

Assessing Scotland's self-sufficiency of major food commodities

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1. INTRODUCTION

Achieving food self-sufficiency has been acknowledged as a means of boosting resilience to adverse events, and reducing the resource footprint of food is currently moving up the policy agenda in many countries.

Only very few studies have focused on local/regional food self-sufficiency and self-reliance.

Our study explores:

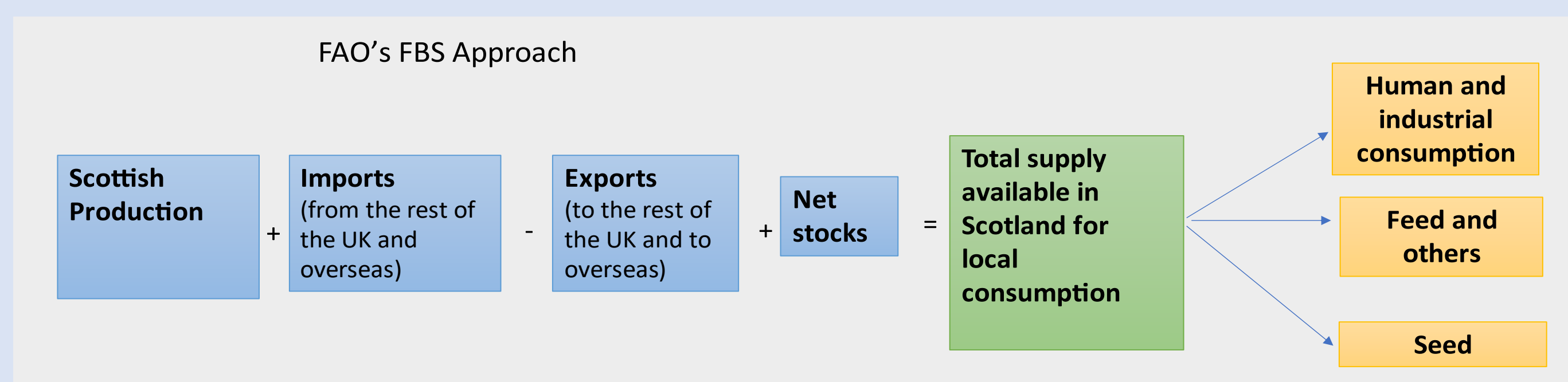
- What is produced in Scotland?
- What is consumed in Scotland?
- Is Scotland self-sufficient in the major food commodities?
- How does Scottish production contribute to nutrition security?

2. METHODS

Estimation of Scotland's food balance sheets (FBS) using FAO's FBS Approach

Data were obtained from Economic Reports on Scottish Agriculture (domestic production, net stocks, Scottish human and industrial consumption, feed, and seed) and from DEFRA's family food statistics (food purchase data).

We developed a consumption-based approach to estimate the net trade values of each commodity since food import and export data are not readily available for Scotland.



Calculation of the self-sufficiency ratios (SSR) of major food commodities

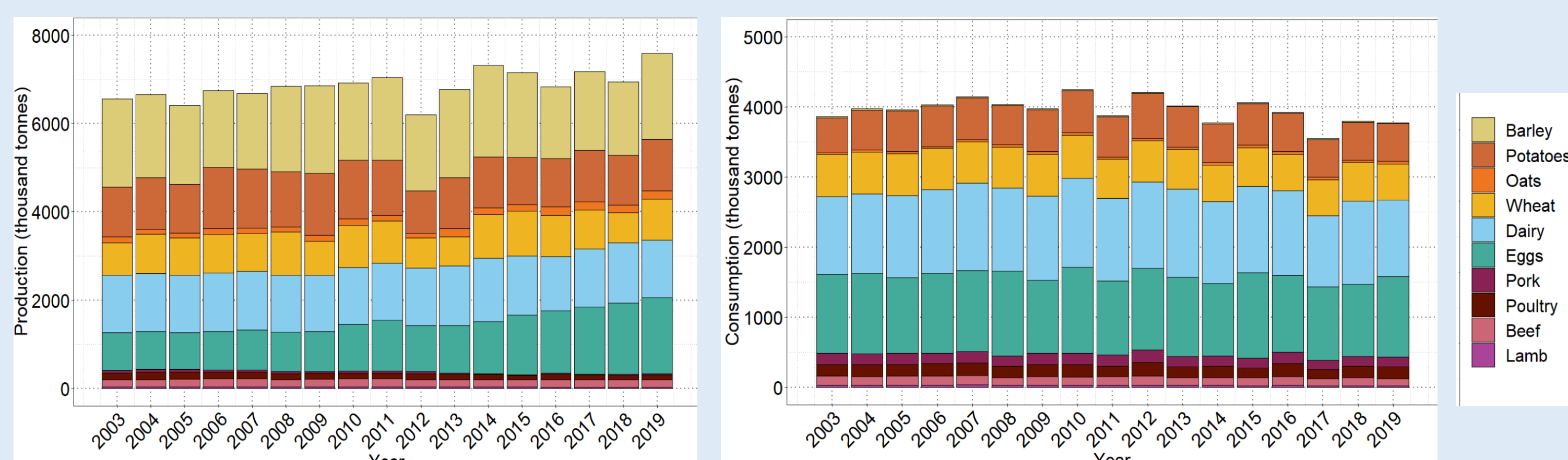
$$SSR = \frac{\text{Scottish Production}}{\text{Scottish Production} + \text{Net trade} + \text{Net stocks}} \times 100$$

