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The Grain Chain: Food Security and Managing Wheat Imports in Arab Countries

Arab countries depend heavily on imported food, particularly wheat. Population growth, rising incomes, and climate change will only increase their dependency on wheat imports, thereby making Arab countries even more exposed to international market volatility. A recent World Bank study, "The Grain Chain: Food Security and Managing Wheat Imports in Arab Countries," identifies key bottlenecks in the wheat-import supply chain (WISC) and some possible remedies. Efficiency improvements to the supply chain can improve food security. This SmartLesson provides a summary of the relevant issues.

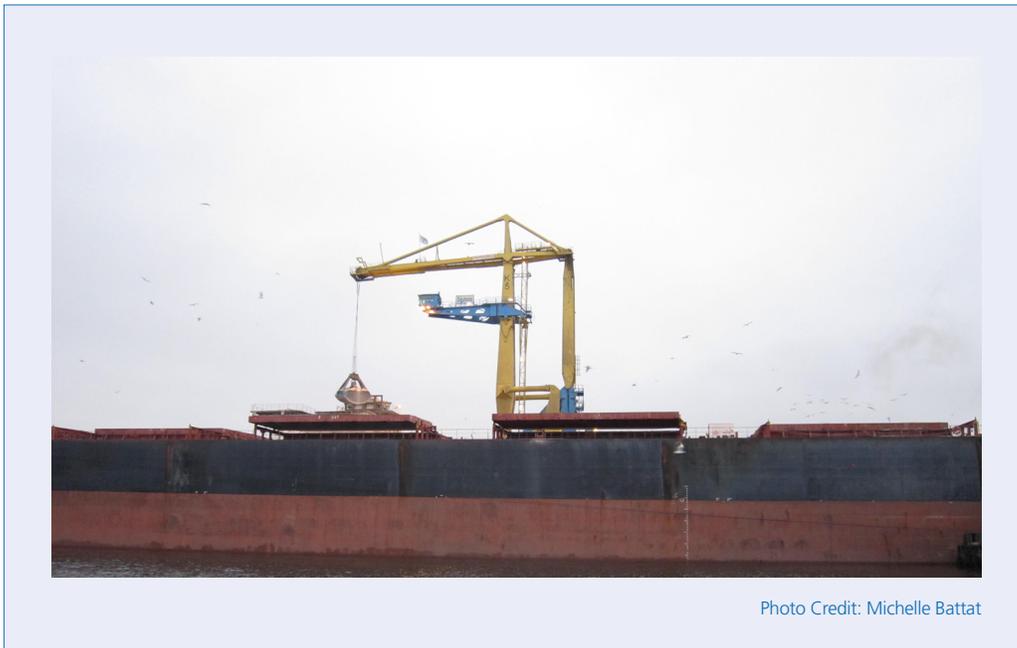


Photo Credit: Michelle Battat

Background

The recent food price shocks of 2007–08 and 2010–11 have raised concerns about the affordability of key food staples, including wheat. Population growth, income growth, promotion of biofuels, high and volatile fuel prices, and depreciation of the US dollar all contribute to upward pressure on wheat prices; meanwhile, climate change, as seen through an increase in severe weather events, and low global stock-to-use ratios further contribute to increased price volatility.

Arab countries are particularly vulnerable to increased volatility in international wheat markets since they rely heavily on wheat imports, and short-term demand for wheat in the Arab world is relatively inelastic. In total, Arab countries import around 56 percent of the cereal calories they consume, the largest share of which comes from wheat. Some countries in the region import 100 percent of their wheat consumption needs.

One approach to helping Arab countries reduce the cost of feeding their citizens is to help reduce the cost of importing staple food supplies. To that effect, the objective of the study “The Grain Chain: Food Security and Managing Wheat Imports in Arab Countries” is to identify key bottlenecks in the wheat-import supply chain (WISC) in Arab countries and to explore ways in which those countries can mitigate import risks and thereby ensure sufficient supply while reducing their fiscal liabilities.

The study identifies three critical aspects to the WISC and examines various investments and strategies Arab countries should consider if they want to reduce their exposure to international market volatility and the total cost of importing wheat.

1. Strategic reserves: Maintaining strategic wheat reserves with clearly defined decision rules can contribute to domestic and international price stabilization.
2. Logistics: Promoting investments throughout the supply chain can create smooth logistics, improve security, provide a reliable supply of wheat, reduce the base cost of importing wheat, and reduce product losses.
3. Procurement: Developing a procurement strategy that leverages strategic partnerships, maintaining a diversified portfolio of suppliers, and using commodity hedging strategies all help mitigate counterparty and price risks.



Photo Credit: Michelle Battat

Lessons Learned

Lesson 1: Increasing strategic reserves and drawing them down based on clear decision rules can help mitigate both domestic and international price volatility.

