



Does Warehouse Receipt Financing Benefit Ghanaian Smallholders?

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In its most elementary form, a warehouse receipt is a document issued by a warehouse operator as evidence that a specified commodity of stated quantity and quality has been deposited at a particular warehouse by a named depositor. When backed by an appropriate legal and regulatory framework, a warehouse receipt becomes a formal financial instrument that allows the depositor to confer full or partial security interest in the stored commodity to another party without requiring physical delivery. This allows the commodity to be traded impersonally and sight-unseen on an organized commodity exchange. It also allows the commodity to be used as possessory collateral for a loan.

In theory, a properly regulated warehouse receipt system can directly benefit smallholder farmers by allowing them to store their surplus safely in a modern warehouse, to sell later when prices are higher, while using the stored commodity as collateral to secure a loan to finance household consumption and investment needs in the interim (Weidemann Associates, Inc. 2000; USAID 2013; Onumah 2010; UNCTAD 1996). In practice, however, warehouse receipt financing has generally failed to deliver the benefits to smallholders hoped for by development economists and practitioners. In Ghana, and more generally throughout Africa, warehouse receipt financing is currently used almost exclusively by large traders, processors, and exporters. In this brief, we explore reasons why smallholders have shunned warehouse receipt financing and discuss policy prescriptions that could make warehouse receipt financing more accessible and beneficial to them.

WAREHOUSE RECEIPT FINANCING IN GHANA

In 2008, backed by the Government of Ghana and supported by the US Agency for International Development (USAID), a body of Ghanaian producer groups, traders, processors, and financial institutions involved in the grain trade formed the

Ghana Grains Council (GGC). One of GGC's articulated missions is to facilitate the integration of smallholders into more competitive markets by establishing a regulated warehouse receipt system in Ghana, with the GGC itself acting as the certification and regulatory agency (Aning 2015; Coulter Consulting Ltd. and Sullivan & Worcester UK LLP 2014).

As of April 2017, the GGC had certified twelve commercial warehouses with a combined storage capacity of 54,600 metric tons to issue warehouse receipts. For a GGC-certified commercial warehouse to issue a receipt, the underlying grain must meet prescribed moisture and purity standards (GGC 2017). For example, its moisture content must not exceed 12 percent, it must be free of agrochemical contamination, and its aflatoxin content must not exceed 15 parts per billion. A certified commercial warehouse is required to have facilities for drying and cleaning of grain to ensure these standards are met before the commodity is stored and a legal warehouse receipt is issued. Once the grain has been processed to meet the prescribed standards, the certified commercial warehouse may issue a warehouse receipt, valid for up to five months from deposit, which may be accepted as collateral by GGC-participating financial institutions.

According to the GGC, through April 2017, certified commercial warehouse operators have issued receipts for 46,942 metric tons of maize, of which 12,555 metric tons have been financed for approximately \$1.2 million. However, GGC partner financial institutions have generally refused to accept warehouse receipts as collateral on smallholder loans. The overwhelming majority of warehouse receipts have been issued by certified commercial warehouse operators to themselves to enable them to use company-owned grain stored in company-owned warehouses as collateral to secure loans to finance their operations and manage their cashflow.

Weinco Ltd., the largest input supplier in Ghana, accounts for the majority of deposits and borrowing under the GGC-certified warehouse receipt system. Through its outgrower scheme, Weinco coordinates more than 12,000 smallholder farmers organized in small groups through its Masara N'Arziki Farmers Association (MAFA). However, MAFA outgrowers do not directly participate in the GGC warehouse receipt system. Weinco takes ownership of the stocks delivered by its outgrowers at harvest, paying them a formulaic price based on the prevailing market price (Coulter Consulting Ltd. and Sullivan & Worcester UK LLP 2014).

PROBLEMS OF SMALLHOLDER WAREHOUSE RECEIPT FINANCING

Although rising prices during the marketing season are necessary for warehouse receipt financing to benefit the smallholder, it is not sufficient. For smallholders to benefit, the price they receive for grain stored in a commercial warehouse must earn a premium over grain stored on-farm in order to offset the higher costs of warehouse storage and the costs of processing the grain to meet the standards required for the issue of a warehouse receipt (Miranda, Mulangu & Kemeze, 2017).

The costs of storing grain in a commercial warehouse and obtaining a warehouse receipt loan are significant, and can easily exceed the costs of storing on-farm. These costs include charges for transporting the grain to the warehouse; charges for sampling, grading, cleaning, drying, and bagging the grain on delivery; charges for pest control, fumigation, utilities, and use of warehouse space while the grain is in the warehouse; and charges for collateral management, including charges for security, insurance, and quality and moisture monitoring. Storing grain in a warehouse will enable smallholder to avoid the losses they suffer by storing their grain on-farm under less favorable conditions and will raise its overall quality through processing. However, if the enhanced grain fails to command a price premium on the market over the common quality grain stored on-farm, the costs of storing grain in a commercial warehouse and obtaining a warehouse receipt will not be recovered.

In Ghana, the costs of warehouse receipt financing, including interest payments, storage costs, and the cost of processing grain to meet the regulatory standards for the issue of a warehouse receipt, have been reported to be on the order of 40 percent of the value of the grain, well in excess

of reported rates of loss from pests in on-farm storage, which generally do not exceed 20 percent over a typical marketing period of five months. Moreover, most smallholders sell their grain in regional markets that do not offer a compensatory price premium for the higher standard grain, given that it is destined for poultry and livestock feed and consumption among poor households. As such, smallholders shun the use of commercial warehouse storage and warehouse receipt financing, preferring instead to market their surplus at harvest or otherwise store it on-farm and sell it later during the marketing season.