Establish the contribution of domestic production towards nutrient security

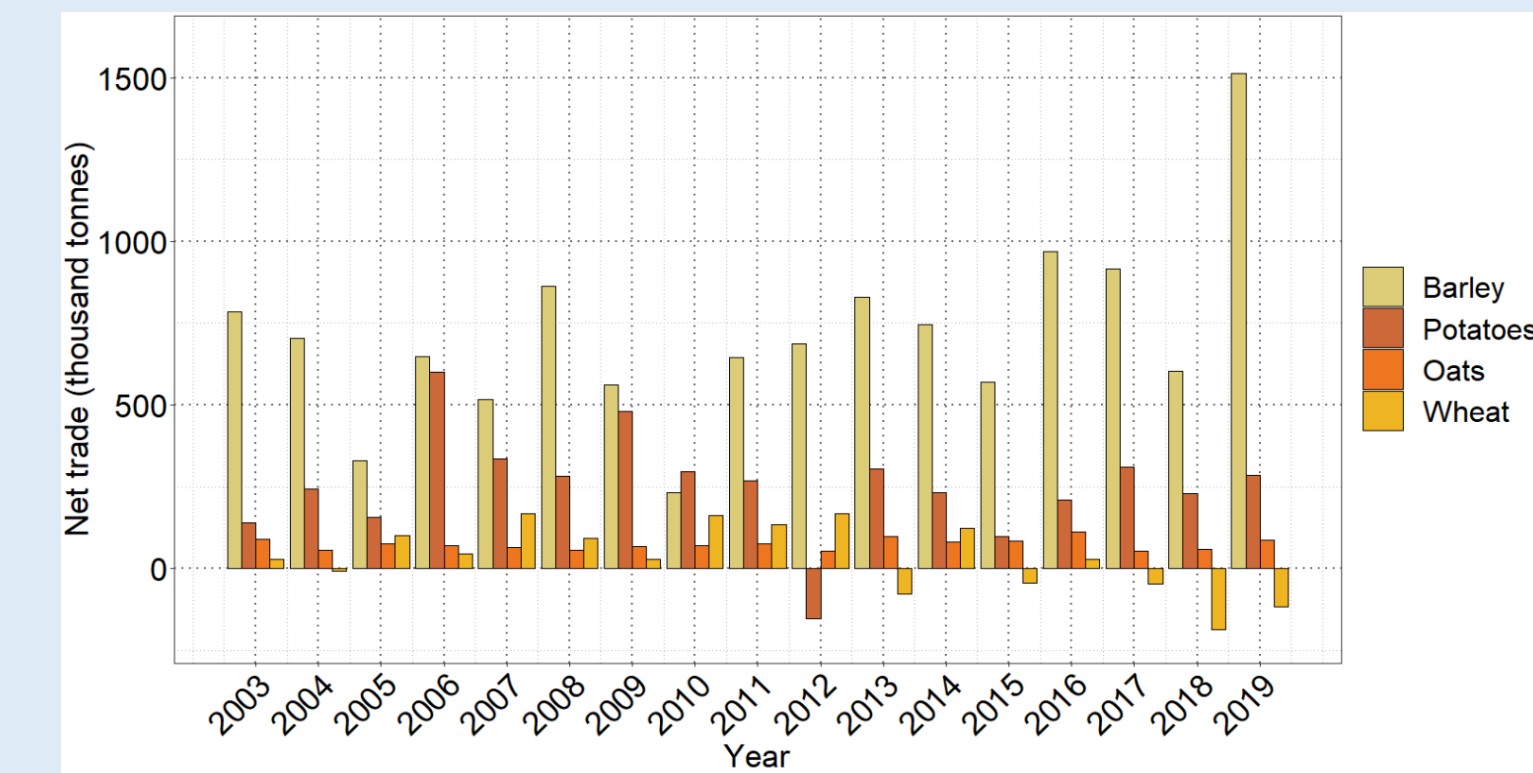
The supply of energy and macronutrients (protein and fat) from the major food commodities was estimated using the conversion factors published by FAO (1).