The analysis suggests that existing storage capacity in the region as a whole averages the equivalent of six months of consumption, and estimated ending stocks average four and half months.¹ However, many Arab countries are planning to increase their strategic wheat reserves as a

¹Ending stocks for a given country are defined as beginning stocks plus production and imports, minus exports and consumption.

policy to improve food security. Not only can this provide them with critical lead time to secure alternative wheat supplies or supply routes during times of crisis, but reserves can also offer psychological benefits that may prevent hoarding and pilferage.

Moreover, historical data suggest a strong negative correlation between changes in wheat stock-to-use ratios and changes in wheat prices. That is to say, when the level of available wheat stocks is high, the likelihood of a price spike has generally been lower, and vice versa. Whereas safety nets like cash transfer programs promote the purchase of wheat when prices are high, well-managed strategic reserves encourage the purchase of wheat when prices are low and the release of stocks when prices are high. Therefore, increasing strategic wheat reserves can reduce domestic price volatility and the frequency of domestic price shocks. Releasing reserves also means a greater supply available on the world wheat market, which mitigates international price risks. This finding is particularly noteworthy, because in helping themselves, Arab countries can also help the world.

In terms of managing the reserves, three factors must be considered in establishing policy guidelines and decision rules: the threshold domestic price that triggers the drawdown of wheat reserves, the target reserve level, and the rate of reserves replenishment. The cost of a wheat reserve policy is dictated in large part by these three criteria. The lower the threshold price, the larger the size of the reserve, and the more aggressive the replenishment rate — the more costly the policy will be. As with any policy decision, the benefits of strategic wheat reserves must be measured against the cost of maintaining them and against the competing needs for the same funds.²

Lesson 2: Improvements to logistics can have significant cost savings.

The logistics analysis assesses the efficiency and reliability of the supply chain from the unloading port to bulk storage at the flour mill. The study, using time and cost as two key measures of efficiency, found that the average WISC transit time in Arab countries is 78 days, costing around \$40 per metric ton. For comparison, the average transit time and cost in the Netherlands are 18 days and \$11 per metric ton; in South Korea, 47 days and \$17 per metric ton.

While there are significant differences in supply chain performance throughout the region, port logistics proved to be an opportunity for improvement in most countries. On average, 29 percent of total WISC costs are incurred at the port. Of these costs, 65 percent are driven by vessel turnaround time, which includes both waiting time in the harbor and the time it takes to unload the wheat once the vessel is at the berth. Long turnaround times — in some extreme cases, vessels wait in the harbor for more than 20 days before beginning to unload the wheat — have a significant impact on the cost of importing wheat. Wheat suppliers also consider port logistics when offering a bid

²For a more detailed discussion of the role of storage policy and food security, please look for “Food security and storage in the Middle East and North Africa” by Donald F. Larson, Julian Lampietti, Christophe Gouel, Carlo Cafiero, Brian D. Wright, and John Roberts, forthcoming.

price for wheat tenders. Therefore, efficiency improvements may reduce both logistics costs and the cost and freight (CFR) price of wheat.

While we observed that vessel turnaround time is a critical bottleneck in many countries throughout the region, the cause for such bottlenecks varies; causes include the capacity of unloading equipment, customs and inspections procedures, priority rules for other vessels, and inclement weather. If vessel waiting times could be reduced to one day, Arab countries would save over \$2.94 per metric ton, or \$110 million per year. Waiting times could be reduced by expanding port handling and storage capacities, adding more berths that can handle grains, changing priority rules, dredging the harbor to allow for larger vessels, harmonizing phytosanitary procedures with the exporting countries, and reducing bureaucracy in customs procedures. It will be important for Arab countries to undertake further analysis of the specific causes of, and potential solutions to, bottlenecks at individual ports to help mitigate supply risks and ease pressures on wheat prices.

Regardless of the cause of a bottleneck, all segments of the WISC are interconnected, and efficient and reliable logistics throughout the supply chain is critical to ensuring delivery of supplies in a timely and cost-effective manner. Efficiency improvements could help reduce the time it takes to import wheat, the base cost of importing wheat, and product loss — as high as 5 percent in some countries — thereby improving food security.

