Food Policy xxx (2015) xxx–xxx

Contents lists available at ScienceDirect

Food Policy

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

From food availability to nutritional capabilities: Advancing food security analysis

Francesco Burchi [a,*], Pasquale De Muro [b,1]

[a] German Development Institute/Deutsches Institut für Entwicklungspolitik (DIE), Department "Sustainable Economic and Social Development", Tulpenfeld 6, 53113 Bonn, Germany
[b] Roma Tre University, Department of Economics, Via Silvio D'Amico 77, 00145 Rome, Italy

ARTICLE INFO

Article history:
Available online xxxx

Keywords:
Food security
Capability approach
Human development
Livelihood
Entitlement
Low-income countries

ABSTRACT

This paper has a threefold objective. First, it provides a comprehensive review of different approaches to analysing food security. Second, it highlights the added value provided by the capability approach and the human development paradigm. Third, it proposes a methodology to assess food security through this approach. Our proposal entails three basic steps: (1) analysis of food entitlements; (2) analysis of nutritional capabilities and (3) analysis of the capability to be food secure. In this way, we can move beyond income, entitlement or livelihood related frameworks, and identify the root causes of food insecurity. Food insecurity can be the result of a lack of education, health or other basic capabilities that constitute people's wellbeing. This, therefore, allows situating the study within the broader area of wellbeing and development.

Introduction

This paper engages in the debate on the theory and policy of food security, a crucial topic within the broader fields of development economics and development studies. The way food security is theorised, measured and finally analysed affects the typology of policies that will be adopted. This paper has a threefold objective. The first one is to critically review different approaches to the analysis of food security proposed either in the academic world or by international organisations. To the best of our knowledge, there has not yet been a systemic attempt to compare the many existing approaches.

The second aim of this paper is to use the capability approach, primarily established by the economist Amartya Sen in the early 1980s, for the analysis of food security. In our opinion, the literature has often failed to identify the linkages between Sen's entitlement approach used in the specific fields of hunger and famine and his capability approach employed to analyse (human) development and wellbeing. While the central pillars of a capability approach to food security may be visible in the pioneering work of Drèze and Sen (1989), in this paper we try to extend it to recognise the crucial role of factors such as participation in political life and women's empowerment.

Last but not least, we provide preliminary programmatic guidance on how to implement this approach in the field. Our method entails three steps that gradually allow a better understanding of food security and could eventually be used in the future to identify new ways of measuring this phenomenon.

Consequently, this paper is divided into four sections. The second section reviews the approaches to food security, outlining the basic differences, the third provides guidelines for an analysis of food security based on the capability approach, and the fourth section concludes and identifies the policy implications of using the capability framework.

Main approaches to the analysis of food security

At the beginning of a paper discussing different approaches to food security, one would expect a clear definition of food security. Here, this is not the case for two reasons: (1) although a commonly accepted definition exists (FAO, 1996), in food security practice and actions the dimensions/factors stressed are often so diverse that they highlight different views on the meaning of the term "food security"; (2) we intend to focus on the different approaches that have drawn attention to different components of food security and, in turn, have contributed to modifying and extending the definition. Thus, this section presents five approaches to food security:

* Corresponding author. Tel.: +49 (0)228 94927185.
E-mail addresses: francesco.burchi@die-gdi.de (F. Burchi), pasquale.demuro@uniroma3.it (P. De Muro).
[1] Tel.: +39 0657335685.

http://dx.doi.org/10.1016/j.foodpol.2015.03.008
0306-9192/

(a) food availability; (b) income-based; (c) basic needs; (d) entitlement and (e) sustainable livelihoods. We will try to maintain a chronological and logical order as far as possible by moving from the oldest and narrower view of food security to the most recent and advanced ones.

Food availability approach

We start our review with the "food availability" approach, because it is undoubtedly the oldest and still the most influential. Although the core ideas of this approach can be traced back to the Venetian thinker Giovanni Botero (1588), it was Thomas Malthus (1789) who popularised it and hence it is also known as the Malthusian approach.

The approach focuses on the balance or imbalance between population and food: In order to maintain this balance, the growth rate of food availability should not be lower than the growth rate of the population. Consequently, from this point of view, food security is merely a matter of aggregate (per capita) food availability. In a closed economy, this depends mainly on food production and stocks whereas in an open economy, it also depends on food trading.[2]

Until the early 1970s, this was the reference approach for the international community, both at the political and the academic level. This is well-reflected in the definition of food security given at the World Food Conference of 1974: '*Availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices*' (UN, 1974).

