Annual Conference of the Agricultural Economics Society  
Warwick University, 15-17 April 2019

Presidential Address

Sustainable Agriculture: Life beyond Subsidies

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Lincoln University, New Zealand
Introduction

New Zealand – What can a tiny country on the other side of the world share with the UK?

• The contribution to wellbeing of knowledge from Agricultural Economists.

• How wellbeings can be incorporated in decision making.

• Ways in which to help producers get rewarded for their production and the wider wellbeings they provide.
Economics and Agricultural Economics

• Economics – Maximise the welfare/wellbeing of citizens subject to limited resources.
• Shift from measuring GDP, as it is a poor reflection of welfare to measuring the wider well-beings.
• Agricultural economics has being doing this for a long time – social, cultural, environmental and economic.
• Evaluating the various capital stocks and how persons can use the flows from these to create/sustain wellbeing.
Wellbeing Policy in NZ

The NZ government is moving beyond GDP towards its first wellbeing budget, connected to the Treasury’s Living Standards Framework and the OECD’s wellbeing measures.

The Government will now measure things through the capitals and flows from these:

- human capital - our people and skills
- social capital - our connections
- natural capital - our environment
- financial and physical capital - our built and financial assets.
New Zealand Treasury’s Living Standards Framework
The New Zealand Living Standards Framework is based on the OECD wellbeing framework.
Wellbeing Economics

• Last year, we published *Wellbeing Economics: The Capabilities Approach to Prosperity*.  
• Each chapter looks at how wellbeing can be facilitated at different levels.  
• Investment in ‘capitals’ is key.  
• This includes the distinctive role of the public sector in promoting wellbeing.
Seven Levels of Choices
Seven Capitals: Foundations of Wellbeing
Knowledge Capital

• Knowledge capital is missing from the OECD’s “four capitals”.
• In the Swan-Solow neoclassical growth model, all growth in per capita output comes from exogenous technological progress.
• Romer’s endogenous growth theory was the first to explain how this can be influenced by knowledge workers.
• The key insight is that growth in knowledge has increasing returns to scale – and so can drive growth in living standards.
• The proportion of knowledge workers is the important factor.
The Distinctive Capabilities of the Nation State

“The crucial feature of the specification used here is that knowledge enters into production in two distinct ways. A new design enables the production of a new good that can be used to produce output. A new design also increases the total stock of knowledge and thereby increases the productivity of human capital in the research sector.”

– Paul Romer (1990, p. S84)
Knowledge Capital – Agricultural Economists!

• Agricultural economics is a broad discipline creating and using knowledge from a wide range of areas over a long period.
• The consideration of environmental and social sustainability is as old as the profession. So well-being is nothing new.
• Nor is the evaluation of capital stocks and flows from these.
• It also focuses on making a difference - so is applied.
• It facilitates inter-disciplinary science to make step wise changes.
• So what knowledge from New Zealand could be relevant?
First a journey

“If I have seen further it is because I stand on the shoulders of Giants.” Isaac Newton (1675)

• So thank you.........
An Integrated Career!

Table from my PhD Thesis

TABLE 8.5
The results of the analysis for 1978/79

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Wheat Policy</th>
<th>Free Trade in prices</th>
<th>50% fall in prices</th>
<th>UK exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prices (ecu's / 100kg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Belux   | 18.04  | 17.57        | 9.42                  | 9.99               | 17.60   |
Denmark | 17.22  | 16.06        | 8.81                  | 8.84               | 16.50   |
Eire    | 16.80  | 16.49        | 9.89                  | 9.67               | 16.97   |
France  | 15.75  | 14.04        | 9.17                  | 7.59               | 14.06   |
Italy   | 16.94  | 12.91        | 9.28                  | 7.08               | 12.96   |
West Germ | 19.35 | 19.64        | 9.44                  | 11.49              | 19.75   |
Netherlands | 17.74 | 17.57        | 9.40                  | 10.02              | 17.71   |
UK      | 15.21  | 11.54        | 9.24                  | 5.73               | 9.02    |
R.O.W.  | 9.93   | 10.23        | 10.42                 | 10.48              | 10.25   |

Recent AERU Research Project

2017 Call for proposals
EU NZ FTA and Brexit

Application Form
Call: 2017
Jean Monnet Activities
• Jean Monnet Networks
• Jean Monnet Projects

Erasmus+
Agribusiness and Economics Research Unit

The AERU Mission
To exercise leadership in research for sustainable well-being.

