

Animal welfare economics in animal production systems

Henk Hogeveen



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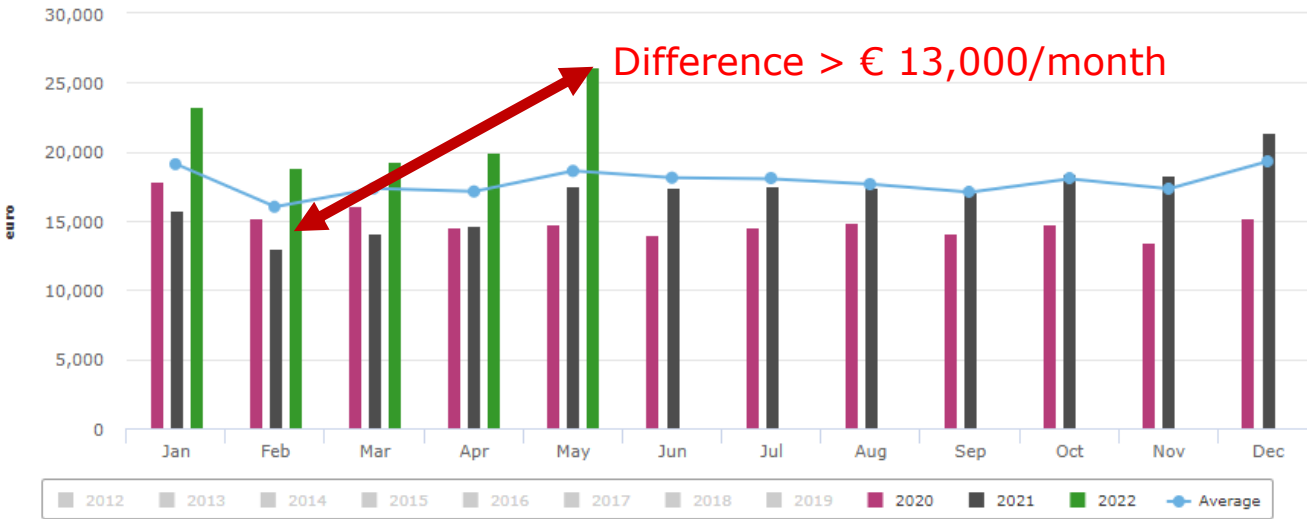
100years
1918 — 2018

Farmers: Small and varying economic margins

Gross margin per month, dairy farming

euro per farm, excluding VAT

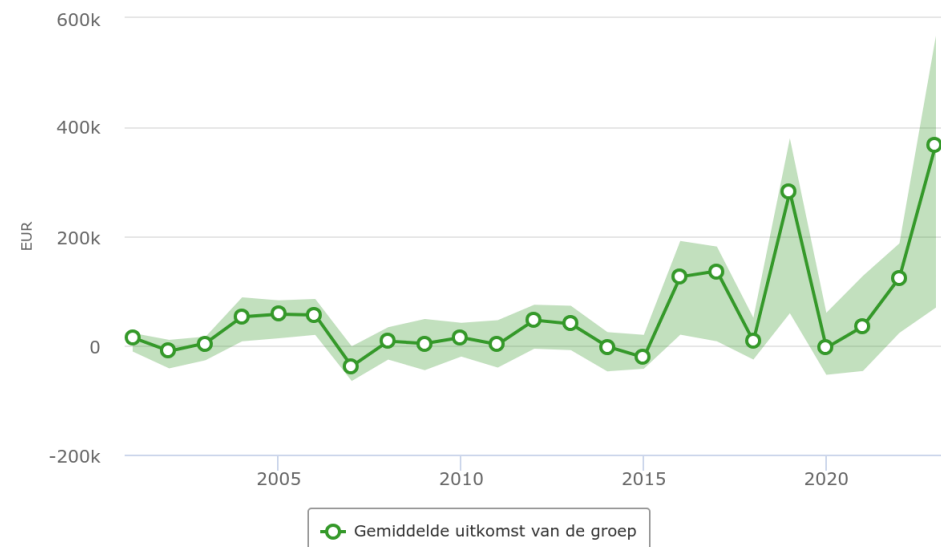
Save



Animal welfare adds to this margin, positive and negative

Ontwikkeling en spreiding van inkomen uit bedrijf per onbetaalde aje

Varkensbedrijven



What can you expect from me

- An economic perspective of animal welfare
- Animal welfare as private good
 - Novel method to link animal welfare to animal health
- Animal welfare as public good
- Optimaal aanhouden kalveren
- Slotopmerkingen



Animal welfare from an economic perspective

- Negative externality?
 - Consequence of a commercial activity which affects **other parties** without this being reflected in market prices
- But what is the price of reduced animal welfare?



Welfare from an economic perspective

- Private good?
 - A product that must be **purchased** to be consumed;
- Public good?
 - Commodity provided **without profit to all members** of a society



Animal welfare is a mixed “good”

- Public good
 - Regulations aimed at minimum level of welfare
 - EU regulation is minimum level
- Everything above that is a private good

Products with higher welfare than legal minimum

- Farmers’ intrinsic motivation – or cost-benefit
- Processor’s demands
- Labelling (more than 100 labels)



Animal welfare from an economic perspective

- Economic values are not necessarily manifested in monetary form.
- In our society money prices characterize much of economic activity
- In principle it is possible to associate a financial weighting to any phenomenon perceived as having value in that society
- Needed to make rational decisions on animal welfare

ANIMAL WELFARE, ECONOMICS AND POLICY

Report on a study undertaken for the Farm &
Animal Health Economics Division of Defra

