



Food value chain transformations in developing countries: Selected hypotheses on nutritional implications



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ABSTRACT

We examine how the transformation of food value chains (FVCs) influence the triple malnutrition burden (undernourishment, micronutrient deficiencies and over-nutrition) in developing countries. We propose a FVC typology (modern, traditional, modern-to-traditional, and traditional-to-modern) that takes into account the participants, the target market, and the products offered. Next, we propose selected hypotheses on the relationship between each FVC category and elements of the triple malnutrition burden. The primary finding is that the transformation of FVCs creates challenges and opportunities for nutrition in developing countries. For example, Modern FVCs may increase over-nutrition problems and alleviate micronutrient deficiencies for urban people with relatively high incomes. However, they have little nutritional impacts among rural residents and urban poor people, who primarily depend on traditional FVCs to access adequate quantities of calories and micronutrients. In addition, modern food manufacturers are leveraging traditional distribution networks (modern-to-traditional FVCs), substantially increasing access to low-priced processed/packaged foods in rural areas and low-income urban neighbors with mixed impacts on the triple burden of malnutrition. Further research should focus on the influence of FVC transformation on reduction of micronutrient deficiencies, on modeling demand substitution effects across food categories and the attendant policy implications for malnutrition.

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Introduction

Malnutrition affects millions of individuals worldwide and presents a continuing challenge to government, donors, and individual decision-makers. [Pinstrup-Andersen and Watson \(2011\)](#) characterize malnutrition in developing countries as a triple burden: Undernourishment (insufficient calorie and protein intake), micronutrient malnutrition (hidden hunger), and over nutrition (excess calories leading to overweight and obesity). In 2010, undernourishment and micronutrient malnutrition affected about 0.9 and two billion people respectively in developing countries ([FAO, 2013](#); [Gómez et al., 2013](#)). By themselves, or in combination with such conditions as diarrhea, respiratory illnesses, and infectious diseases, undernourishment and micronutrient deficiencies may result in growth retardation, impaired cognitive development, and poor school performance in children, low labor productivity, reduced disease resistance, anemia, blindness and even death ([Kennedy et al., 2003](#); [WHO/UNICEF, 2004](#)). Meanwhile, over-nutrition, reflected in escalating overweight and obesity rates along with higher incidence of chronic diseases like diabetes, continues to expand in developing countries ([Popkin, 1999, 1998](#)). The causes of this triple burden are multiple but the availability,

variety, and composition of foods that make up peoples' diets play a major role. Healthy diets contain a variety of nutrient dense foods from several food groups and limited amounts of foods and beverages with added fats and sugars ([Miller and Welch, 2013](#)).

In this paper, we review the literature and examine how food value chain (FVC) transformations, described below, are influencing the triple burden of malnutrition in developing countries. In addition, we identify areas that require more attention from researchers and decision-makers. FVCs are changing rapidly in developing countries due to several factors. These include population and income growth, urbanization, and the expansion, globally and domestically, of modern food retailing, distribution, and wholesaling firms ([FAO, 2010](#); [Reardon and Timmer, 2007](#)). As a result, today's developing country FVCs exhibit great diversity, as modern sector firms either establish their own food chains or interact with traditional FVC actors, such as smallholder farmers and traders, wet markets, corner stores, and street vendors. We argue that a deeper understanding of the drivers of emerging FVC arrangements, the motivations of actors who participate in them, the products offered, and the markets targeted can provide valuable insights into the policy options for curbing the influence of malnutrition in developing countries.

We first classify FVCs into four categories. These categories differentiate based on participants and their interactions, markets targeted, and types of products offered to end consumers. We label the categories 'modern', 'traditional', 'modern-to-traditional', and

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Table 1Food value chain typologies and their hypothesized influences on nutrition. *Source:* Developed by authors based on the review of the literature.

Type	Participants	Implications for food access	Hypothesized nutritional impacts
Traditional	Traditional traders buy primarily from smallholder farmers, and sell to consumers and traders in wet, mostly local, markets	<p><i>Affordability:</i> A local 'clearing-house' for products, with flexible prices, product volumes, and quality standards</p> <p><i>Availability:</i> Food 'hub' for consumers and local 'mom and pop' stores to access directly from traders and smallholder farmers; market offerings are highly dependent on production seasonality</p>	<ul style="list-style-type: none"> • Traditional FVCs help reduce micronutrient deficiencies and undernourishment by offering low-priced fruits, vegetables, livestock products, and staples, particularly in rural areas and in poor neighborhoods of urban areas • Production seasonality, combined with lack of post-harvest and distribution infrastructure, increase FVC intermediation costs and limit the ability of traditional FVCs to reduce micronutrient deficiencies and undernourishment
Modern	Domestic and multinational food manufacturers procure primarily from commercial farms and sell through modern supermarket outlets	<p><i>Affordability:</i> Economies of scale enable the production, marketing, and distribution of packaged/processed foods at low per-unit prices</p> <p><i>Availability:</i> Modern supermarkets provide year round, wide product assortment, primarily in urban areas; supermarkets are expanding successfully the market for processed and packaged foods</p>	<ul style="list-style-type: none"> • Modern FVCs may contribute to alleviate micronutrient deficiencies by offering a wide assortment of products year round; but supermarket's physical location and quality standards may imply higher retail prices, missing the poor • Modern FVCs may contribute to obesity/overweight malnutrition by expanding the reach of inexpensive, calorie-dense processed/packaged foods, primarily in urban areas
Modern-to-traditional	Domestic and multinational food manufacturers sell through the network of traditional traders and retailers (e.g., 'mom and pop' stores)	<p><i>Affordability:</i> Food manufacturers benefit from economies of scale to connect with traditional distributors and retailers, offering low-priced processed foods to reach low income consumers</p> <p><i>Availability:</i> By linking with traditional retailers, food manufacturers develop intense distribution strategies in urban areas and in rural, isolated markets</p>	<ul style="list-style-type: none"> • Expansion of processed/packaged foods into isolated, rural regions may alleviate undernourishment; but it can result in over-nutrition among urban consumers • Food fortification initiatives focusing on modern-to-traditional FVCs may contribute to reduce micronutrient malnutrition
Traditional-to-modern	Supermarkets and food manufacturers source food from smallholder farmers and traders	<p><i>Affordability:</i> Increased income opportunities in high value crop and livestock production for smallholder farmers and traders can expand food budgets because most are net-food buyers</p> <p><i>Availability:</i> Increased production and crop diversification may increase food available for local consumption</p>	<ul style="list-style-type: none"> • Traditional-to-modern FVCs may reduce micronutrient deficiencies and undernourishment of smallholder farmers through and traders through higher incomes leading to diet diversification • Opportunities for smallholder farmers and traders to benefit directly from participation appear limited and may miss asset-poor farmers; substantial benefits happen through off-farm employment opportunities

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