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Food, farmers, and the future: Investigating prospects of increased food production within a national context

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ABSTRACT

With international food price shocks in 2008 and 2011, food security became a political priority in many countries. In addition, some politicians have recently adopted a more nationalistic stance. Against that background, this paper critically investigates the prospects of increased food production within a national context. We use a small, high-income country, Norway, as an empirical case. In 2012, the government set a goal of increasing agricultural food production by 20% by 2030. We ask: 1) How has food production in Norway developed before and after the goal was set? 2) What plans do farmers have, and what do they regard as the main obstacles to increased production? We apply a mixed method combining public statistics, a survey, and interviews. We analyze four production systems: a) milk; b) grass-based meat; c) combined pig and grain; and d) grain. These systems represent around 80% of the domestically consumed food produced on farms in Norway. Since 2000, aggregate food production has had a slight downward trend with periodic fluctuations. Based on a political economy approach, we identify land and labor as the most limiting factors. Capital is less of a hindrance and offers a potential for increased production. Farmers have modest expectations of increased production, though. This outlook resonates with the strong integration of agriculture into the wider economy, at both micro and macro levels, making it challenging to implement new policies and change farm practices on a broad basis. Increases in some specific products, however, are realistic.

1. Introduction

1.1. Background and research problem

The international food crises of 2008 and 2011 were followed by a shift in national discourses and policies regarding agriculture and production (Almås and Campbell, 2012; Marsh, 2010). Umbrella terms such as "neoproductivism" (e.g. Evans, 2013; Wilson and Burton, 2015) were proposed to describe the shift, and "sustainable intensification" was launched as prescription for future agricultural development (e.g. Wezel et al., 2015). The change in rhetoric and prescriptions has been linked to a number of factors, such as global population growth, climate change, biofuel production, and shifting food consumption patterns in developing countries (Schneider et al., 2011). The rhetorical and political shift implies a transition from multifunctionality and production control to a focus on production and production increase. Recent policy tendencies in the direction of increased nationalism and protectionism globally strengthen the need to study the possibilities and challenges of increased food production within national contexts.[1]

First, despite the buzz-word "sustainable intensification", the sustainability of many productivist strategies has been questioned (Fish et al., 2013; Lawrence et al., 2013; Marsh, 2010; Rosin, 2013; Tomlinson, 2013; Wirsenius et al., 2010). Second, it has become clear that the new productivism is not necessarily neo-liberal and market-oriented. There are multiple forms of new productivism (Evans, 2013; Wilson and Burton, 2015). In addition to market-oriented tendencies, we may observe "cooperative neo-productivism" (Burton and Wilson, 2012) and "repositioned neo-productivism" that include elements from multifunctional agriculture Bjørkhaug et al. (2012). All these terms suggest intensified land use, although it is not clear how the intensification will take place. Most seriously, we do not know to what extent new discourses and national goals on food production, food security, and intensified agriculture actually lead to growth in food production. This is the key question addressed in this article.

Exploring the driving forces for increased production and the factors that hinder it is not straightforward. Neither rhetorical changes nor political shifts translate directly into agricultural output. Farmers are the primary agents who implement new agricultural practices.

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[1] Salient examples from 2016 are Brexit in the UK and the election of Donald Trump as US president.

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Therefore, in order to know to what extent new discourses on food security and intensified agriculture lead to growth in food production, we must study farmers' responses to these shifts and aggregate outputs over time. Furthermore, the forces that facilitate and hinder agricultural changes differ across the globe. In addition to specific agricultural conditions and markets for foodstuffs, general factors such as labor markets, welfare systems, and other economic conditions are likely to be influential. Food security and land use result from farmers' actions, which are situated in a broader political economy. Understanding the strategies of British farmers, for instance, offers little guidance to comprehending Spanish agriculture; and knowing the conditions of dairy farmers does not explain grain production in the same country. Context is critical when analyzing agriculture and the prospects for change.

On this basis, we elaborate a way to analyze increased food production that takes into consideration the agricultural environment, the political economy of various agricultural production systems, and national and regional contexts. As a plausibility probe we have chosen Norway. Norway is a particularly interesting and demanding case in this respect because of the multifunctional and pluriactive character of its farming. In Norway, as in most other developed countries, various branches of agriculture differ markedly in terms of resource and labor use, market conditions, and integration in the wider economy.

This paper assesses the prospects for increased agriculture-based food production within a high-income country where the conditions for agriculture are somewhat marginal. Why has production increased or not increased? To achieve this purpose, we seek answers to these research questions:

1. How has agricultural production on the aggregate level and in specific production systems developed in Norway since 2000?
2. On the farm level, what strategies do farmers have in various production systems? How do they evaluate the prospects for increased production and the importance of various production factors as drivers and as obstacles to expansion?
3. How do the findings compare to other countries with more or less similar economic and political contexts?