3. KEY FINDINGS

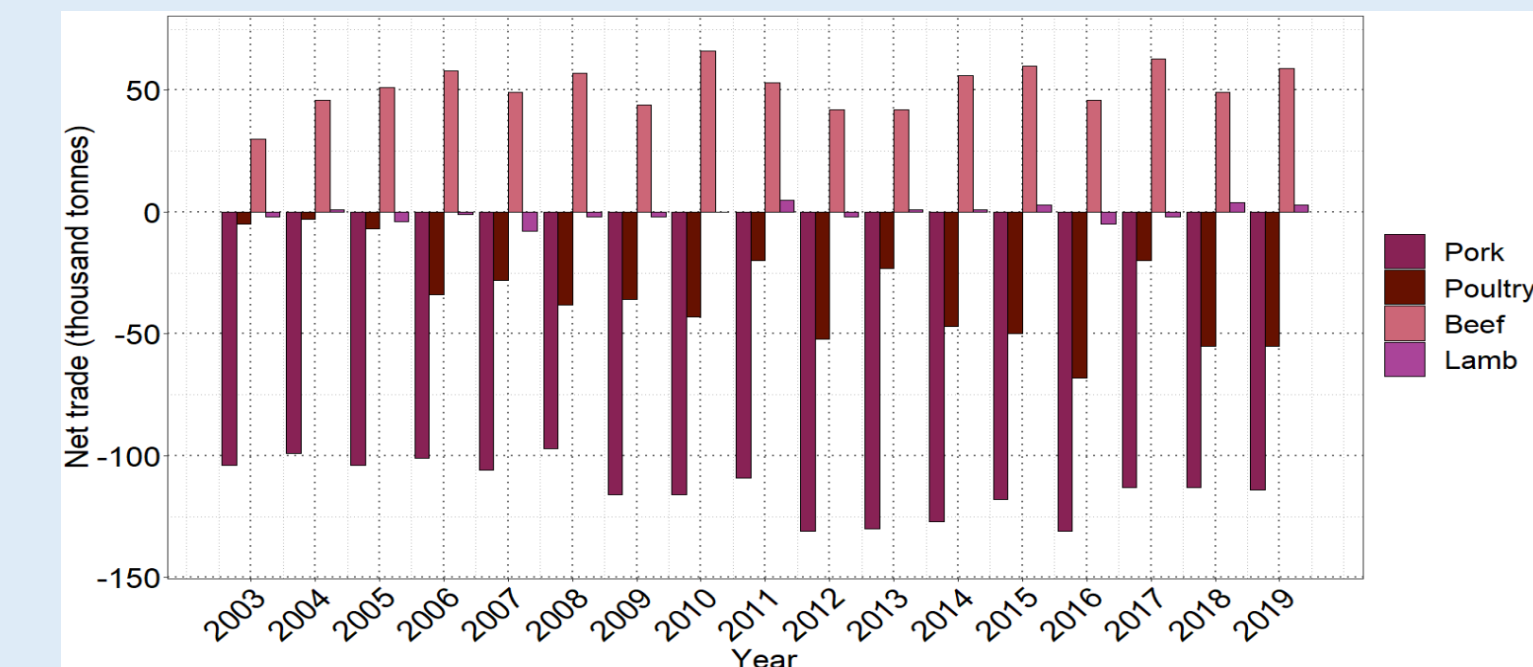
- Wheat, oats, and egg production increased, whilst pork and poultry production dropped between 2003 and 2019.
- Dairy and eggs are the most consumed food commodity in Scotland.



