



## Viewpoint

## Food self-sufficiency: Making sense of it, and when it makes sense



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## ABSTRACT

Food self-sufficiency gained increased attention in a number of countries in the wake of the 2007–08 international food crisis, as countries sought to buffer themselves from volatility on world food markets. Food self-sufficiency is often presented in policy circles as the direct opposite of international trade in food, and is widely critiqued by economists as a misguided approach to food security that places political priorities ahead of economic efficiency. This paper takes a closer look at the concept of food self-sufficiency and makes the case that policy choice on this issue is far from a straightforward binary choice between the extremes of relying solely on homegrown food and a fully open trade policy for foodstuffs. It shows that in practice, food self-sufficiency is defined and measured in a number of different ways, and argues that a broader understanding of the concept opens up space for considering food self-sufficiency policy in relative terms, rather than as an either/or policy choice. Conceptualizing food self-sufficiency along a continuum may help to move the debate in a more productive direction, allowing for greater consideration of instances when the pursuit of policies to increase domestic food production may make sense both politically and economically.

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## 1. Introduction

Food self-sufficiency has moved higher on the policy agenda in a number of countries following the extreme food price volatility experienced during the 2007–08 food price crisis and its after-shocks. Countries as diverse as Senegal, India, the Philippines, Qatar, Bolivia, and Russia have all expressed interest in improving their levels of food self-sufficiency. This policy turn has been widely critiqued as being misguided. The *Financial Times*, for example, noted in a 2009 editorial on the topic that the “aim of self-sufficiency in food would be disastrous globally” (*Financial Times*, 2009). The debate over food self-sufficiency is often cast as one in which economic reasoning and political imperatives clash. On one hand, proponents of food self-sufficiency defend the political right of states to insulate themselves from the vagaries of world food markets by increasing their reliance on domestic food production. On the other hand, critics argue that there are high costs to states that prioritize political over economic considerations in setting their food policies.

This paper examines the concept of food self-sufficiency in the context of debates on trade and food security and makes the case that policy choice on this issue is far from a straightforward binary choice between the extremes of relying solely on homegrown food

and a fully open trade policy for foodstuffs. It shows that in practice, food self-sufficiency is defined and measured in a number of different ways. The paper argues that taking a broader understanding of the concept opens up space for considering food self-sufficiency policy in a more nuanced way, rather than as an either/or policy choice. Conceptualizing food self-sufficiency in relative terms, and policies to support it along a continuum between closed borders and fully open trade, allows for greater consideration of instances when the pursuit of policies to increase a country's food production for its own domestic consumption may provide both economic and political benefits.

The first section of the paper provides an overview of the concept of food self-sufficiency and the various ways in which it is typically defined and measured. Section two outlines recent trends in food self-sufficiency for both the world's population and for countries. The third section sketches out the evolution of policy debates on this question, showing that food self-sufficiency has long been a key concern of states, and how recent critiques of the idea have painted it in binary terms. Section four discusses how a conceptualization of the idea in relative terms, along a continuum, can help to open space to consider the ways in which the risks of food self-sufficiency, as outlined by its critics, might be weighed against the risks of relying too heavily on world markets to ensure an adequate and stable food supply.

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## 2. Defining and measuring food self-sufficiency

Food self-sufficiency is an often-used term, but it is frequently left undefined by those who employ it. This may be because there is more than one definition of the concept.<sup>1</sup> The FAO (1999) defines it in broad terms: “The concept of food self-sufficiency is generally taken to mean the extent to which a country can satisfy its food needs from its own domestic production.” This understanding is illustrated in Fig. 1. In the diagram, the diagonal line that indicates where food production is equal to food consumption represents 100% food self-sufficiency. The diagram could be further refined by plotting individual countries onto it to show where they fall relative to the 100% self-sufficiency line. Some countries would fall over the line, indicating that they are more than self-sufficient, and some countries would fall below it, indicating that they are in food deficit.<sup>2</sup>

This basic definition—a country producing sufficient food to cover its own needs—is how people typically understand the idea of food self-sufficiency, but some aspects of it are still fuzzy. It is unclear, for example, whether a country that pursues food self-sufficiency still engages in food trade with other countries. Determining how trade fits into the food self-sufficiency policies of individual countries requires further refinement of the definition of the concept and clarification with respect to how it guides government policy choice.

Some analysts define food self-sufficiency as a country eschewing all food trade and relying 100% on domestic food production to meet its food needs. This definition can be characterized as a country closing its borders and adopting complete autarky for its food sector. An extreme policy stance such as this is very rare in practice. All countries rely on imports for at least some of their food consumption, including large food exporters that produce far more food than they consume. Even, North Korea, the country with policies that most approach autarky, still imports food and accepts international food assistance (FAO, 2015a).

