

Introduction

- Productivity growth in the beef and sheep sector is a key policy objective in Northern Ireland
- Most farms operate in Less Favoured Areas (LFA), facing natural constraints, and with direct payments an important contributor to farm income
- Future financial support for beef will be tied to meeting key productivity targets and milestones, such as age at first calving
- This research considers the drivers of productivity on beef and sheep farms, considering the context such as the degree of natural constraint, and enterprise mix

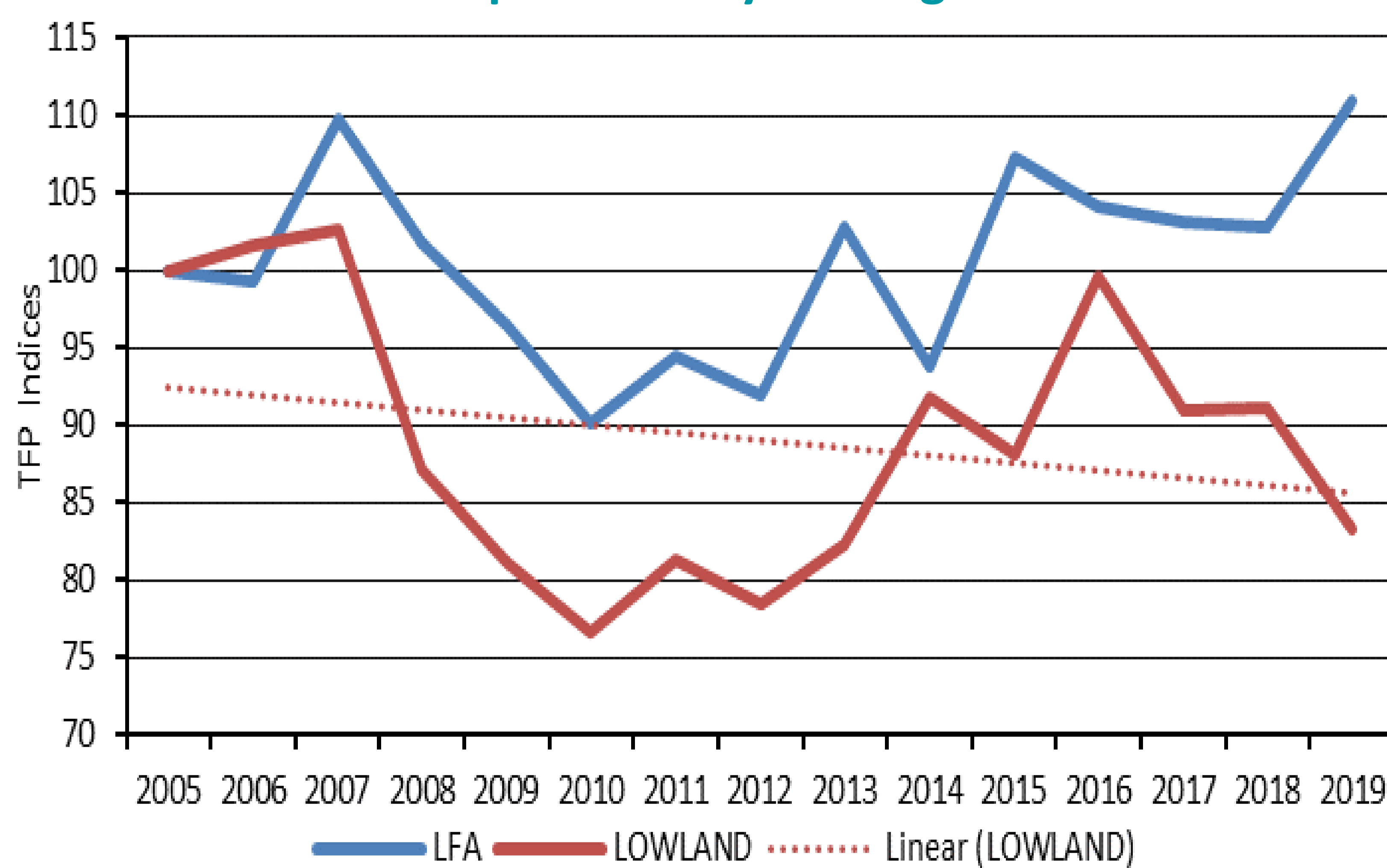


Research objective: to estimate productivity and examine the factors influencing farm-level productivity of beef and sheep farms

Methodology

- Data used - Farm Business Survey (FBS) 2005 – 2019, n = 2949, farms in the LFA (n=2262) and Lowland (n=687) areas, Department of Agricultural, Environment and Rural Affairs (DAERA)
- Fisher index used to calculate the dependent variable: Total Factor Productivity (TFP)
- Panel fixed-effects regression to model relationship between TFP and farm characteristics

Results: Total factor productivity and regression results



| Significant variables | |
|--|----------|
| Stocking density | 0.22*** |
| Purchased feed per cow eq | -0.04* |
| Age | -0.41** |
| Land quality (LFA=1 dummy) | -0.71*** |
| Herd size | 0.12** |
| Labour input per cow eq | -0.05* |
| Home grown feed per cow eq | -0.02*** |
| SPOUSE's education - A levels, Agric. College or above | 0.4*** |
| Off farm employment (dummy) | -0.06** |
| Part time farming (dummy) | -0.07** |

Non-significant variables: Subsidy, Capital and labour ratio, net investment, farmer's education level

Insights from results

- **Total factor productivity:** Both inputs and outputs are decreasing in the LFA, but output at a slower rate. While input growth exceeds that of outputs in the Lowland sector
- **A higher stocking density:** Beef and sheep farms operating relatively intensive systems are more productive
- **The intensity of purchased feed:** Possibility of diminishing marginal returns to purchased feedstuffs setting in for some farmers, at which point higher feed input will not enhance productivity but rather constitute additional cost
- **Age :** Experience helps productivity only to a point and the lack of interest in new innovative farm systems may lead to lower farm productivity
- **Land quality:** Natural conditions and poor quality of land is a constraint for productivity growth for LFA farms
- **Herd size:** Larger farms on average are more productive potentially from taking advantage of economies of scale
- **Labour intensity per cow eq:** This implies that labour-intensive farming is less productive
- **Home grown feed (does not include grass/silage):** Suggest grass is most efficient, above both home grown and purchased cereals. The overall opportunity cost of foregone grass to grow feed could reduce overall productivity
- **Spouse education:** Farms are relatively more productive when the spouse has at least a college degree
- **Off farm and Part time:** Smaller beef and sheep farms which are over 80% in each region, participate more in off-farm activities and are part-time. Thus, allocating less time to farm and operating less intensive units