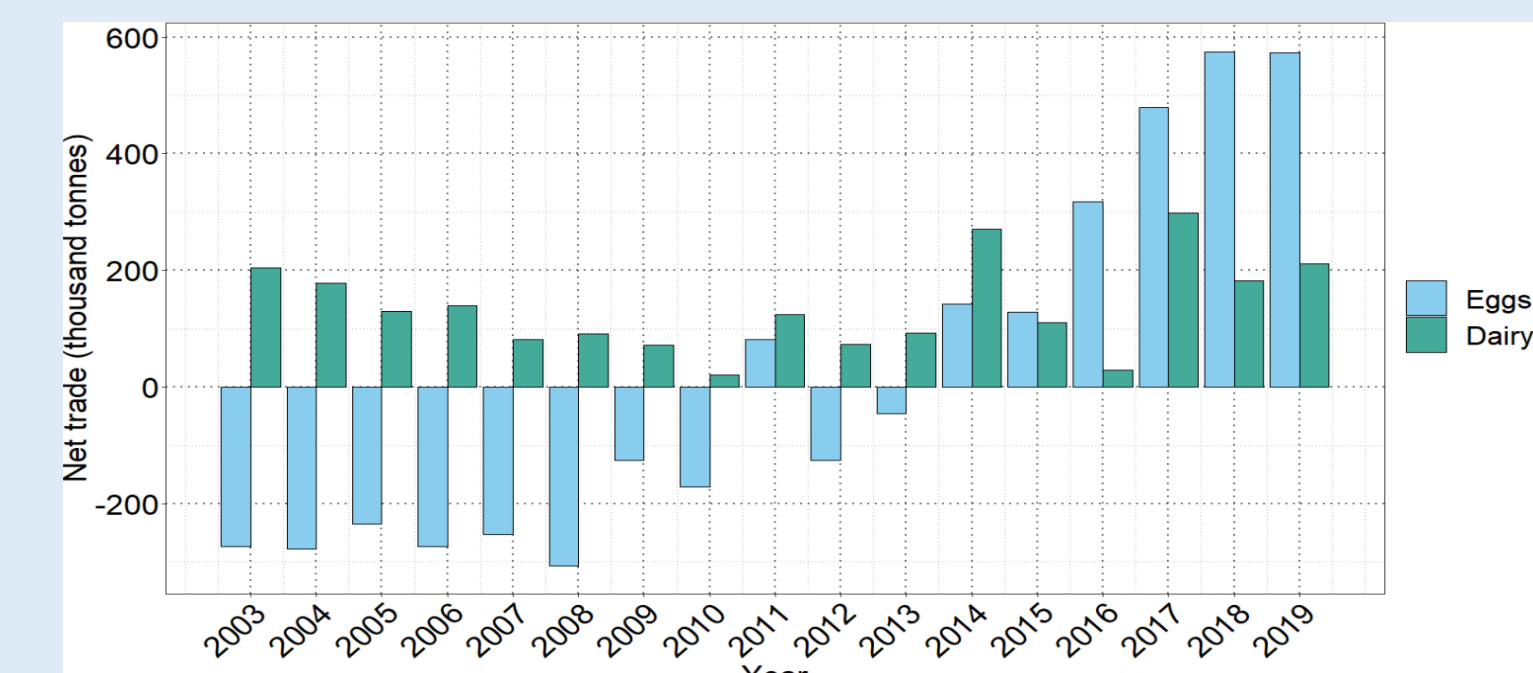
- Scotland is a net-exporter of cereal and potatoes, though this was not always the case between 2003 and 2019.



- Scotland is a net exporter of beef, exporting an average of 51 300 tonnes per year.



- Scotland is also a net exporter of dairy products, and it turned from a net importer to a net exporter of eggs in 2014.



