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Global Value Chain Analysis and Food Security

Duke MINERVA Project

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Abstract

Current food security paradigms often examine food availability in a manner that focuses exclusively on global factors or local institutional arrangements without critically examining the links between the two. The Global Value Chain (GVC) framework allows for a holistic approach to studies of food security by allowing researchers to examine commodities through production, distribution, and retailing activities. The approach demonstrates not only the importance of firms and other actors involved in commodity lifecycles, but also investigates the various governance structures that impact trade and food systems. This brief compares the GVC approach to understanding food security with more traditional approaches and identifies how GVC analysis allows researchers to identify and investigate important food security challenges facing MENA, particularly the issues of governance and international trade.

Keywords

Food Security, Global Value Chains, Food Systems

Introduction

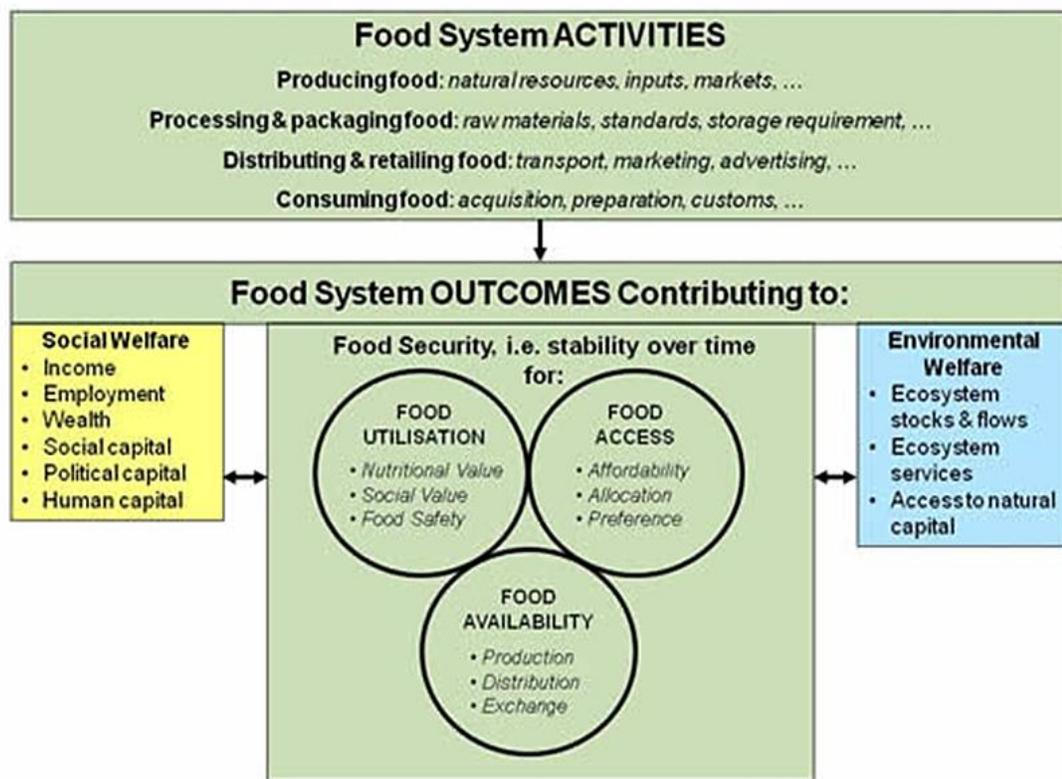
Reports estimate that by 2050, the world will need 70 to 100% more food to meet the demands of the global population¹. Growing populations, shifting diets and climate change all contribute to challenges facing producers and policy makers in terms of securing a stable food supply, thus making food security an important policy topic across the globe.

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Conventional studies of food security generally frame the issue by looking at total supply, wastages in the system and other constraints that limit the availability and accessibility of food for various populations. However, these studies are often limited by their inability to incorporate global trade and the role of firms and institutions on food security outcomes.

This brief highlights recent paradigms for studying food security and shows how the global value chain framework unpacks agri-business dynamics that affect food security outcomes. We argue that the GVC framework allows policymakers to approach issues of food security on multiple levels, thereby giving a more holistic understanding of the issue and possible policy responses.

