Raising the competitiveness of Scotland’s agri-food industry

Andrew Barnes², Kev Bevan³ and Cesar Revoredo-Giha²

Key Findings

- The European Commission considers productivity to be the most reliable long term indicator of competitiveness. The Scottish Government’s aim of growing the output of the Scottish agri-food industry to £12 billion by 2017 is intrinsically based on a growth in productivity.
- International comparisons of productivity growth are limited, although the evidence that is available suggests that UK agricultural productivity since the 1980s has been lower than countries that were previously comparable.
- This research measured the productivity and efficiency of Scottish agriculture, and found that productivity growth has been reducing over the twenty years since 1989, with the rate of slow down increasing over time.
- This reduction in productivity growth predominantly reflects in a large fall in output growth, possibly due to structural changes after reform of the CAP, with no corresponding adjustments for inputs. Thus, labour (output per worker) and land (output per hectare) productivity fell to negative levels in the post-2004 period.
- A more mixed picture emerges at the farm level. Technical efficiency (TE) fell for general cropping and cereal farm types over the 1989-2009 period, whereas for specialist dairy and Less Favoured Area (LFA) cattle farms, efficiency remained stable. There was quite dramatic downward turbulence in the rate of efficiency for the specialist sheep sector. The LFA cattle and sheep sector has slowly increased mean efficiencies over this time as the impact of specialisation towards cattle and the removal of sheep from these systems may be improving efficiencies.
- A review of productivity studies identifies a number of reasons for decline in productivity growth, including: falls in research and development funding; a shift in funding away from productivity towards wider social issues; the loss of advisory services focused on productivity gains; changes in industrial R&D; the negative consequences of subsidies, such as restricting access to new entrants and supporting avoidance of market risk; and increasing constraints on resources, predominantly through global economic and environmental change.
- There is a paucity of evidence on the impact of recent CAP reforms on agricultural efficiency, although a recent study, by Barnes et al. (2010), did find a positive effect of recent reforms on English farming. It would therefore be difficult to estimate the possible impact of proposed future CAP reform on UK productivity and efficiency.

---

¹ This Research Briefing summarises the main findings from this study. For the full research report please see: Barnes, A.P., Bevan, K. R. And Revoredo-Giha, C. (2011) Raising the competitiveness of Scotland’s agri-food industry. Rural Policy Centre Research Report, SAC, Edinburgh (July). Available online at: http://www.sac.ac.uk/ruralpolicycentre/pubs/supporttoagriculture/competitivenessagrifood/.

² Land Economy and Environment Research Group, SAC. For more information please contact Dr Andrew Barnes (T: 0131 5354042; E: andrew.barnes@sac.ac.uk)

³ SAC Consulting.
Poor productivity growth at the farm level has serious implications for the Scottish Government’s declared growth plans for Scotland’s wider agri-food industry. The study highlights a number of drivers of productivity which are particularly relevant for Scotland. These include: R&D funding trends and patterns; industrial R&D funding; the role of subsidies; the role of extension activity; and growing resource and environmental constraints.

To address these issues there are a number of areas which need to be explored by both researchers and industry. These include:

- Measuring and monitoring changes to productivity and efficiency;
- Measuring the impact of research and technologies on productivity;
- Measuring the impact of extension on productivity;
- Measuring farmer response to innovation adoption and perceptions of extension;
- Exploring options for increasing industry input into research, such as the role of cooperatives in adapting technology to suit regional characteristics;
- Extending productivity measurement to whole food supply chains and analysing the impact of market structures on farmer efficiencies;
- Exploring the targeting of subsidies and the role this plays in supporting productivity growth;
- Examining the role of other causal factors on productivity, such as farm size and access for new entrants into the industry.

Adopting some of these measures may allow Scottish agriculture to reverse the decline in productivity growth. The adoption of best practice measures from advice could also help to counteract some of the negative influence from increasing temperature fluctuations or the variability of a developing global economy.

**Background**

The growing importance of food security issues in Western agricultural policy and an emphasis on reducing the negative environmental impact of the food sector, have increased the need for understanding agricultural productivity growth. The Scottish Government’s aim of raising the output of the agri-food industry is based on a growth in productivity. An unproductive industry will have wider impacts on its position in export markets and, worse still, could lead to loses in market share in the home market. This study aimed to indicate how Scottish agriculture and the wider agri-food industry can improve its competitiveness through raising productivity at both the farm production and food chain level.

**Key Terms**

Farmers can do little to change the general level of prices and costs, thus to lift profitability they must raise their productivity by more than the deterioration in their terms of trade. Farm subsidies are expected to decline in the long term as a result of further CAP reform and Scottish agriculture will need to improve productivity to remain competitive. Farmers can improve their productivity by: changing their input-output mix (e.g. reducing cattle and increasing crops); adopting new technologies (e.g. better seed varieties); or changing the size of their business.

*Total Factor Productivity* – a measure of the output growth not attributable to the growth in inputs i.e. intermediate inputs (e.g. fertiliser, feed), capital, labour and land. TFP is therefore the residual growth in output explained by technological change and the adoption of better production methods that improve efficiency. TFP therefore identifies factors that influence the long term trend in output, rather than short term variations in production that can be explained by changes in the weather or prices for example.

*Partial Productivity measures (often termed technical efficiency*) – provide useful insights into competitiveness but should be used with care and too much credence should not be placed on measures like milk yield and lambing percentage.

For more information on the work of SAC’s Rural Policy Centre, please contact: Jane Atterton, Researcher, Rural Policy Centre, SAC. T: 0131 5354256; E: jane.atterton@sac.ac.uk; W: www.sac.ac.uk/ruralpolicycentre