The policy implications of this approach are twofold:

- On the "demand side", the need to reduce the growth rate of population – namely the fertility rate – through appropriate policies.[3]
- On the "supply side", the need to boost (per capita) food production, namely agricultural production. For such purposes, the foremost policy that is generally prescribed and implemented is to increase agricultural productivity.

Although in 1996 the World Food Summit adopted, with a large consensus, a much broader and advanced definition of food security that includes, in addition to availability, other fundamental dimensions of food security – such as access to and utilisation of food, a narrow sectoral focus on agricultural supply, productivity and technology still dominates the international food security discourse and practice.

Whereas this is not the place to discuss the reasons why this narrow view persists in spite of its evident flaws and failures, it is interesting to note that after the 1970s, the Malthusian ghosts of scarcity have been reinvigorated by increasing ecological concerns and related concepts such as "carrying capacity" and "ecological footprint."

Before moving on to the next approaches, it is important to emphasise a methodological aspect that is useful in our analysis. One main characteristic of any approach to food security is its units of analysis. Generally speaking, the unit of analysis can range from the world in total, to a country, a region, down to a community, a household or a single individual. Furthermore, from an economic point of view, the approach can focus on a single sector, a cluster of sectors (e.g. the "food system" or "chain") or can be economy-wide.[4]

Considering these characteristics, the units of analysis generally used in the food availability approach are the country (and its food balance sheet) or the world and the agricultural sector (its production and productivity).

Income-based approach

The long-lasting view of food security as a problem of food availability has been partly re-visited within a more macro-economic approach. The focus on the food sector – initially only agricultural production, but also food trading later on – has been criticised by economists for being too concentrated on one single economic sector. Recognising that the economy is composed of many interdependent sectors, food insecurity cannot be viewed as a problem that is exclusive to the agricultural/food sector. That is why the first attempt to broaden the discipline was actually an attempt to shift the analysis towards national economies as a whole. This meant bringing into the analysis variables, such as Gross Domestic Product (GDP), economic growth, not necessarily dependent on food production. In a market-economy, a stronger economic system can allow the import of goods such as food.

This macro-economic framework was also more consistent with old and very influential economic theories such as Ricardo's comparative advantages, according to which each country has to specialise in the sector in which it has an advantage, given by the abundance of a specific productive asset or by lower costs of production. This whole approach might be considered a way to include the national means of increasing aggregate food availability within the food security framework.

However, the most important shift was from food availability at the macro-level to income at the micro-level (Griffin and Khan, 1977; Haq, 1976; Reutlinger and Selowsky, 1976; Reutlinger, 1977). The approach is very similar to the one traditionally used to assess poverty. While poverty was conceived as a lack of sufficient income needed to buy a bundle of goods to guarantee the survival (or minimum standard of living) of a person, food insecurity is implicitly assumed to be a sub-category of poverty (often referred to as "food poverty"), i.e. lack of sufficient income needed to buy the amount of food required for survival at the given conditions (Sibrian et al., 2007; Sibrian, 2008). In particular, different foods are converted into calories: If people's calorie availability is lower than a threshold identified by international nutritionists, they are considered to be food insecure.

Through household surveys providing information on income, it is theoretically possible to estimate the amount of food consumed, given the assumption that poorer households use a larger proportion of their income to buy food.[5] Food is, then, converted into calories: if household calorie availability is lower than the "required" minimum, some or all the members of that household are food insecure. The specific problem related to this method consists in the assumption of a given income-calorie elasticity. Taking, for example, an elasticity measured in the same country in previous studies, requires making very strong hypotheses.

[2] Currently, the tool utilised to assess food availability is the "food balance sheet" which gives a picture of the amount of food available for human consumption in a country as a result of food production, imports, exports, aid, wastes, and alternative uses (FAO, 2001).

[3] Sen (1999, Ch. 9) critically reviews various policies aimed at reducing the fertility rate.

[4] Though increasingly popular, in our review of different approaches to food security we do not include "food sovereignty" as an approach in its own right. This is because it is a political discourse emerged in mid-1990s about the agrifood system rather than an analytical approach to food security. Considering its focus on food production, agriculture and natural resources, as well as its emphasis on the autonomy of local communities, food sovereignty is actually very close to the concept of food self-sufficiency. Therefore, food sovereignty may be considered a localist and communitarian version of the food availability approach.

[5] As argued by Svedberg (2002, Ch. 7), there seems to be relevant empirical evidence to support this hypothesis.

Please cite this article in press as: Burchi, F., De Muro, P. From food availability to nutritional capabilities: Advancing food security analysis. Food Policy (2015), http://dx.doi.org/10.1016/j.foodpol.2015.03.008