Figure 1 Food System Activities and Food Security^{2, 3}



¹ Godfray, H. Charles, John Beddington, Ian Crute, Lawrence Haddad, David Lawrence, James Muir, Jules Pretty, Sherman Robinson, Sandy Thomas and Camilla Toulmin 2010. Food Security: The Challenge of Feeding 9 Billion People. *Science* 327: 812-818.

² Ericksen, Polly J. 2008. What Is the Vulnerability of a Food System to Global Environmental Change? *Ecology and Society* 13.

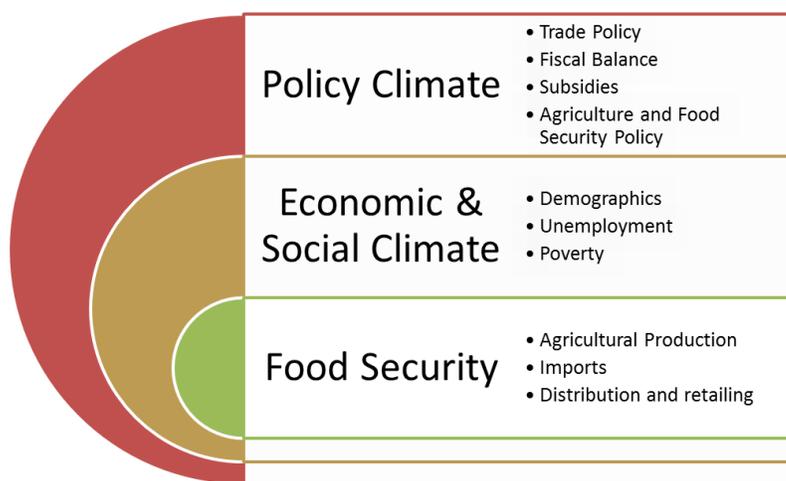
³ Ingram, John 2011. A Food Systems Approach to Researching Food Security and its Interactions with Global Environmental Change. *Food Security* 4: 417-431

Food systems and food security

Food systems-meaning all activities involved in the production, distribution, and consumption of food-is a rich area of scholarship. Food security is the outcome of a functional food system⁴. The most frequently cited definition of food security comes from the 1996 World Food Summit where the FAO established a widely food security as a “situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” Figure 1 outlines the major components of the current definition of food security as understood in terms of the food system. As previous scholarship indicates, access to safe, nutritious, affordable food is often results of activities within the food system. However, there are several factors which work together to impact the outcome of food security, which in turn also effects overall stability in the region. Figure 2 shows how policy, economic and social climate all effect food security outcomes.

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Figure 2: Food security factors



Conventional models of food security encompass many aspects of food systems, including production capacity and dietary patterns. However, they often overlook important issues, such as international trade, firms, government institutions, and other actors involved in food systems outside of production. Additionally, traditional models often rely on econometrics to draw conclusions; while this approach is helpful for identifying determinants of food system dynamics it has yet to be effective in influencing food security policy decisions, as such studies take a narrow (rather than systems-based) research focus and do not always indicate practical advice for policy-makers and private sector actors. Conventional understandings of food security, despite their benefits, did not offer insights to help policy makers anticipate the 2007-2008 food crises nor did it help to explain the role of corporations in government decisions on import or export bans. The global value chain, elaborated on the following page, helps to better incorporate these often overlooked actors and institutions that contribute to food security and insecurity.

⁴Sobal, Jeffery, Laura K. Khan and Carole Bisogni. 1998. A Conceptual Model of the Food and Nutrition System. *Social Science & Medicine* 47: 853-863.

