Food Policy 63 (2016) 87–101

Contents lists available at ScienceDirect

Food Policy

journal homepage: www.elsevier.com/locate/foodpol

How important is economic growth for reducing undernourishment in developing countries?

Bárbara Soriano *, Alberto Garrido

Technical University of Madrid, Spain

ARTICLE INFO

Article history:
Received 25 August 2015
Received in revised form 26 July 2016
Accepted 26 July 2016

Keywords:
Economic growth
Prevalence of undernourishment
Rate of change

ABSTRACT

There is intense debate in the literature about how important economic growth is for solving the problem of undernourishment. This paper focuses on the rate of change in the prevalence of undernourishment and looks at whether higher economic growth speeds up reductions in undernutrition in developing countries. The analysis uses panel data analysis on data spanning 22 years (1991–2012) and covering 27 developing countries. Results reveal that faster annual economic growth leads to larger annual improvements in undernourishment rates. Both annual and long-term economic growth are relevant. Sustained economic growth has a greater positive impact on undernutrition than short-term economic growth. In addition to economic growth, investments in health, education and access to drinking water are also enabling factors for reducing undernourishment. In conclusion, increased income growth can hasten the effects of food policies aimed at reducing undernourishment, but not to the extent that sustained growth and better access to health, education and drinking water can.

1. Introduction

According to the Global Hunger Index, hunger has fallen by 40% since 1990 (IFPRI et al., 2014). There are substantial differences in the rates of change in food security across developing countries. The percentage of people suffering from hunger in Nicaragua decreased by 31% from 1990 to 2009, while the fall in Ecuador was 4.9% over the same period (Willaarts et al., 2014). What explains these disparities in the rates of change? Some studies found that economic growth is a major prerequisite for improving nutrition in developing countries (Ravallion, 1990; Pritchett and Summers, 1996; Smith and Haddad, 2002). Other authors suggest that food security is less responsive to economic growth than other human development measures like poverty (Headey, 2011; Ecker et al., 2012). It appears that income growth is a necessary but not a sufficient condition for combating undernourishment. Investments in public health, sanitation and education are also identified as factors conducive to reducing undernourishment (Wolf and Behrman, 1983; Timmer, 2000; Alderman et al., 2003; Suri et al., 2011; Ruel and Alderman, 2013). Both economic growth and the pathways through which it affects undernutrition matter (Ravallion and Chen, 1996; Dollar and Kraay, 2000). Discovering the pathways through which improved per capita income leads to improvements in undernutrition is the key to identifying appropriate food and nutritional strategies and policies (Smith and Haddad, 2002).

The aim of the article is to determine how important economic growth is for reducing undernourishment in developing countries. Our analysis of the impact of economic growth on undernutrition examines three characteristics of economic growth: (1) the pace of economic growth; (2) the economic growth lag structure and (3) the pathways through which economic growth leads to improvements in undernutrition. For this purpose, the article addresses three research questions. The first question attempts to identify the different trends in the prevalence of undernourishment within developing countries. The second question aims to confirm whether higher economic growth reduces undernourishment in developing countries faster. It also evaluates what impact the economic growth lag structure has on the prevalence of undernourishment. The third question addresses the analysis of the pathways through which economic growth influences undernourishment.

To answer these research questions, this article uses panel data from 27 developing countries over the period 1991–2012. Sections 2 and 3 present the conceptual framework and review the economic growth and undernutrition literature. Section 4 reports the analyzed sample of countries and data. Section 5 describes the

* Corresponding author at: Campos de prácticas de la Escuela Técnica Superior de Ingenieros Agrónomos, Universidad Politécnica de Madrid-Ciudad Universitaria, 28040 Madrid, Spain.

E-mail addresses: barbara.soriano@upm.es (B. Soriano), alberto.garrido@upm.es (A. Garrido).

http://dx.doi.org/10.1016/j.foodpol.2016.07.004
0306-9192/

three-stage methodology applied to answer the three research questions. Section 6 summarizes and discusses the results. Finally, Section 7 presents the main conclusions.

2. Conceptual framework

The prevailing definition describes food security as the condition that "exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life." This definition encompasses the four pillars of food security: availability, access, utilization and stability. The nutritional dimension is embodied in the concept of food security (Cafiero, 2012).

The conceptual framework for analyzing food security was first laid down in UNICEF's framework on the causes of malnutrition and death in children and women (UNICEF, 1990). Initiatives proposed more recently build upon the UNICEF model (Riely et al., 1999; Grebmer et al., 2010).