SIMULATION OF NET REVENUES OBTAINED THROUGH WAREHOUSE STORAGE OF GRAIN

Table 1 presents hypothetical net revenues earned by a smallholder under various storage and marketing strategies. These scenarios assume:

- The smallholder produces a surplus of ten 100-kilogram bags of grain at harvest;
- The market price at harvest in mid-November is GHC 80 per bag, and appreciates by 40 percent to GHC 112 per bag at the end of the five-month marketing season in mid-April;
- Stocks stored on-farm suffer a 20 percent loss from pests during the marketing season;
- Stocks stored in a certified commercial warehouse do not suffer post-harvest losses, but incur costs of storage and transportation to the warehouse of GHC 4 per bag;
- Stocks stored in a certified commercial warehouse and processed to meet prescribed quality standards currently required for the issue of a warehouse receipt incur a cost of GHC 16 per bag; and
- The lender is willing to offer a marketing season loan for 75 percent of the value of the grain stored in the warehouse at 10 percent interest, and charges GHC 4 per bag in collateral management fees.

These assumptions are based on interviews conducted with Ghanaian smallholders, warehouse operators, and lenders. For the purposes of illustration, they are conservatively chosen within reported ranges to favor smallholder use of warehouse receipt financing (Mulangu, Kemeze & Miranda 2017).

We consider five marketing scenarios.

1. Under scenario 1, the smallholder sells his or her entire surplus at harvest, netting GHC 800.

Table 1. Smallholder net revenues under various storage and warehouse receipt financing scenarios

Scenario	(1)	(2)	Store in warehouse		
			(3)	(4)	(5)
			Current costs and prices	Lower processing costs	Higher price premium
Marketing revenue					
Bags sold, November	10	-	-	-	-
Bags sold, April	-	8	10	10	10
Price received at sale, GHC per 100-kg bag	80	112	112	112	134
Loan net revenue					
Net revenue, November, GHC	-	-	600	600	600
Net revenue, April, GHC	-	-	(660)	(660)	(660)
Marketing revenue					
Warehouse storage, GHC	-	-	(40)	(40)	(40)
Collateral management, GHC	-	-	(40)	(40)	(40)
Warehouse processing, GHC	-	-	(160)	-	(160)
Net revenue, GHC	800	896	820	980	1,044

Source: Calculations by authors.

- Under scenario 2, the smallholder stores the surplus on-farm at harvest, suffering a 2-bag loss over the marketing season, sells in April at a higher market price, netting GHC 896, which is more than what he or she would have earned by selling at harvest.
- Under scenario 3, the smallholder stores the surplus in the warehouse, takes out a warehouse receipt loan for GHC 600, and at the end of the season sells the grain at the higher April market price, repaying the loan with 10 percent interest. The smallholder incurs GHC 240 in warehouse storage transactions cost, netting GHC 820, which is more than what he or she would have earned by selling at harvest, but less than what would have been earned by storing on-farm.
- Scenario 4 is identical to scenario 3, except that the smallholder's grain is not processed to meet the prescribed quality standards currently required for the issue of a warehouse receipt. Under this scenario, the smallholder nets GHC 980, which is more than what he or she would have earned selling the surplus grain at harvest or storing it on-farm and selling it at the end of the marketing season.
- Scenario 5 also is similar to scenario 3, except that the smallholder is able to earn a 20 percent price premium over the prevailing market price for grain stored in the warehouse. Under this scenario, the smallholder nets

GHC 1,044, more than what he or she would have earned selling the surplus grain at harvest or storing it on-farm and selling it at the end of the marketing season.

WAYS FORWARD

For warehouse receipt financing to benefit smallholders in Ghana, either the price premium earned by smallholders for their certified higher quality grain stored in the warehouse must be raised or the cost of warehouse receipt financing must be reduced. The price received by smallholders for enhanced grain stored in the warehouse could be raised through government policies to promote exports or expansion of the downstream high-value-added grain-processing sector, both of which would raise demand for higher quality grain. The government could also mandate that grain purchased by public schools, the armed forces, and other state institutional buyers meet higher standards. However, these efforts would likely prove inadequate, if the majority of grain grown by smallholders remains destined for use by livestock producers or poor households that place little if any value on the quality enhancements required for the issue of a warehouse receipt.

Increased use of warehouse receipt financing among smallholders is more likely to be achieved by reducing the associated costs. One way to reduce the warehouse receipt financing costs for smallholders would be to institute a dual or graduated warehouse receipt system that allows warehouse receipts to be issued on grain that only meets the lower quality standards satisfied by the common grain grown by smallholders. Under such a graduated warehouse receipt system, the lower quality grain typically produced by smallholders could still be used to secure warehouse receipt financing without being subjected to the cost of processing the grain to meet the higher standards demanded by processors and exporters, which is reported to be at least 20 percent of the market value of the grain.

We do not mean to suggest that a well-regulated warehouse receipt system designed exclusively for trade in high quality grain would not benefit smallholders. However, we argue that it generally will not benefit them directly, as is often claimed by the development community. The establishment of a centralized commodity exchange based on the trade of negotiable receipts issued on high quality grain could promote the

modernization of the agricultural value chain, making it more efficient, stimulating investment in processing capacity, and promoting commodity exports. Such advancements would benefit all growers of grain, including smallholders. However, negotiable warehouse receipts traded on exchanges, due to stringent quality standards and minimum volume requirements, would at best benefit smallholders indirectly, and only those limited few that are formally integrated into

agricultural value chains via contract farming. In short, promoting value chain development through the establishment of centralized exchanges based on the trade of warehouse receipts and promoting smallholder access to warehouse receipt financing are not entirely compatible goals. Both cannot be met by a single, indiscriminating set of regulations governing the issue of warehouse receipts.

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