Given the prevalence of trade in today’s global economy, a more pragmatic understanding of food self-sufficiency is domestic food production that is equal to or exceeds 100% of a country’s food consumption. Trade is not ruled out within this definition, as food self-sufficiency is defined by the ratio of food produced to food consumed at the domestic level. Understood this way, food self-sufficiency is not necessarily focused on where specific foods are grown, but rather on a country’s domestic food production capacity. Under this definition, self-sufficient countries may still pursue a degree of agricultural specialization in order to trade these foods with other countries. The key point is that food self-sufficient countries produce an amount of food that is equal to or greater than the amount of food that they consume. A key indicator that captures this more practical understanding of the concept is the self-sufficiency ratio (SSR), which expresses food production as a ratio of available supply, as depicted by the following equation (FAO, 2012: 360):

$$SSR = \text{Production} \times 100 / (\text{Production} + \text{Imports} - \text{Exports})$$

The SSR can be further refined to include fluctuations in the level of domestic food stocks (Puma et al., 2015). The SSR can be measured in either calories or in volume of food produced by a country, although it can also be calculated based on monetary values. The SSR is typically calculated for a specific commodity or class of commodities—such as rice, wheat, maize, or cereals. The FAO recommends caution in applying the SSR concept to the overall food situation of a country, because it may mask instances where a country produces one food commodity in abundance

<sup>1</sup> For a discussion, see O’Hagen (1975).

<sup>2</sup> For a representation from the 1970s, see O’Hagen (1975) and Josling (1975). For a more recent representation, see Porkka et al. (2013).

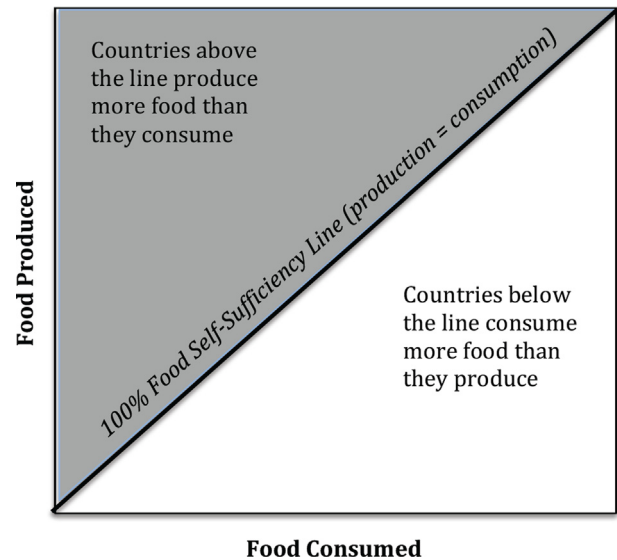


Fig. 1. Basic representation of food self-sufficiency. Source: Clapp, 2015a.

while needing to rely on imports for other food commodities (FAO, 2012: 361). Most SSR analyses focus on key staple crops, such as cereals and starchy roots, in order to give an approximation of food self-sufficiency of a country.

Food self-sufficiency can also be measured in terms of a country’s dietary energy production (DEP) per capita. Countries that produce 2500 kcal (kcal) or more per person per day are typically considered to be self-sufficient, as consumption of at least this many calories per day is seen by most nutritionists to be necessary to ensure an adequate diet (Porkka et al., 2013).<sup>3</sup> Analysis by Porkka et al. (2013: 3), classified food production between 2000 and 2500 kcal per person per day as “insufficient”, and production below 2000 kcal per day as “low”.

These various indicators of food self-sufficiency give some clues as to the trade and food security status of countries, but they are not the same thing. Under both the SSR and DEP measures of food self-sufficiency, for example, a self-sufficient country can be an active importer and exporter of food. Most net food exporting countries are typically also self-sufficient, and most net food importing countries are not self-sufficient, but this is not necessarily always the case.<sup>4</sup> Similarly, food self-sufficiency does not guarantee food security within a country, although the two concepts relate to one another. A country is considered food secure if food is available, accessible, nutritious, and stable across the other three dimensions (FAO, 2008). But food security as a concept does not distinguish whether that food is imported from abroad or grown domestically (Clapp, 2014). Food self-sufficiency, on the other hand, is focused on the supply, or availability component of food security, and is concerned with ensuring that the country has the capacity to produce food in sufficient quantities to meet its domestic needs. Some analysts also see food self-sufficiency as supporting stability in the food supply, while others contend that it can contribute to instability.

Part of what makes food self-sufficiency a complex issue is that different countries face diverse situations that make policy generalizations very difficult. For example, some countries that are more than self-sufficient in food at the country level can still have high

<sup>3</sup> There are different interpretations of what constitutes an adequate diet in terms of caloric intake. Other factors besides calories also matter for adequate diets, including the nutritional content of the food. The caloric focus here merely captures the macronutrient needs for an adequate diet.

<sup>4</sup> Some countries may import and re-export food items which may affect these measures. This is an issue with seafood, for example. See Asche et al. (2015).

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