The UNICEF conceptual framework structured the causes of malnutrition at three levels: immediate, underlying and basic causes. Inadequate dietary intake and disease are immediate causes operating at the individual level. Underlying causes are household food insecurity, inadequate care and insufficient health services and unhealthy environment. Basic causes are human, economic and organizational resources, socio-cultural, socio-political and socio-economic factors (Engle et al., 1999; Smith and Haddad, 2000; Reinhard, 2002). The UNICEF conceptual framework is defined primarily at the micro level that relates the ability of households/individuals to achieve food security.

According to Pinstrup-Andersen (2009), food security at household level is a necessary but not a sufficient condition for adequate nutrition. Household access to enough food may not assure adequate food intake by all household members for two reasons. First, food accessibility may not necessarily be followed by actual food acquisition. The head of the household may prioritize the acquisition of other goods and services over food products. Second, the allocation of available food at household level may not meet the physiological requirements of all its members.

With regard to the insufficiency of the household approach, the United Nations (2011) acknowledges that national development has to be enhanced to achieve the nutritional development goal beyond the household level. Besides, Ecker and Breisinger (2012) conclude that the main shortcoming of the UNICEF framework is that it mainly focuses on the household level. Due to the complexity of the food system and the growing importance of global factors, they propose adding country-level assessment to the existing conceptual framework and differentiating the macro and micro dimensions in the conceptual framework of the food and nutritional system (Fig. 1).

Fig. 1 shows the two levels of categorization of the determinants of food security. The micro-level causes structured according to the UNICEF framework appear at the top and the macro-level dimension at the bottom of the Fig. 1. At the macro level, the factors that have an impact on food security are macroeconomic stability, economic growth and its distribution (Timmer, 2000), public spending and investment in key sectors—economic and social sectors (health, education and access to water and sanitation)—, and governance and quality of institutions (Rodrik et al., 2004; Ecker and Breisinger, 2012). These determinants may help to improve food security by increasing household incomes, providing assets and services that are essential for malnutrition prevention and treatment, and providing food (Ecker and Breisinger, 2012).

The blue[1] arrows in Fig. 1 indicate that the macro-level determinants have both a direct (vertical arrow) and indirect impact (horizontal arrow) on food security. Macroeconomic stability helps to tackle the basic causes of food security (human, economic and organizational resources) and also to enhance income growth that again has an impact on the basic causes of food security. Macroeconomic stability and economic growth help to promote public spending and investment in key sectors that again have an impact on the micro-level determinants of food security. Macroeconomic stability, economic growth and public investments improve the governance and the quality of institutions that again influence food security. Finally, the grey arrows indicate that there is a reverse relationship between economic growth and undernutrition. Several authors find that improvements in the prevalence of undernourishment lead to economic growth (Arcand, 2001; Wang and Taniguchi, 2002; Fogel, 2004; Neeliah and Shankar, 2008).

This article analyzes the impact of economic growth on food security, focusing on the direct and indirect effect of economic growth on undernourishment through public spending and investment in health, education and improved access to drinking water (intermediate variables). Investment in health, education and access to water are key sectors for food security (Wolf and Behrman, 1983; Timmer, 2000; Alderman et al., 2003; Suri et al., 2011; Ruel and Alderman, 2013). The determinants of food security analyzed in the article are set in blue squares in Fig. 1.

3. Overview of the relevant literature on economic growth and undernutrition reduction

Food security is a wide and complex concept characterized by multiple dimensions (availability, access, utilization and stability) measured on different scales at either the national, local, household or individual level. Because of its complexity, food security is a challenge to monitor. Several indicators have been proposed for measuring food security (Cafiero, 2012; Dijk and Meijerink, 2014).

The identification of the scope of the undernutrition indicator is a key factor in its selection. Cafiero (2012) suggests two approaches for ascertaining whether the indicator measures the causes (limited availability or access) or the consequences (nutritional status, economic and social cost, welfare reduction) of food insecurity. The first approach is based on information on the per capita food supply from the FAO Food Balance Sheets (FBS). The FAO Food Balance Sheets are detailed accounts of the various components of the supply and utilization of all types of food commodities during a specified reference period. The prevalence of undernourishment is measured at household level by estimating the number of people whose dietary energy consumption (DEC) is likely to fall below established thresholds referred to as dietary energy requirement (DER). The second approach is based on information about the nutritional status of individuals, mainly in the form of anthropometric data on height and weight in children and women.

Nubé (2001) found that while these two approaches are theoretically related, they have very different outcomes. Nubé (2001) considers that the DEC-based methodology for estimating the prevalence of undernourishment is very complex and requires a great many data. She concludes that anthropometric indicators are likely to be a more reliable source of information for estimating undernutrition. Contrariwise, Naiken (2007) justifies the study of undernourishment based on DEC versus anthropometric indices, claiming that the first approach points toward food deprivation or hunger, whereas the latter reflects broader concepts of undernutrition and malnutrition that go beyond food insufficiency. He

[1] For interpretation of color in Fig. 1, the reader is referred to the web version of this article.