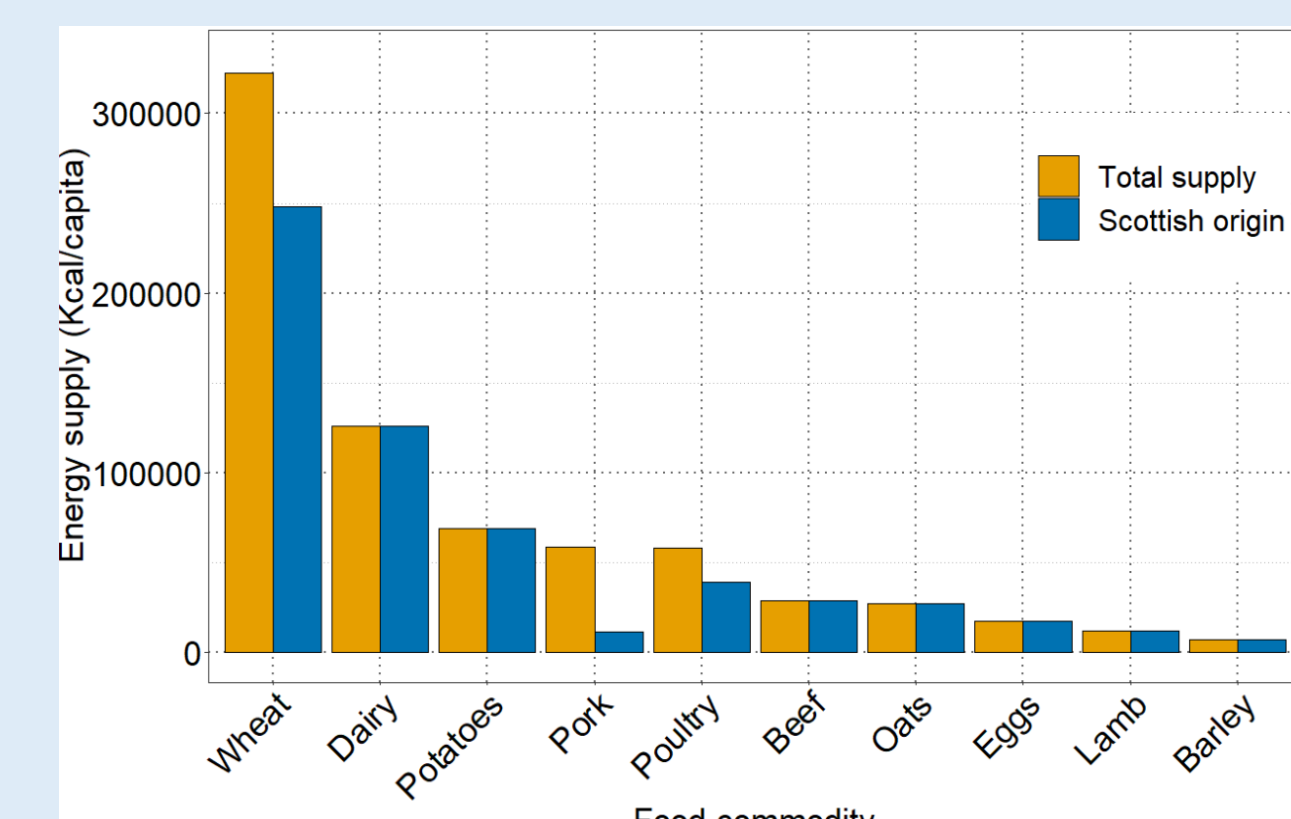
Scotland's ability to produce food compared to total consumption (2003-2019)

- Scotland has a strong level of self-sufficiency in cereals, potatoes, lamb, beef, dairy and eggs.
- There is room for improvement in achieving self-sufficiency in poultry and pork, where the self-sufficiency ratio (SSR) is relatively low.