by
Professor John McInerney

February 2004



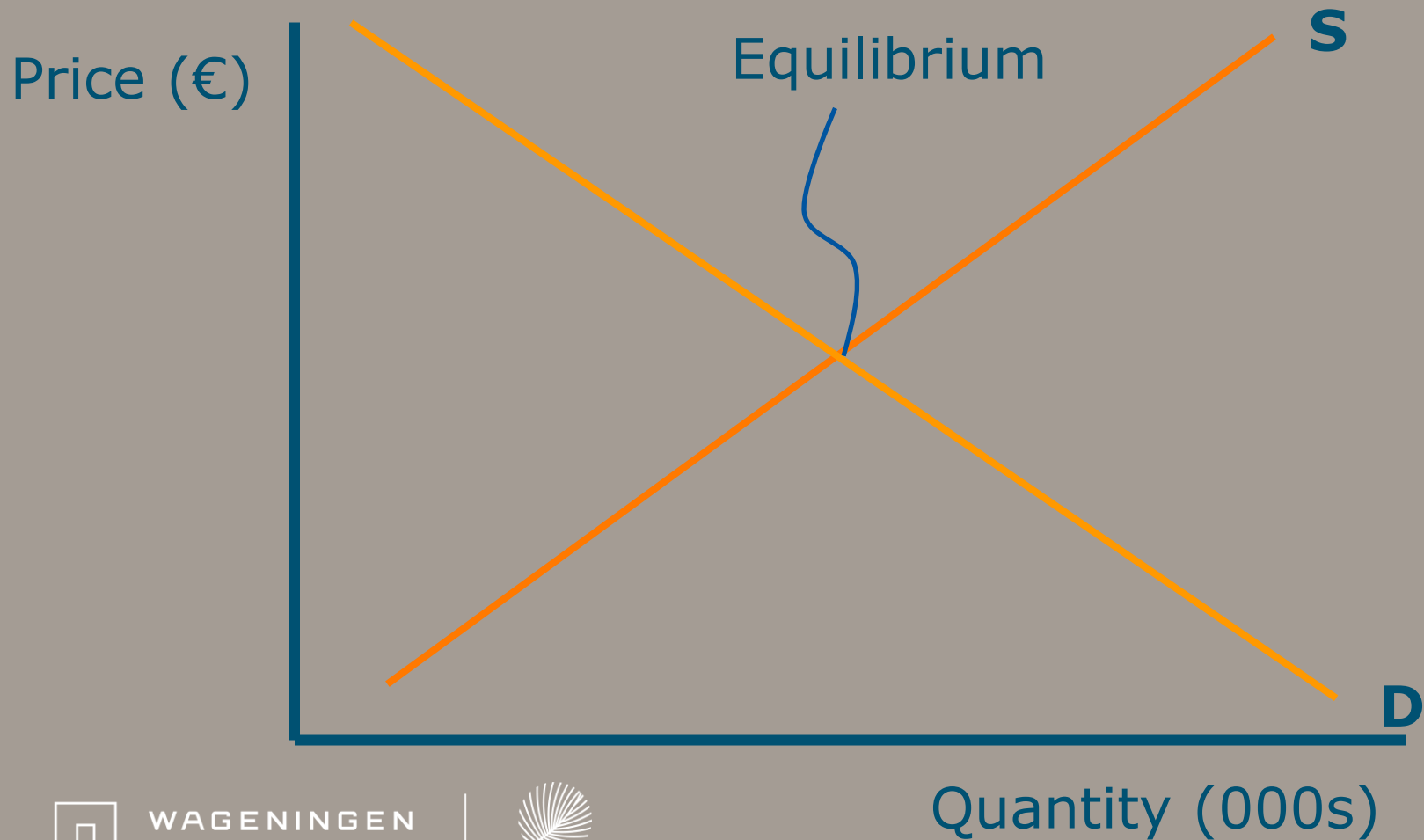
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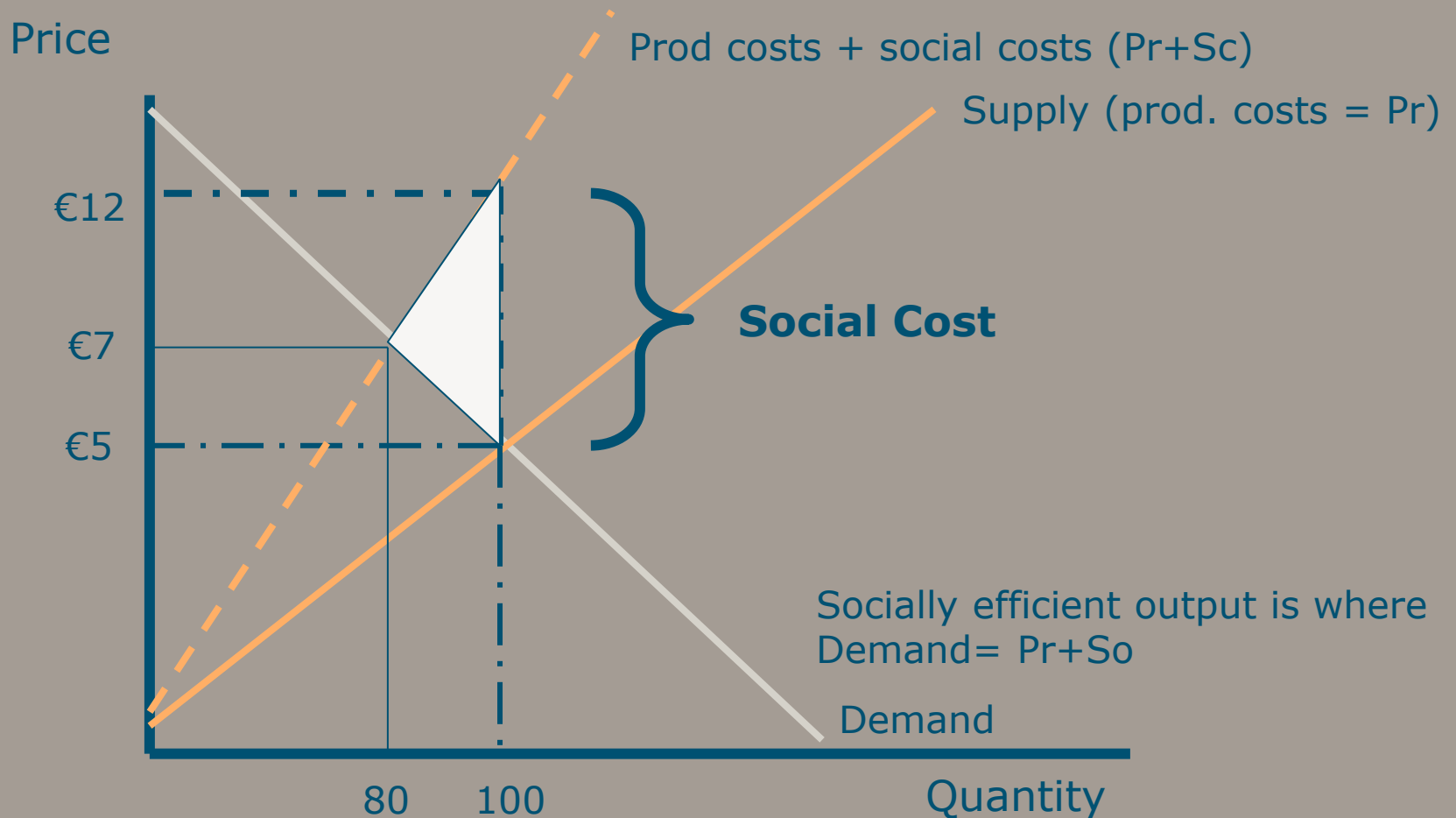
100years
1918 — 2018

<https://webarchive.nationalarchives.gov.uk/20110318142209/http://www.defra.gov.uk/evidence/economics/foodfarm/reports/documents/animalwelfare.pdf>

Remember the market mechanism ?



