Irish agriculture: public goods and productivity conundrums

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Westminster Food & Nutrition Forum keynote Seminar
Next steps for farming productivity – agri-tech, investment and knowledge transfer

The Caledonian Club, 12th March, London

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Teagasc in brief

- Teagasc – pronounced "Chawg-ask" means "instruction"

- Teagasc – The Irish Agriculture and Food Development Authority – research, advisory and education

- Annual expenditure €180 m. and 1200 total staff – 70% State grant

- 233 researchers + 240 Ph.D. students; 64 subject-matter specialists; 78 teachers; 285 advisory; 7 research centres; 51 advisory offices and 7 colleges

FOOD & DRINK EXPORTS

Source: Bord Bia 2017

€11.15 billion

the value of Irish food & drink exports, an increase of 2%

The sector recorded the **7th** consecutive year of growth in exports during 2016

Growth of **41%** or €3.27 billion since 2010

Irish food & drink is sold in **180** markets worldwide

37% of Irish food & drink exports are destined for the UK, valued at €4.13 billion

Other EU markets account for €3.53 bn or **32%**

International markets account for €3.49 bn, or **31%**

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Teagasc research: from farm to gut
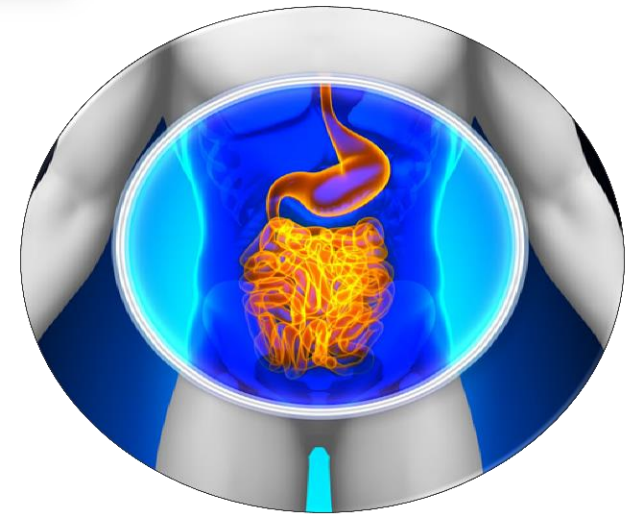
Profit from productivity