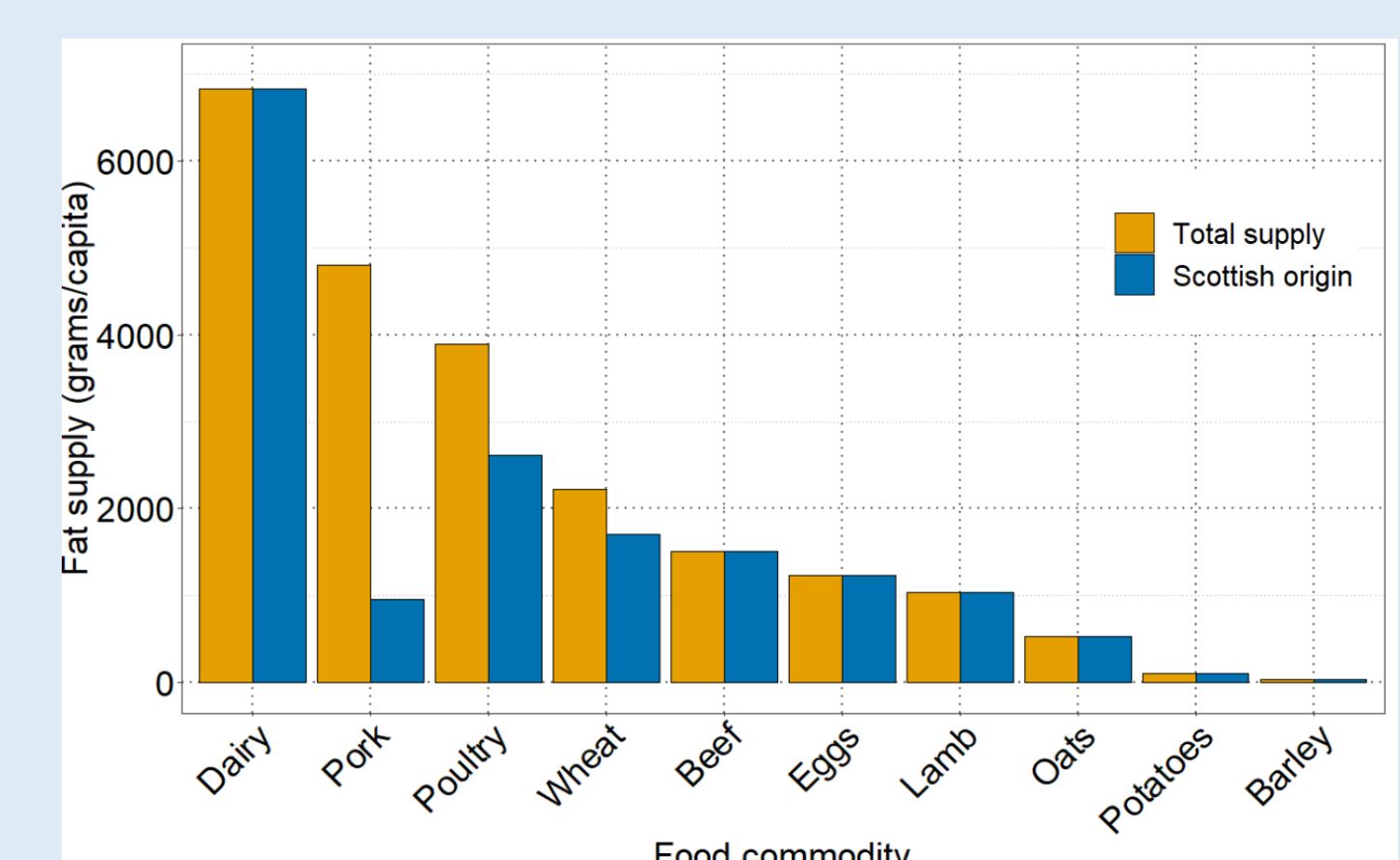
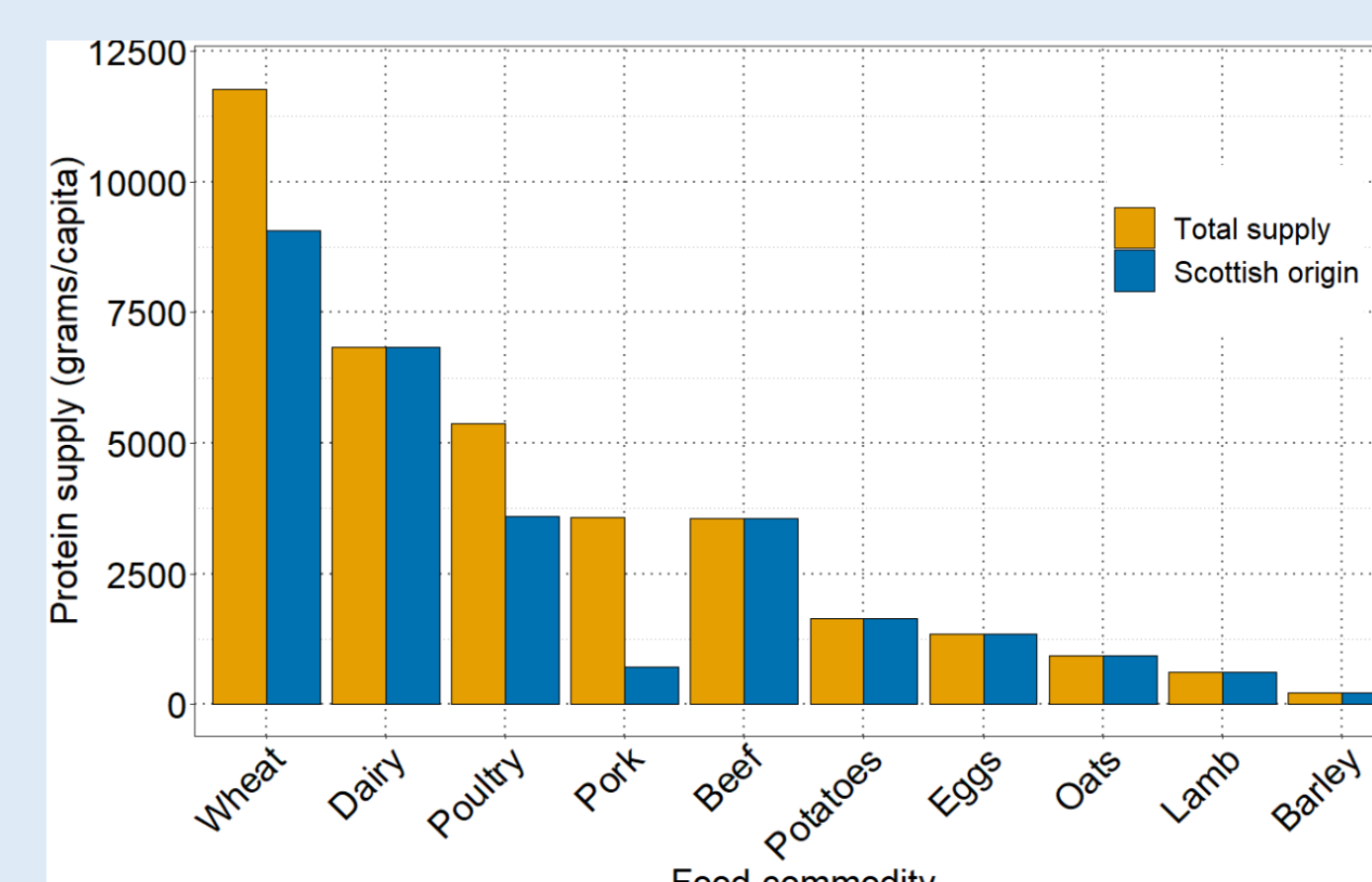
Commodity	Mean SSR (%)
Wheat	107.5
Barley	166.1
Oats	222.6
Potatoes	127.8
Poultry	79.5
Lamb	99.9
Beef	146.3
Pork	26.3
Dairy	111.8
Eggs	101.8

Comparison of the food sources supplying energy and macronutrients available for consumption in Scotland in 2019

- Wheat contributes significantly to the total energy supply, with a substantial portion originating from Scotland.
- Potatoes are also an important source of energy, and the entire supply comes from Scotland.



- Meat products are notable sources of protein and fat, with varying proportions from Scottish origin.
- Dairy products and eggs contribute significantly to protein and fat supply and their whole supply comes from Scotland.



4. FINAL REMARKS

- The Scottish food system demonstrates resilience, showcasing self-sufficiency in grains, potatoes, lamb, beef, dairy, and eggs and a reliance on imports for poultry and pork.
- Our findings provide an understanding of the situation of the aggregated Scottish food security. Understanding food supply patterns can aid in dietary planning, food security considerations, and supporting local agricultural production.
- We highlighted where investment and support may be needed to enhance domestic production and promote a resilient and sustainable food system.
- Estimated self-sufficiency ratios provide a more accurate assessment of the extent of food localisation in Scotland.
- The method used in this study has the potential to be used for the estimation of regional-level food self-sufficiency even when regional trade data and food balance sheets are unavailable.