Animal welfare as “external costs”



What can you expect from me

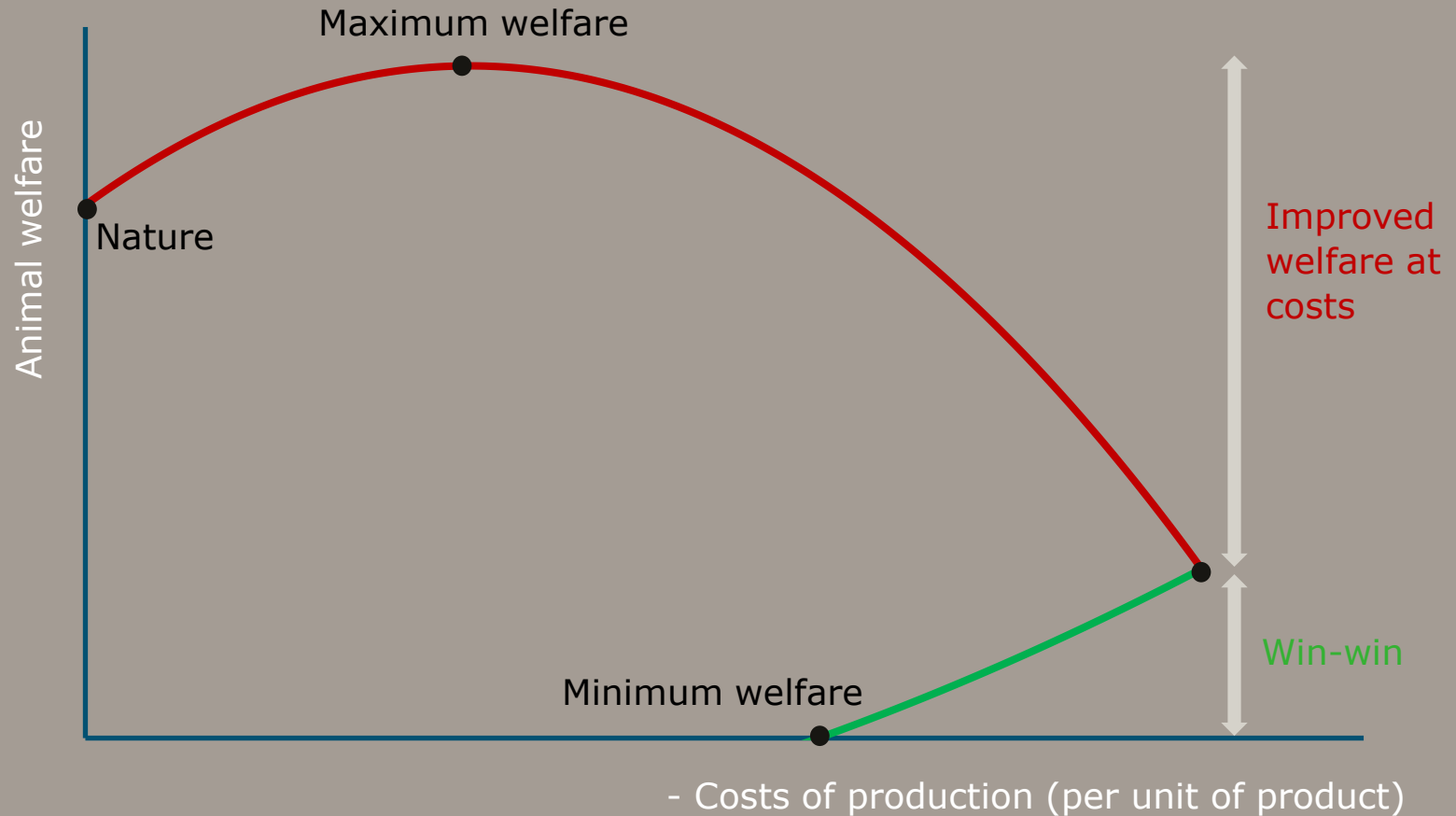
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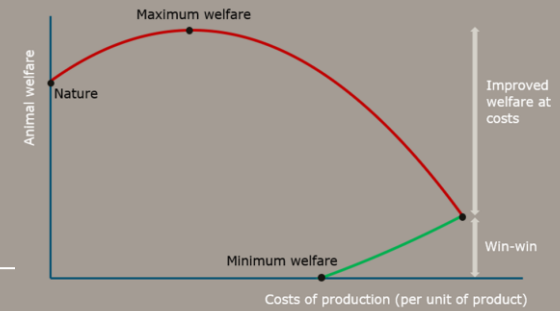


**What is the
economic
effect of
improved
welfare?**

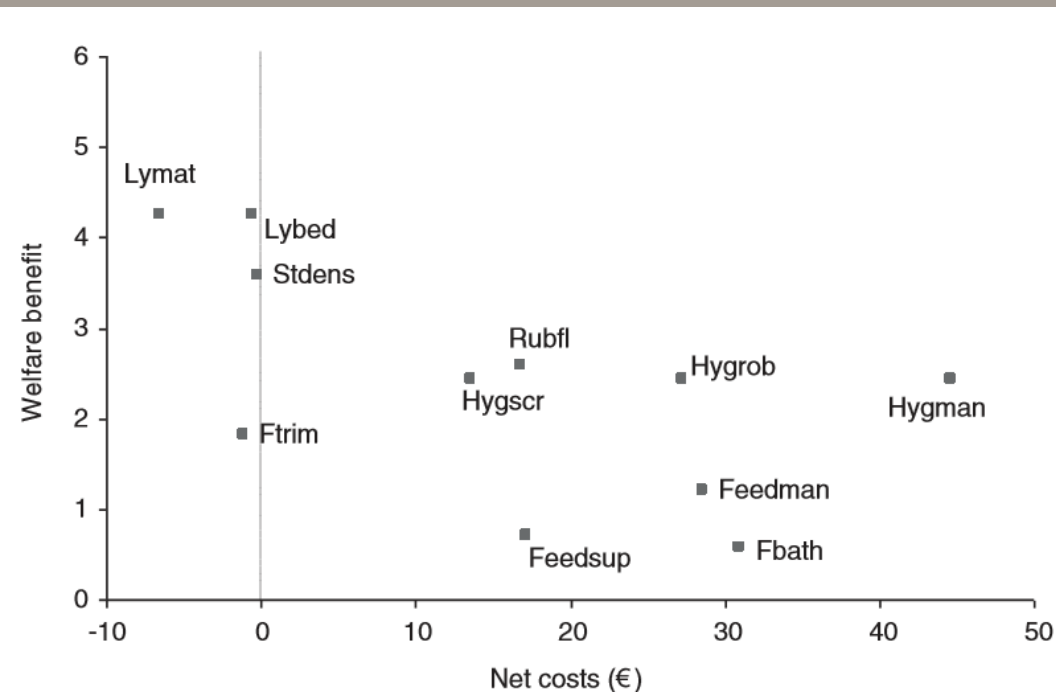
Let's start with animal welfare & costs of production



Is the win-win situation still possible?