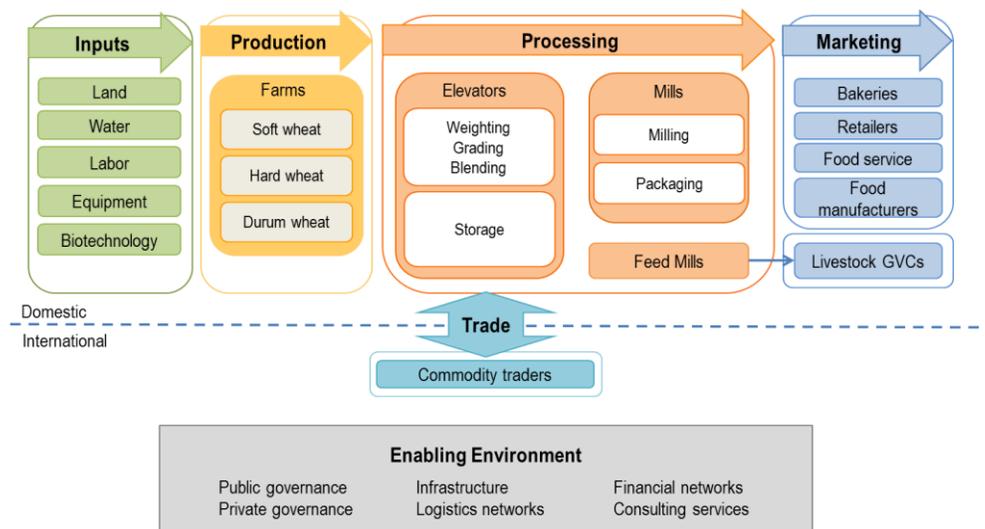
What does GVC analysis entail?

A **value chain** comprises the full range of activities required to bring a product from conception to consumption. In today's globalized and interconnected world, many value chains –several of which are important to food systems and food security – span multiple countries; they are global value chains (GVCs).

Recognizing the growing importance of GVCs to developments in the economy and in society, a group of interdisciplinary researchers have developed an analytic approach, known as **GVC analysis**, to study topics ranging from international development to corporate strategy to food security (see Figure 3 for an example of a GVC for wheat). Broadly, the goal of GVC analysis is to unpack the set of activities within the value chain, identify who carries these out and where they do so, and understand the institutions and power relations that govern how these actors interact with one another. Many industries feature **lead firms**, which are responsible for orchestrating value chains through the selection of suppliers, the formulation of product and process standards. For example, trading companies act as lead firms in the wheat GVC.

In recognition of the substantial variation across value chains in terms of production technologies and governance dynamics, GVC analysis is always carried out in a “disaggregated” way, focusing on individual products or industries rather than the global economy as a whole.

Figure 3: The wheat global value chain



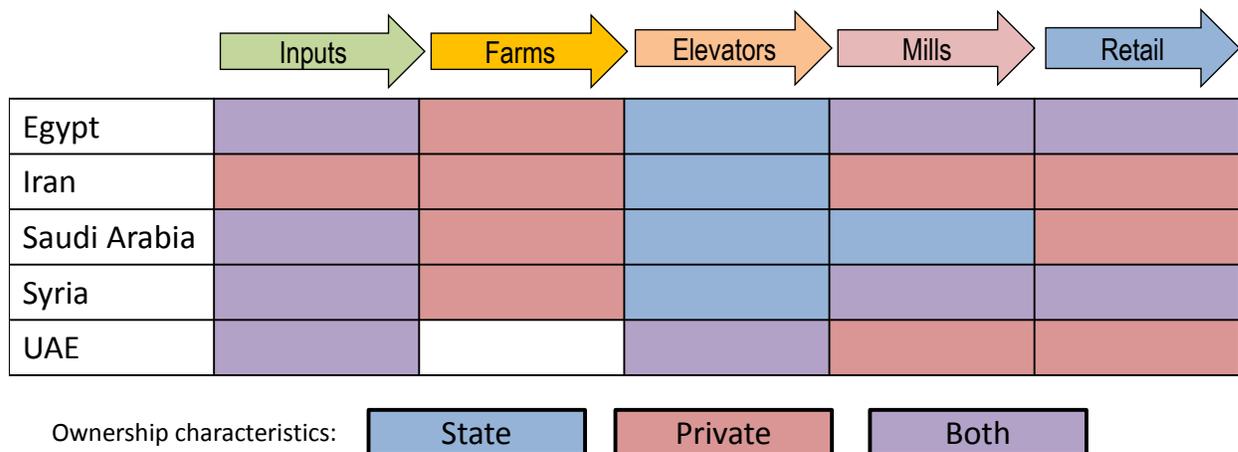
A typical GVC analysis follows several steps.