Hence, the *empirical* study addresses a set of specific cases within Norwegian agriculture. The combination of rather challenging agricultural conditions and a politically relatively protected agricultural sector within a well-functioning liberal capitalist economy is directly comparable to relatively few other countries around the globe. *Theoretically* and *methodologically*, however, the study is relevant for any country or region where domestic agriculture plays some role in securing food for the population.[2]

1.2. The Norwegian context

In Norway, domestic agricultural products contribute about 45% of the food consumed by the country's approximately 5 million inhabitants.[3] In 2012 the Parliament approved, as a part of a new agricultural policy, a goal of a 20% increase in agricultural food production by 2030 to keep up with population growth. This was the main element in the government's new goals for food security (Meld. St. 9, 2011–2012). Other goals were 1) agriculture across the whole country, 2) increased value creation, and 3) sustainable agriculture. While most of the policy goals differed only slightly from previous policies, a concrete goal of 20% increase was new. The practical application of the goal was reduced by a precondition that there should be sufficient demand in the domestic market. Moreover, no explicit changes in policy instruments to reach the goal was adopted. Yet, by holding up increased production as a political goal, the discourse changed from problems of overproduction to problems of food security. Thus, with reference to rising international demand for food, Norwegian policymakers adopted neo-productivist lines of thought (Tønnessen et al., 2014). The new conservative government taking office in 2013 confirmed in 2016 the goal of increased production, however without an exact percentage for the increase. The new government emphasize cost efficient production as a goal and have shifted subsidies to benefit larger farms (Meld. St. 11, 2016–2017), and thereby even more pushed policy in neo-productivist direction.

A recent study has shown that the agronomic potential for increased food production in Norway is between 10 and 20% under unchanged consumption patterns (Arnoldussen et al., 2014). As we will show, this potential is far from being realized.

Over a long period, the number of active farmers has declined by around 3% annually (Forbord et al., 2014) and labor productivity has risen correspondingly (Budsjettnemnda for jordbruket, 2015). Similar developments have taken place in other advanced economies. Yet farmers' strategic choices must be understood within their specific contexts, and Norway is not an average case. Less than four percent of Norway's land is suitable for agricultural use (Kartverket, 2015; Statistics Norway, 2015b). In many parts of the country much of the agricultural land is steep and scattered. In 2012, the total agricultural land constituted 1.1 million hectares, of which about 1.0 million hectares (88%) were in use (Arnoldussen et al., 2014). The country's northern location means that the productivity of agricultural land is lower than in zones that are more temperate. Internationally, Norwegian agriculture is of limited significance. Nationally, the agricultural sector is small: agriculture makes up around 0.4% of GNP, and 2.7% of the labor force works in agriculture. The economy is to large extent based on ample access to fossil fuel and hydropower energy, and its unemployment rate is low. In sum, Norway is a wealthy welfare state with abundant energy and capital but a scarcity of agricultural land and available labor. Moreover, during the 1990s Norway (along with the EU and other countries) changed its agricultural policy in the direction of dampening traditional agricultural production and reducing subsidies, emphasizing alternative production, special foods, and strong environmental regulation.

1.3. Theoretical approach

Numerous studies have focused on the on-farm factors that influence farmers' production preferences and practices. The approaches span agronomic to economic, structural, and cultural features. A combination of agronomic and management variables are shown to affect agricultural efficiency, sustainability, and performance (Bell et al., 2014; Dogliotti et al., 2014; Hansson, 2007; Kelly et al., 2012). Moreover, structural features, such as the size of fields and the distance between fields, as well as ownership of land, clearly matter (Demetriou et al., 2012; Forbord et al., 2014; Jabarin and Epplin, 1994; van Dijk, 2003).

Looking beyond the agronomic conditions, Bradshaw (2004) found output specialization to be a feature of productivism, while output diversification characterized post-productivism, and concluded that farmers specialize for reasons other than government subsidies. Gorton et al. (2008) showed that farmers retain a productivist mindset regardless of the orientation of agricultural policy. Other research has demonstrated that mindsets and cultural orientations influence farmers' agricultural behavior (e.g. Burton, 2004; Burton et al., 2008).

The wider political economic context can be expected to affect

[2] This study is most easily transferable to countries with political, economic and agricultural conditions that are similar to Norway's. Based on international statistics, such countries are Switzerland, Iceland, Korea, Japan, Austria, and Finland. Source: http://data.worldbank.org. Typically, these countries export only small amounts of agricultural products and the state offers a relatively high degree of support to agriculture. Source: https://data.oecd.org/agriculture.htm. It must be noted, however, that well over 100 countries have less arable land per capita than Norway (0.15 ha/person), among them many EU countries.

[3] The remaining 55% of foodstuffs are supplied by imports (53%) and fish (2%) (Helsedirektoratet, 2015).