- Yes, by reduced levels of production diseases
 - Mastitis, foot disorders, metabolic disorders,
 - Also possible for organic production



Animal (2013), 7:1, pp 167–175 © The Animal Consortium 2012
doi:10.1017/S1751731112001383



Measures to improve dairy cow foot health: consequences for farmer income and dairy cow welfare

M. R. N. Bruijnjs^{1†}, H. Hogeveen^{2,3} and E. N. Stassen¹

How to quantify the effect of animal disease on animal welfare

Basis: The five domain framework

- As follow-up of the five-freedom framework
- David Mellor
- 4 “measurable” domains
- 1 “affected”, mental domain

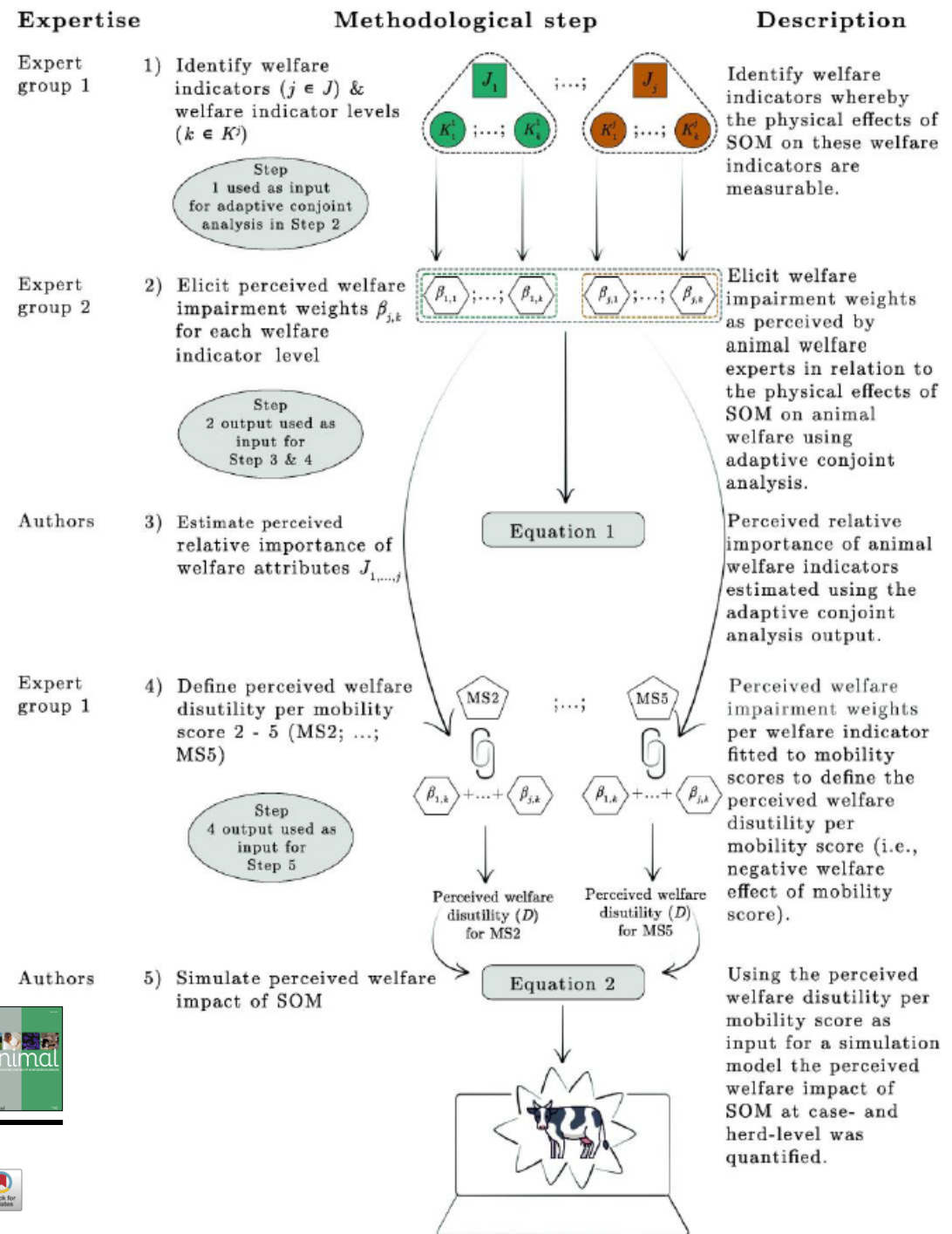


Picture of RSPCA

Enhancing animal welfare by creating opportunities for positive affective engagement

Novel method

- Five steps
- Welfare “disutility” of suboptimal mobility



Contents lists available at ScienceDirect

Animal

The international journal of animal biosciences



Application for dairy cattle lameness

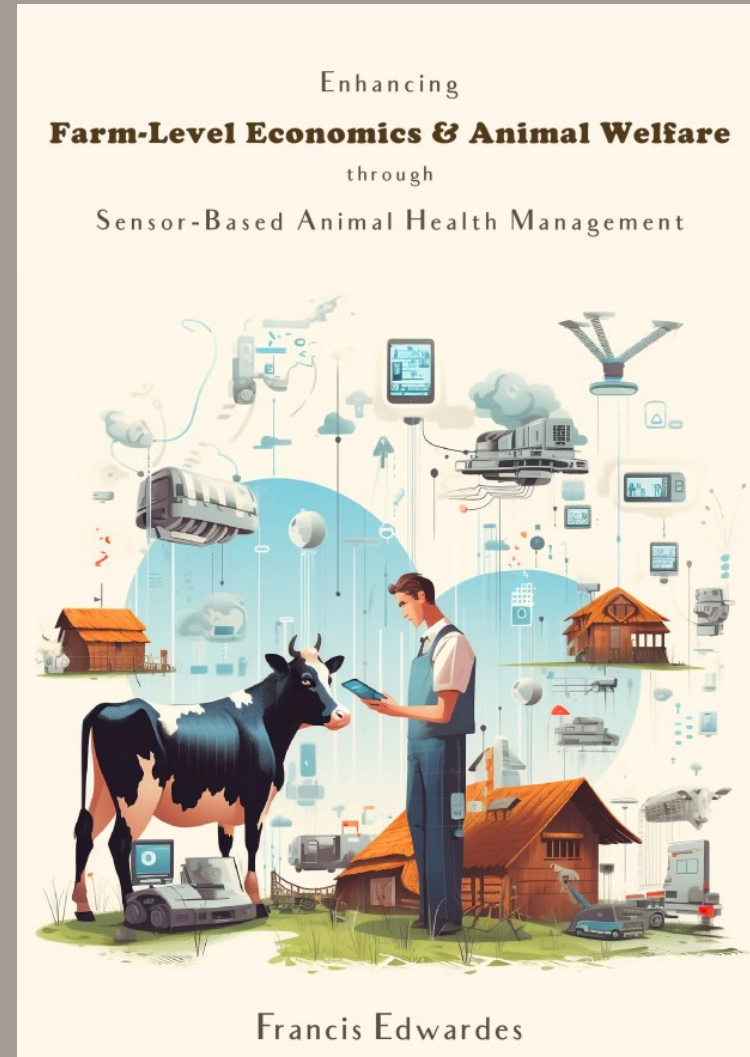
- Linked to 4 domains:
 - 5 indicators:
 - Feed & water intake
 - Functionality impairment
 - Body condition score
 - Behavioural change
 - Cow-human interaction
- All with a number of levels
- Indicators can be measured
 - Estimated using expertise
 - Effect disorder on indicators