1. Select a product or industry for inquiry.
2. Map the input-output structure of the GVC to identify each step in the value chain. Note that this should include pre-production and post-production services, as well as supporting activities such as finance and logistics.
3. Use data on production, consumption and international trade to identify the geographies of supply and demand along the value chain.
4. Identify the lead firms, intermediary organizations and local suppliers in the GVC, and overlay these onto the GVC map in order to identify key leverage points.
5. Analyze additional layers in the GVC in order to identify institutions, stakeholders, policies, etc. which shape behavior and outcomes along the value chain.

Using GVC analysis to assess food security

- **A focus on actors and strategies.** The GVC approach takes *firms* – from individual farmers to multinational trading companies – as the basic units of analysis. Firms serve as “nodes” within the input-output structure of the value chain. GVC analysis directs our attention to the strategies that firms pursue in order to “capture” more value from the value chains in which they participate. With respect to food systems, the food security strategies of states are also of central analytic concern.
- **Incorporating global trade.** In bringing goods from conception to consumption, GVCs cross national borders. Indeed, MENA is more dependent than any other world region on imports of wheat for ensuring food security. Thus, the GVC approach to understanding food security incorporates analyses of international trade flows and national trade policies.
- **A systems-based approach.** Rather than looking only at the infrastructure and policy environment within a particular country, we look at how national and local food systems are situated within large global industries and what the implications are for promoting food security.

Figure 4: Ownership patterns along the wheat GVC in selected MENA countries



- **Comparative analyses.** The GVC approach allows us to compare how different countries organize each node of food/wheat value chains, and how both public and private rules constitute different institutional systems within these countries. For example, Figure 4 compares how institutional characteristics (here, rules and norms about the ownership characteristics of each stage of the value chain) differ across five selected MENA countries. These institutional differences indicate the extent to which actors and inter-organizational dynamics vary across MENA countries, underlining the importance of a wide-angle perspective on food security analysis in the region.

GVC analysis: moving beyond existing frameworks

The term “food security” was first formalized in 1974 at the World Food Conference. In the subsequent four decades, there have been impressive advances in our understanding of food security and how it can be promoted. During this time, there have also been important transformations in the food systems, as globalization has created new opportunities and challenges for ensuring food security for specific populations. Recent assessments of the dimensions and determinants of food security have benefited greatly from improvements in the quality and comparability of quantitative data, which have enabled sophisticated statistical analyses (see Table 1). In spite of the value that such approaches provide to policy makers, they nevertheless contain important shortcomings, including simplistic treatments of international food trade and a weak analysis of the strategies and interests of key public and private actors. The GVC approach attempts to fill these important gaps in our knowledge about food security and how it can be guaranteed by more seriously analyzing the implications of globalization and supply chain dynamics for how countries and individuals ensure access to food.

Table 1: Comparison of Food Security Approaches

Framework	IFPRI ¹	USDA ²	FAO ³ (FAO 2013)	GVC
Data	Quantitative indicators, multiple levels of analysis	Quantitative indicators mainly at country level	Quantitative indicators at country-level	Mixed-methods (quantitative and qualitative), multiple levels of analysis
Approach	Econometrics; micro-macro approach	Econometrics; quantitative comparisons	Econometrics, quantitative comparisons	Actor-centered; mixed-methods (qualitative and SNA)
Findings	Emphasis on economic growth, improving data systems and improving efficiency of public programs	Emphasis on factors affecting food production and ability to import food from the international market	Emphasis on improving productivity and efficiency in country food systems	Events and trends outside of MENA have important food security implications; interventions should vary by sub-region and by country
Strengths	Models allow for easy interpretation and comparison between countries	Models allow for easy interpretation and comparison between countries	Models allow for easy interpretation and comparison between countries	Accounts for global dynamics; focus on actors, strategies, and power; rigorous trade analysis
Weakness	Macro approach only includes country-level rather than global factors; no analysis of actors	Difficult to incorporate governance mechanisms and policies that impact international trade	Insufficient analysis of globalized sourcing networks; no analysis of actors	New approach; still requires conceptual and methodological refinements; focus is on a small number of commodities

- 1) Breisinger et al. 2010. <http://www.ifpri.org/sites/default/files/publications/pr25.pdf>
- 2) USDA Economic Research Service. 2014. [Global Food Security](#).
- 3) FAO. 2013. <http://www.fao.org/docrep/018/i3434e/i3434e.pdf>

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