Established by Cabinet Committee in 1962 in anticipation of the UK entering the European Union
New Zealand’s early economic prosperity grew from exporting three commodities to the UK:

– Meat
– Dairy
– Wool
New Zealand

• New Zealand is a small country, a long way from anywhere and heavily dependant on agricultural trade.

• It fell down the OECD per capital GDP rankings, from 3rd in the 1950s to 20th in 2016.

• Preferential access into the UK and then the EU, followed by first mover advantage into China (first OECD country with FTA).

• Created a culture of taking orders, focused on commodity production with strong and efficient supply chains.
New Zealand Exports by Commodity

Source: Statistics New Zealand Harmonised Trade Series
New Zealand Exports by Country

Source: Statistics New Zealand Harmonised Trade Series
New Zealand in 1994

• Neo-classical – market solves all issues and NO planning.
• Low cost culture – feed the world.
• Third of the land in Conservation Estate, so environmental outcomes on agricultural land not so important.
• So Market Access the big issue – Cairns group of WTO, etc.
• Focussed on income, not wider wellbeings.
• Agriculture considered a sunset industry.
New Zealand must take “deliberate steps to break economic dependence on the primary sector, in particular by investing in science and technology”.

(Hendy and Callaghan, 2013, pp. 15-16).

As if the primary sector’s development has not always relied on investment in science and technology!
Caroline in New Zealand

• So started a journey suggesting that the market may care about the environment and how we produce food.
• Trade modelling, linking trade with the environment: the Lincoln Trade and Environment Model (LTEM)
• Projects on organics and low input agriculture.
• Regional economic development.
• Climate change, carbon emissions, ETS.
• GMOs and “scaremongering”!!!
• And then came ..........
Food Miles

The miles a product is transported from producer to consumer.

NZ is 11,400 miles from the UK!

• This ignored energy use and emission in production.

• So we compared energy use in four products (apples, onions, dairy and lamb).

• We compared UK produce with NZ produce, delivered to the UK market.

Dairy NZ – UK

• NZ used under half the energy that the UK did.
• Even despite not being able to obtain as detailed data on UK capital inputs.
• Even when methane and nitrous oxide were included, the UK produced 34% more GHG emissions per kgMS and 30% more per ha.
Lamb - NZ versus UK

• NZ was 4 times more energy efficient than the UK in lamb production.

• Information on UK lamb production system not as comprehensive as for dairy, so the 4 times could have been higher.

• Reflects different production systems!!!
Food Miles

Crazy round of meetings and talks, both in the UK and in New Zealand.

Attitude in New Zealand was still focused on low cost – “we will feed China and India and they don’t care how food is produced”.
And “we are ingredient suppliers with no power in world markets”.
So we went to find out.....
Increasing Returns to Producers

• What are the attributes consumers are willing to pay for and how do they vary by country? – *Choice Experiments*

• What is the potential of various markets? – *Trade Modelling*

• How do we capture this value and ensure this is fairly returned to producer? – *Market Orientated Value Chains*
Vision for AERU Research

New Zealand’s land-based export products should be marketed to international consumers as more valuable than basic commodities.

This means selling to international markets that New Zealand products offer more to consumers than being a cheap source of nutrition, fabrics or wood.
<table>
<thead>
<tr>
<th>Safety</th>
<th>Dairy (China)</th>
<th>Lamb (India)</th>
<th>Dairy (UK)</th>
<th>Lamb (UK)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>74%</td>
<td>44%</td>
<td>73%</td>
<td>77%</td>
</tr>
<tr>
<td>Welfare</td>
<td>26%</td>
<td>13%</td>
<td>42%</td>
<td>41%</td>
</tr>
<tr>
<td></td>
<td>16%</td>
<td>12%</td>
<td>19%</td>
<td>26%</td>
</tr>
<tr>
<td>Water</td>
<td>16%</td>
<td>12%</td>
<td>19%</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>16%</td>
<td>12%</td>
<td>19%</td>
<td>26%</td>
</tr>
<tr>
<td>GHG</td>
<td>25%</td>
<td>14%</td>
<td>38%</td>
<td>39%</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>22%</td>
<td>15%</td>
<td>27%</td>
<td>42%</td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td>15%</td>
<td>27%</td>
<td>42%</td>
</tr>
<tr>
<td>Foreign Origin</td>
<td>26%</td>
<td>10%</td>
<td>-20%</td>
<td>-</td>
</tr>
<tr>
<td>NZ Origin</td>
<td>49%</td>
<td>24%</td>
<td>10%</td>
<td>21%</td>
</tr>
</tbody>
</table>
| Notes: | WTP derived using Krinsky and Robb method.