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100years
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How to estimate affected state

- We cannot directly measure that
- We used animal welfare specialists
 - During a workshop at the International Conference for Animal Ethologists
- Using adaptive conjoint analysis
 - Define 2 “cows” with different aspects: ask specialists which cow has better welfare
 - Effect on welfare as “(dis)utility”

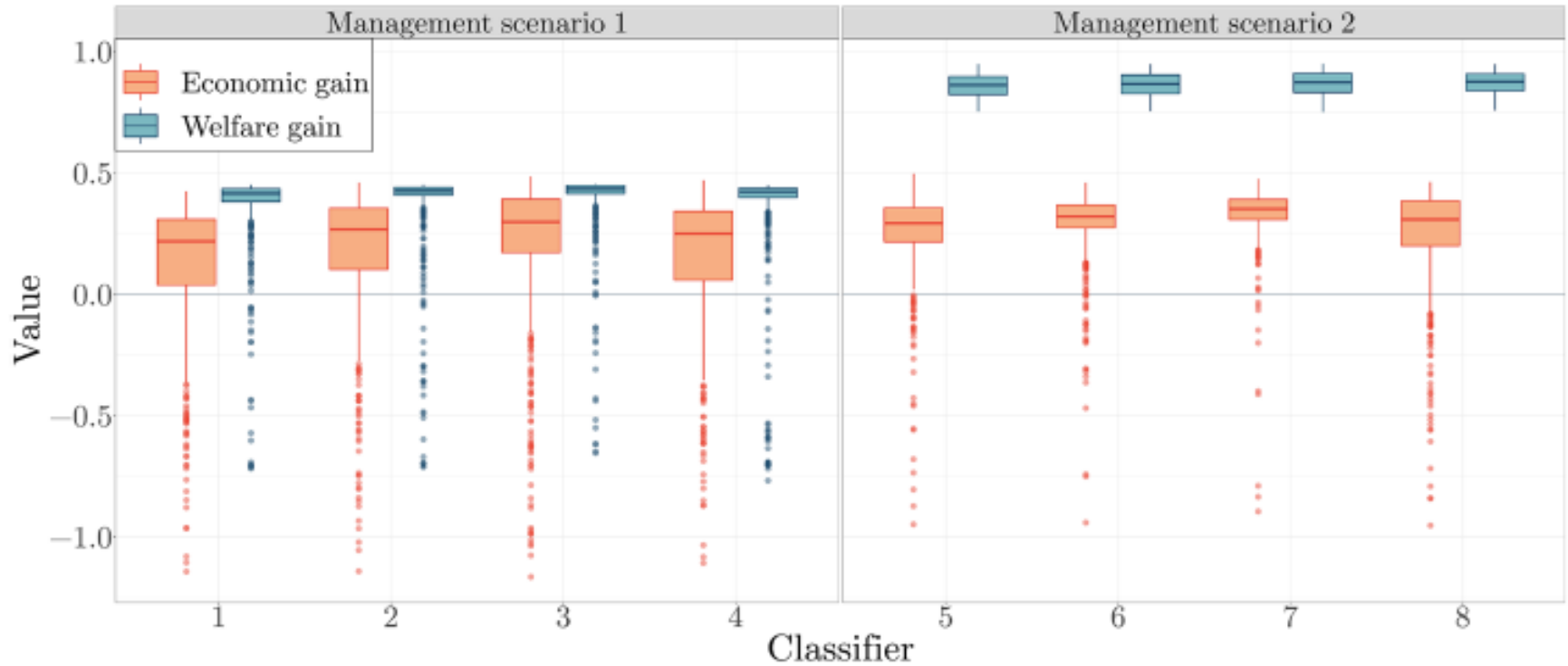
Welfare impairment weights

Mobility score (<i>l</i>)	Welfare indicator (<i>j</i>)					Welfare disutility ($\sum_{j \in J} \beta_{j,k,l}$)
	Feed and water intake	Functional impairment	Body condition score	Behavioural change	Cow-human interaction	
1	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.42	0.00	0.00	0.00	0.42
3	0.57	1.01	0.39	0.42	0.20	2.59
4	1.14	1.46	0.67	0.75	0.20	4.22
5	1.14	2.06	0.67	0.75	0.20	4.82

- Combine weights with bio-economic simulation model
- Estimate effect of improved management on
 - Economic farm result
 - Animal welfare



Some results



By reducing disease

- Economic benefits possible
- Animal welfare benefits
- Win-win situation
- This may (partly) be seen as a private good improvement – at the side of the producer.