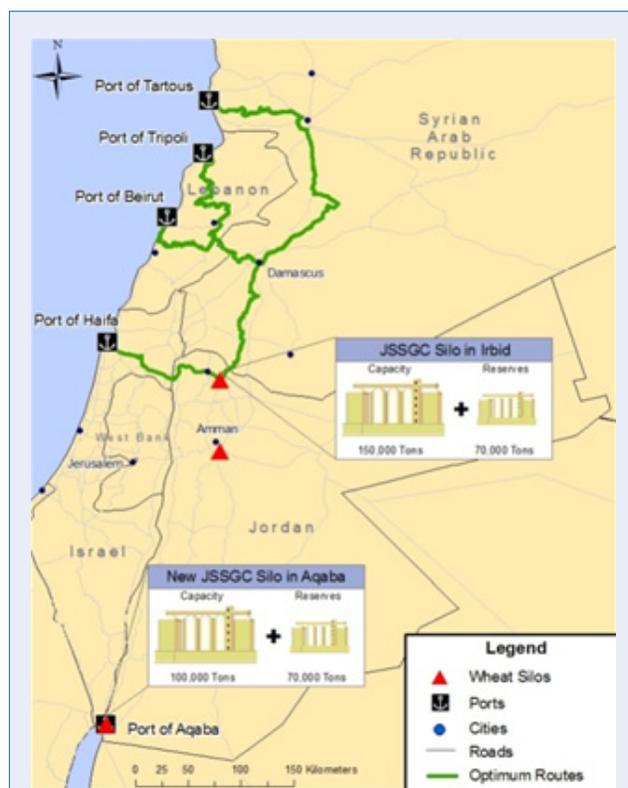
Lesson 3: Strategic partnerships and hedging instruments would help reduce the risk of supply disruptions and price volatility.

Across the Arab world, the team observed different approaches to issuing wheat tenders. Some countries take a more conservative approach by issuing tenders in a predictable fashion, which keeps a constant flow of wheat coming into the country and spreads price risk across all tenders. Other countries take a riskier approach, importing large volumes of wheat through a limited number of tenders.

Regardless of a country's preferred method of wheat procurement, there are various methods and tools that can enhance a country's risk management strategy and thereby improve food security. Countries could develop strategic partnerships with grain traders and key grain-exporting countries. This could take the form of a long-term contract with a reliable grain trader who has access to global markets, or a free-trade agreement (FTA) with a grain exporter including a specific clause regarding the trade of wheat, as is the case in the Morocco–U.S. FTA. These relationships would help reduce counterparty risk, which if actualized and left unmitigated could lead to temporary supply disruptions.

Cooperation among neighboring Arab countries may also ease the risk of supply disruptions. In some instances, there may be gains to be had by working with neighboring countries to import wheat to the region. For example, a country such as Jordan, with only one port in the south

(Aqaba), may be able to reduce supply chain congestion by importing some wheat through nearby Mediterranean ports (Tartous in Syria, Tripoli and Beirut in Lebanon, or Haifa in Israel) and then trucking it to silos and mills in the northern part of the country. Other countries may be able to take advantage of transshipment from large vessels at deep-water ports into smaller vessels serving shallow-water ports. Using this hub-and-spoke model would allow large volumes of wheat to be shipped to a single deep-water port in the region and then distributed to multiple destinations. Last, Arab countries could take advantage of a "parcel service" model. Specifically, smaller countries like Qatar and Bahrain may be able to benefit from importing wheat on shared vessels, and also carrying cargo for neighboring countries.



Jordan could also import wheat via nearby Mediterranean ports.

Source: Authors of "The Grain Chain: Food Security and Managing Wheat Imports," 2011.

Physical and financial hedging instruments could also be employed to reduce exposure to price volatility and shocks. Some Arab countries are already using physical hedging instruments, such as forward contracts, to lock in a price for wheat, but these tend to be on a short-term basis. These countries could benefit from issuing similar contracts over a longer time horizon — locking in the volume and price of wheat imports 18 to 24 months in advance of the delivery of the wheat could help governments with budget planning.

The use of financial hedging instruments for agricultural commodities, on the other hand, is not yet common practice in the Arab world. Trading wheat futures and options on an exchange is yet another strategy countries

could employ to help mitigate the price risks they face. A successful hedging strategy would be over a long-term horizon, using a mix of the various instruments available, and could help governments better predict their future fiscal liabilities and thereby improve food security.

Conclusion

Of course, there is no silver bullet to mitigate wheat import risks. For instance, strategic reserves would not be effective if logistics systems fail to reliably deliver the wheat from storage to the flour mills or end consumer. At the same time, smooth logistics can keep base importing costs low and ensure timely delivery of supplies, but they do not provide a supply buffer during price shocks. Finally, without an effective procurement and hedging strategy, countries are constrained in terms of mitigating their exposure to price volatility. Therefore, a comprehensive approach that incorporates strategic reserves, supply chain logistics, and procurement strategies is critical to reducing import risks and will have the greatest impact on improving food security.

Although the Arab world faces a unique set of constraints and risks, this study is relevant for countries in other regions as well. The holistic approach is applicable for any other grain-importing country seeking to manage its exposure to import risks. And the study is equally relevant for grain exporters. A key message in business is “know your customer.” Arab countries import the majority of their wheat from North America, Western Europe, the former Soviet Union, and Australia; these key grain exporters can better meet the needs of their customers by improving their understanding of the risks Arab wheat importers are facing.



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