- Profit = productivity x relative output and input prices

- In medium to long run ... <u>change</u> in relative prices ~ constant

- Technology adoption/innovation >> productivity >> Improved profit

- Hopefully we can all agree on the veracity of this proposition

Role for public research knowledge transfer in addressing market failures

- Two examples: data infrastructure and technology integration failures

- Data infrastructure failure can frustrate development of 'best' technology

- Integration failure can frustrate adoption of 'best' technology

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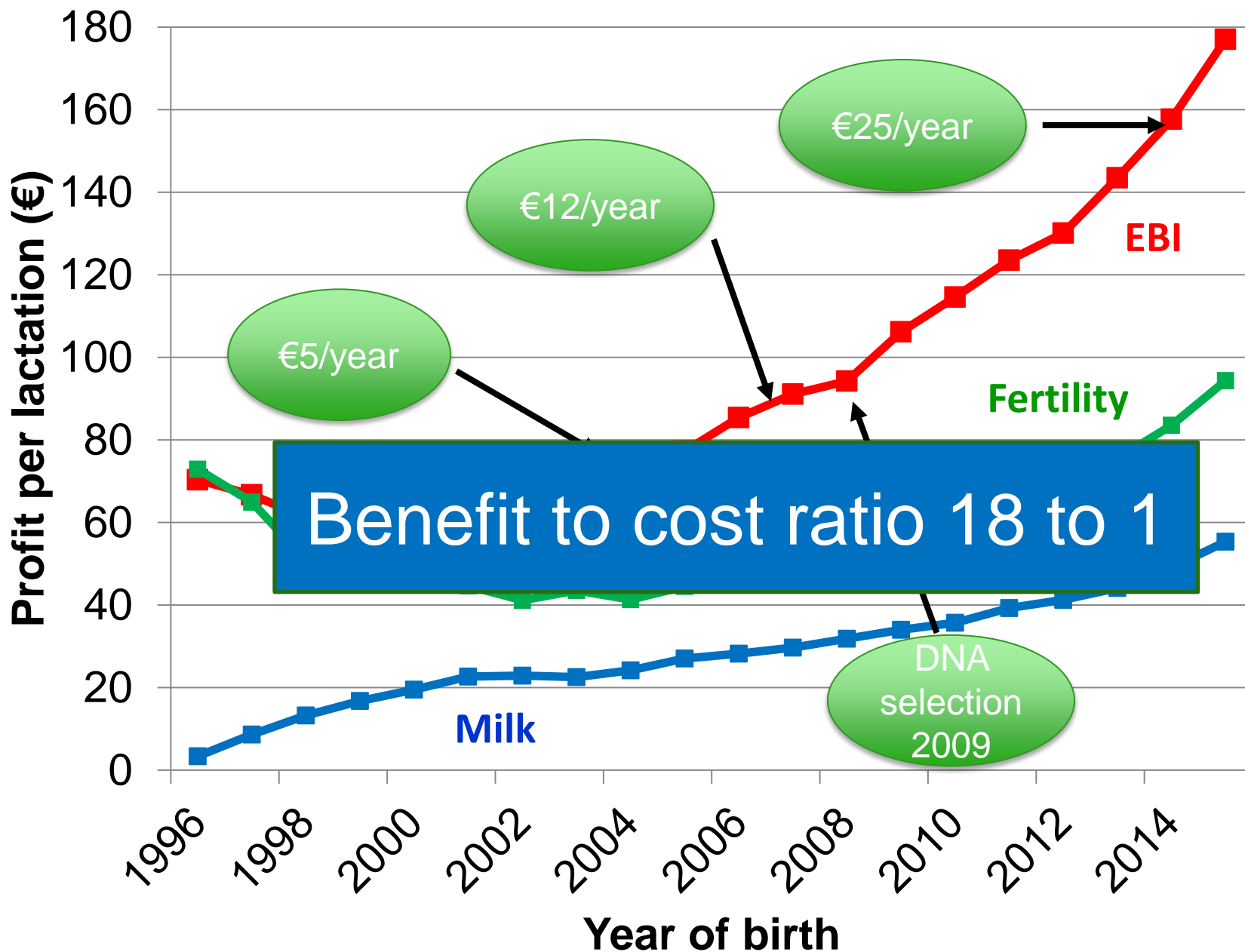AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

Embodied technology

- New technology is typically embodied in purchased market inputs (e.g. fertilisers, machinery, software, etc.)

- Purchases of these inputs has greatly improved on-farm profits and will continue to do so ...

- 'Simple' use decision rule vs 'complex' underlying technology

- High potential levels of adoption

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AI sire selection for dairy cows driven by Economic Breeding Index (EBI)

- EBI denominated in € and reflects dairy profitability (= monetary value of genetic gain)

- Single market accepted EBI for dairy sector

- Very high rate of adoption

- Key factors in developing the EBI ...

  (1) farmer ownership of the underlying genetics data

  (2) 'independent' research team to produce credible EBI

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Trend of EBI in Irish dairying

Profit per lactation (€)

Year of birth

€25/year

€12/year

€5/year

EBI

Fertility

Milk

DNA selection 2009

Benefit to cost ratio 18 to 1

Integration market failure

- Some technologies may not/cannot be embodied in individual inputs ...

- 'complex' decision rules vs (potentially) 'simple' underlying technology

- Result: adoption may be lower (sometimes substantially) than otherwise with lower profits and perhaps poorer environmental outcomes

- Examples: 1) optimal grassland management 2) pasture-based precision agriculture?

Conclusion

- Market failures matter!