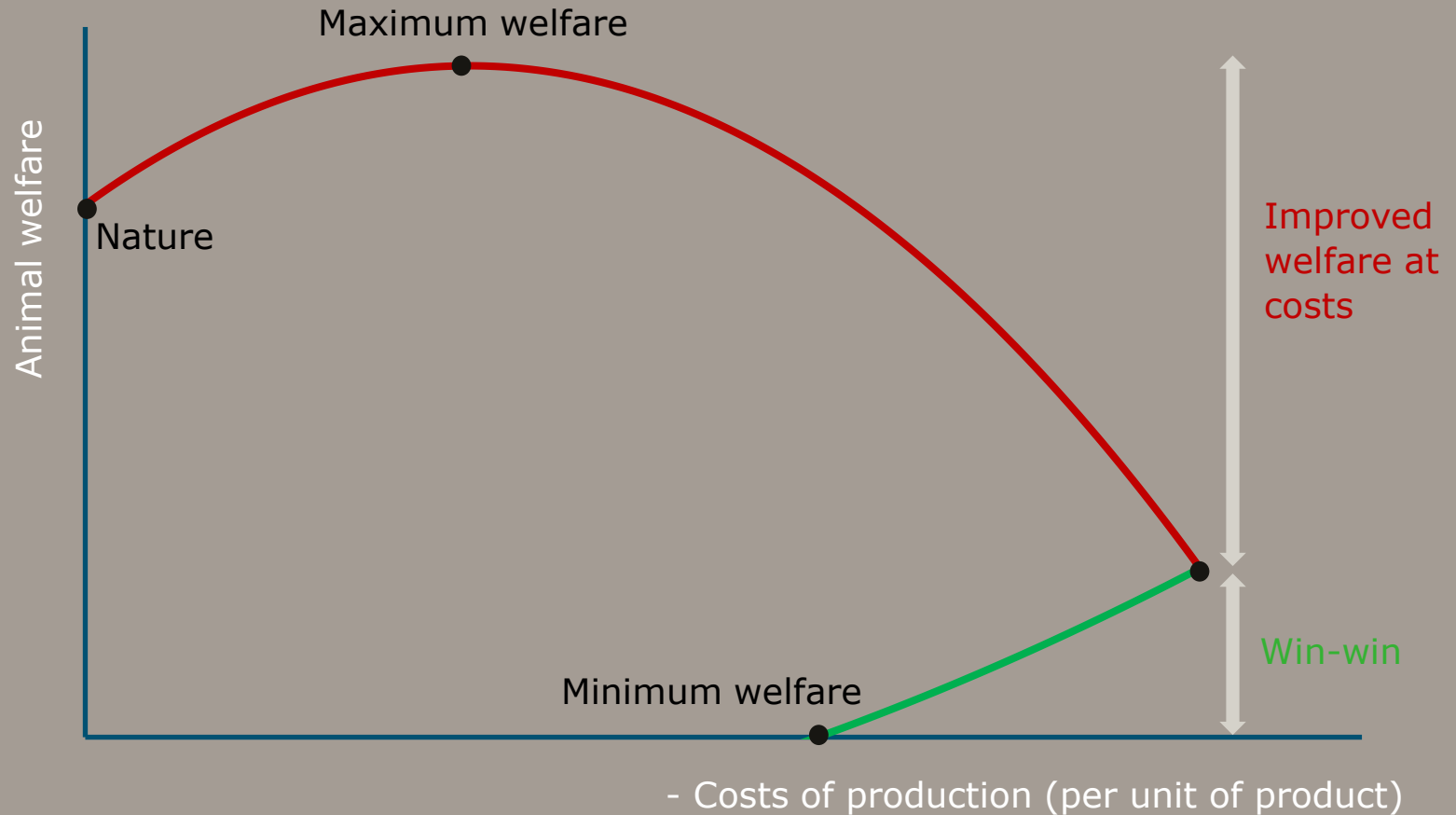


What can you expect from me

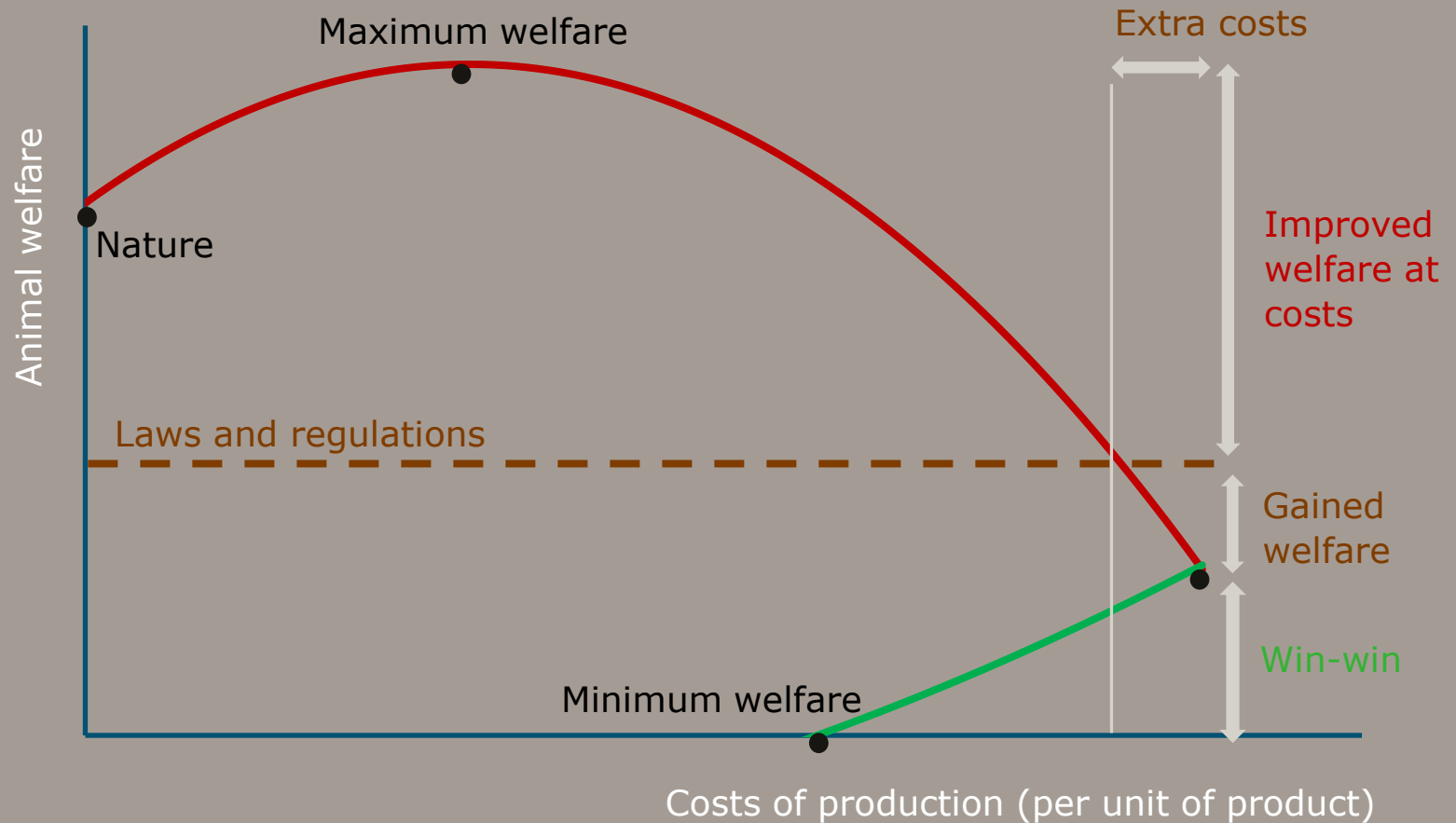
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- Concluding remarks