Maximising Export Returns

China
India
Indonesia
Japan
New Zealand
United Kingdom

CROSS-COUNTRY COMPARISON

Qualities
View of NZ
Digital

How to use this tool (v3.0)
California: Willingness-to-pay as percentage of average beef price

-26% Feed-lot Raised
-16% Grain-fed
16% Traceability
7% Environmentally Sustainable
9% No added Antibiotics
15% Social Responsibility
14% GMO-Free
14% No Added Hormones
16% Enhanced Animal Welfare
22% 100% Pasture Raised
22% Organic
23% 100% Grass-fed
29% Australian Raised, U.S. Processed
35% U.S. Raised and Processed
42% N.Z. Raised, U.S. Processed
43% N.Z. Raised and Processed
42% U.S. Raised and Processed
44% Australian Raised, U.S. Processed

Impact

New Zealand Beef and Lamb commissioned extra research and used this to underpin their new Taste Pure and Nature Origin Brands, and their quality assurance scheme.
ZESPRI is an outstanding example of a New Zealand product that earns a premium by marketing these qualities to its international consumers.
Have you ever used your mobile device in conjunction with barcodes and/or QR codes for finding more information about or purchasing food and beverages?

Opportunities for UK Agriculture

• UK potentially will lose the subsidies it receives under the CAP.

• This will likely include the direct payments (although maybe diverted to environmental payments).

• So producers may have to survive on lower subsidies.

• Current CAP payments Euro 3.9 billion.

• What premiums have to be earned to cover that?
Trade Model - LTEM

• Non-spatial, partial equilibrium international trade model.
• Focus on agriculture with an environmental sub-module.
• Data: FAO, OECD, WTO and IPCC; base year 2012, projections to 2024.
• Model includes:
  - 21 countries or regions (incl. ROW)
  - 22 commodities (incl. five for dairy industry, four for livestock and three for oilseed complex)
• Results show prices, quantities, net trade and GHG emissions.
### Additional Producer Returns in the UK with 10% and 20% Price Premium (Millions of Euros)

<table>
<thead>
<tr>
<th></th>
<th>10%</th>
<th>20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>294</td>
<td>815</td>
</tr>
<tr>
<td>Beef</td>
<td>268</td>
<td>538</td>
</tr>
<tr>
<td>Sheep</td>
<td>93</td>
<td>180</td>
</tr>
<tr>
<td>Milk (raw and processed)</td>
<td>839</td>
<td>1,744</td>
</tr>
<tr>
<td>Pork</td>
<td>157</td>
<td>316</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,624</strong></td>
<td><strong>8,250</strong></td>
</tr>
</tbody>
</table>
Research on Value Chain Opportunities

• Change from supply chains to market orientated value chains to ensure the potential value in market is captured and distributed fairly.

• This includes values based on the attributes associated with products, including social, environmental and cultural.

• Research on global value chains to identify opportunities for creating, communicating and capturing greater value from agri-food products.

Market Orientated Value Chains

• Characteristics of value chains that share value to the consumers - evaluated a number of chains.
• A key result was that players in the value chain share the same values (social, cultural and environmental)
• These values are core but presented in different ways for different ‘parts’ of the chain
• The need for formal contractual arrangements are less.
• And leadership and power are not necessarily the same.

Conclusion

• Agricultural economics has a huge contribution to make.
• Wellbeing economics is nothing new to the profession, so we have a lot to offer the wider community.
• We should aim for high value (social, cultural, environmental and economic) for our communities — including farmers.
• And celebrate the contribution knowledge makes.
• Standing on the shoulders of Giants!
Tēnā koutou. Tēnā koutou.
Kia ora tātou katoa.

That is you. That is you.
May you and I, all of us together, enjoy wellbeing.