Let's get back to the theory

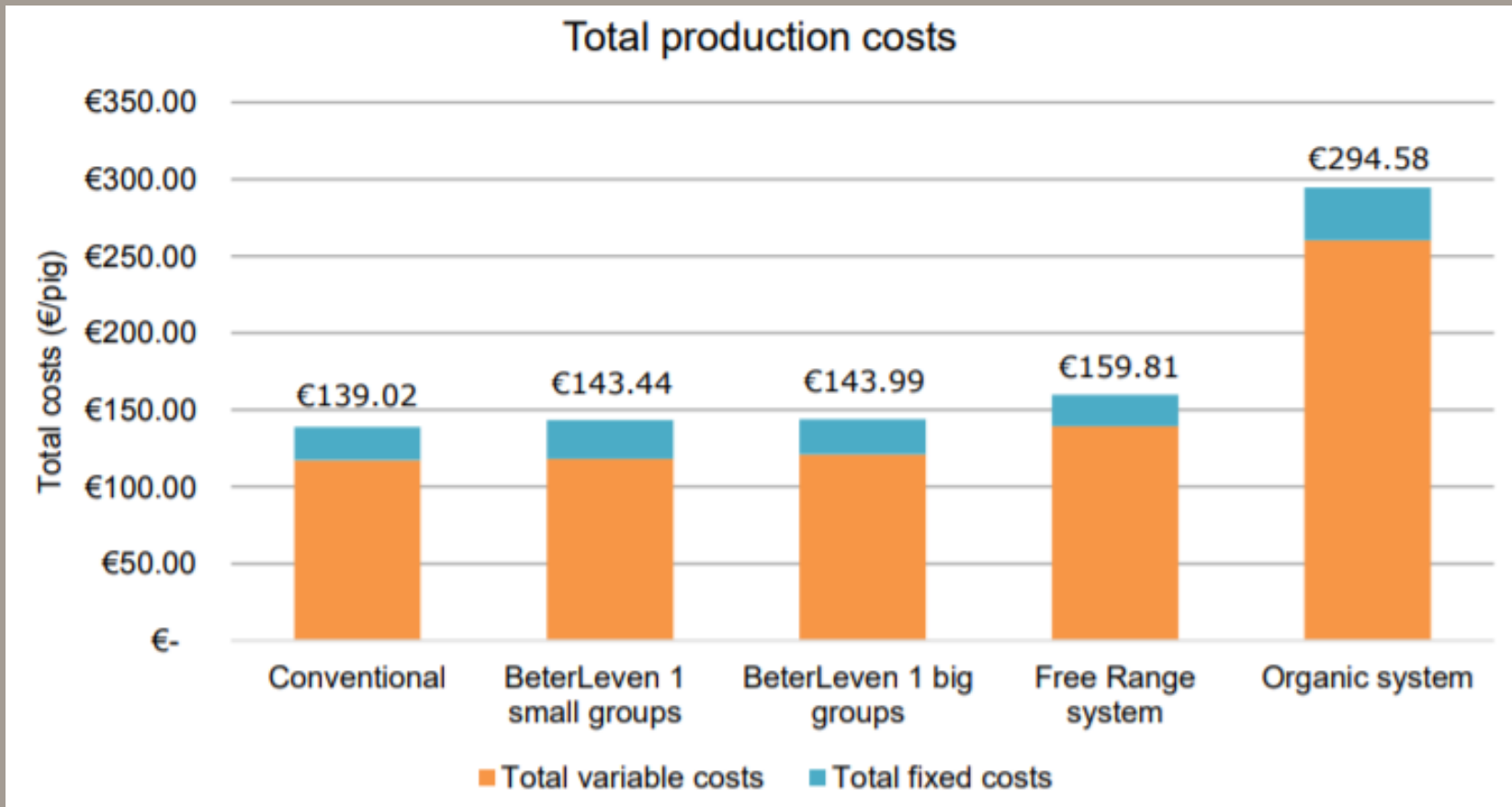


The public good approach



What are the costs of improved welfare?

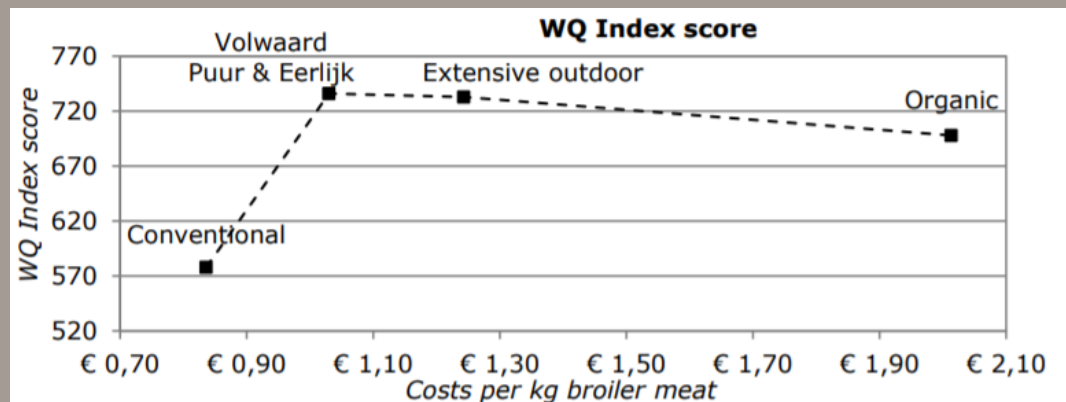
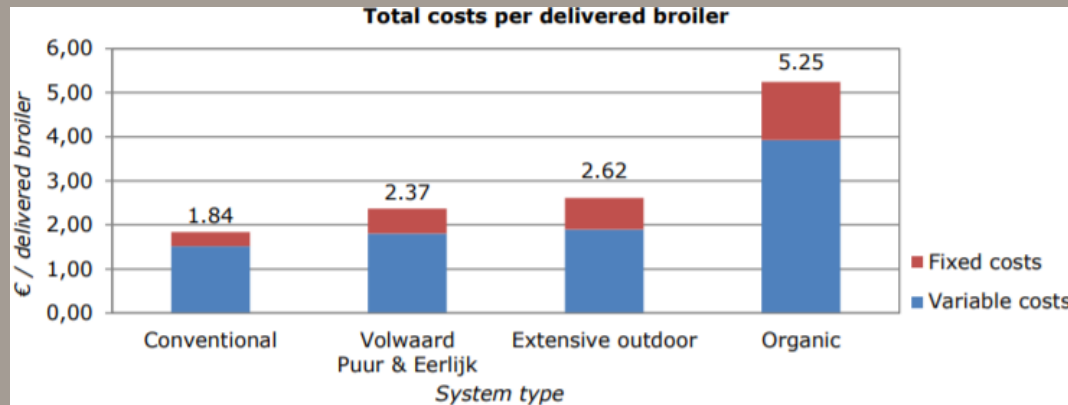
Pork: difference conventional and free range: € 0.34/kg



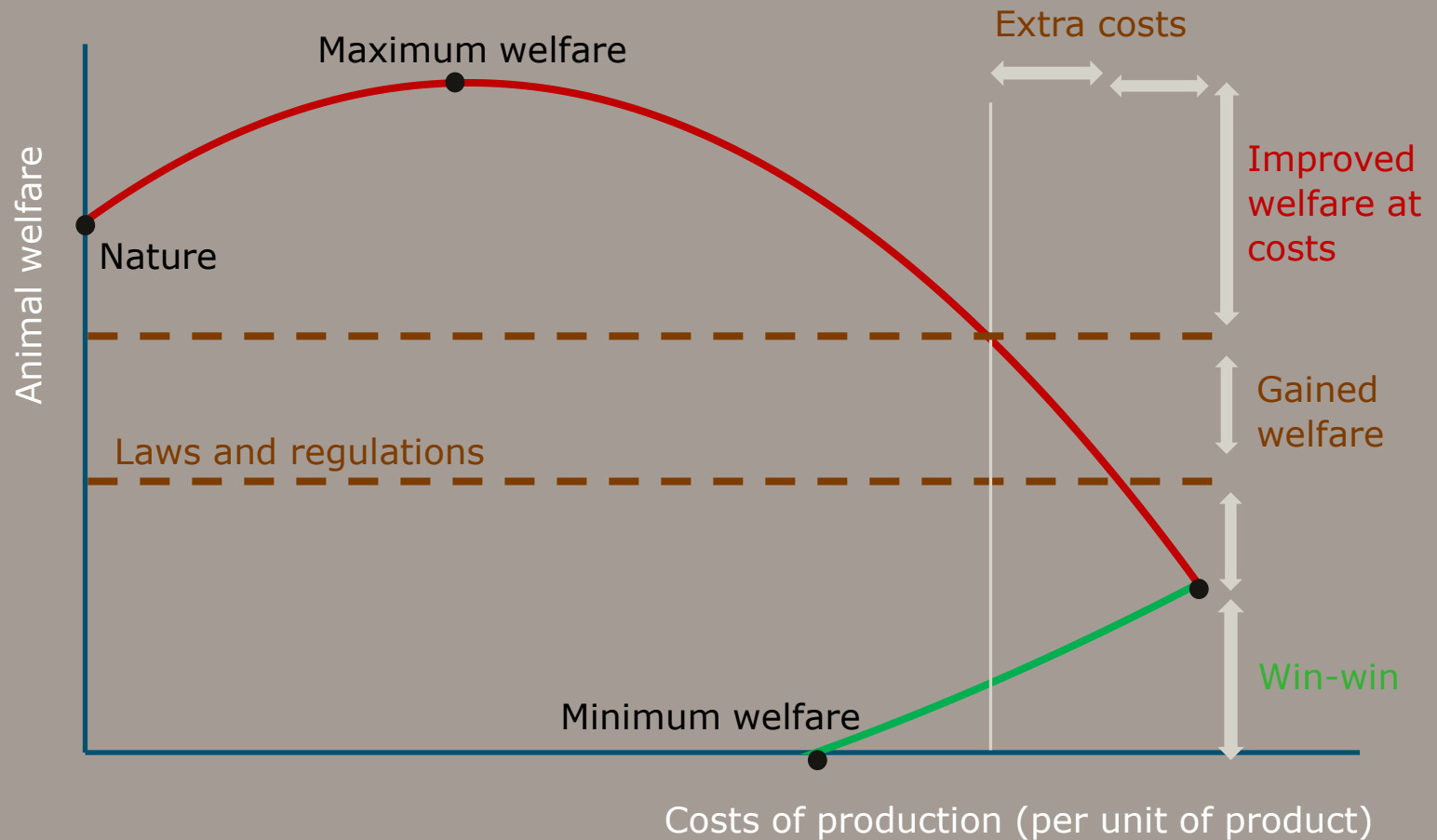
Poultry

~ € 0.45/kg difference between conventional and outdoor

~ € 1.35/kg difference between conventional and organic



The public good approach



Competition comes in place

- Animal welfare is no reason to ban import
- No level playing field
 - Change of production location (abroad)
- As a consequence regulation goes slow



Available online at www.sciencedirect.com

 ScienceDirect

Food Policy 32 (2007) 315–333

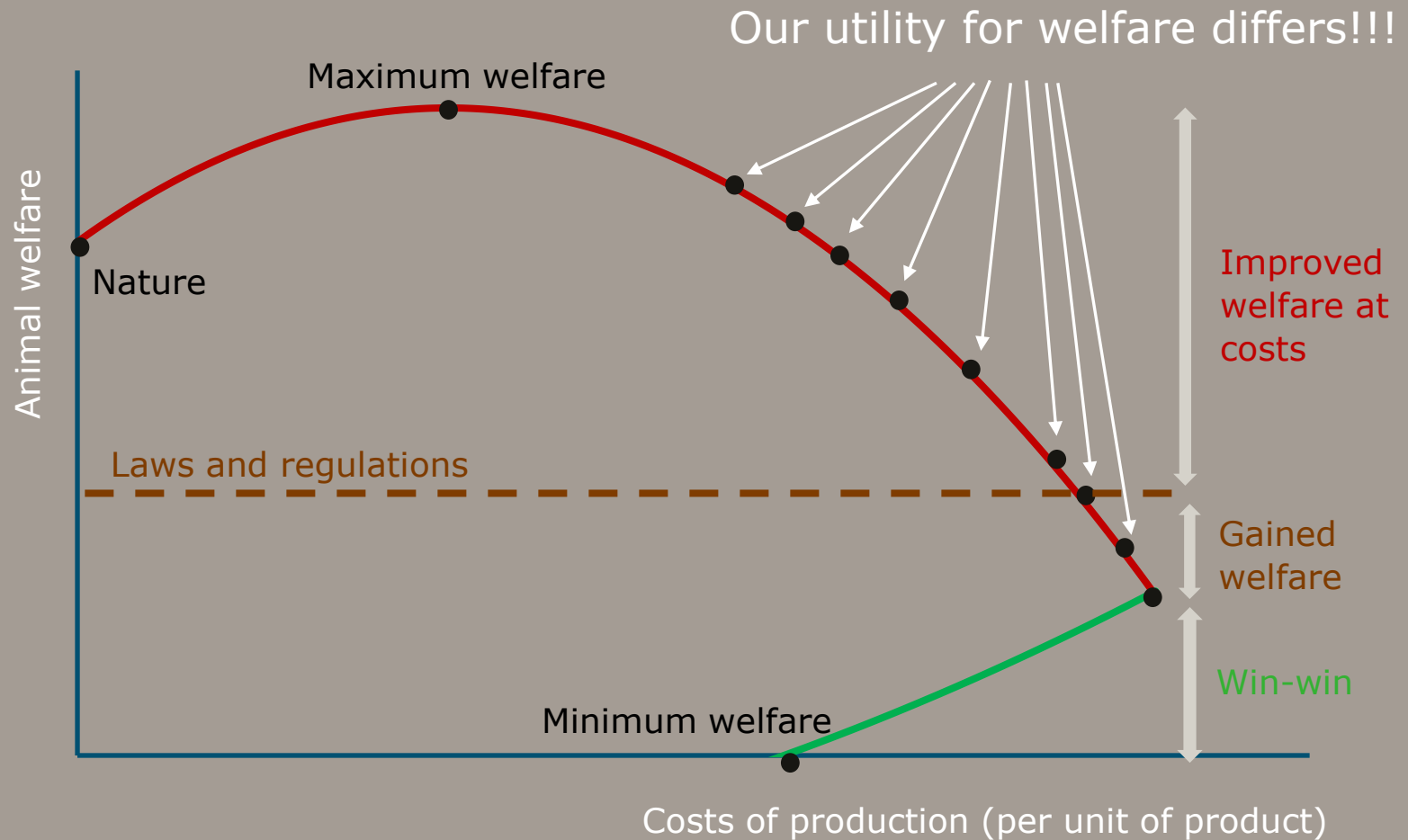
FOOD
POLICY

www.elsevier.com/locate/foodpol

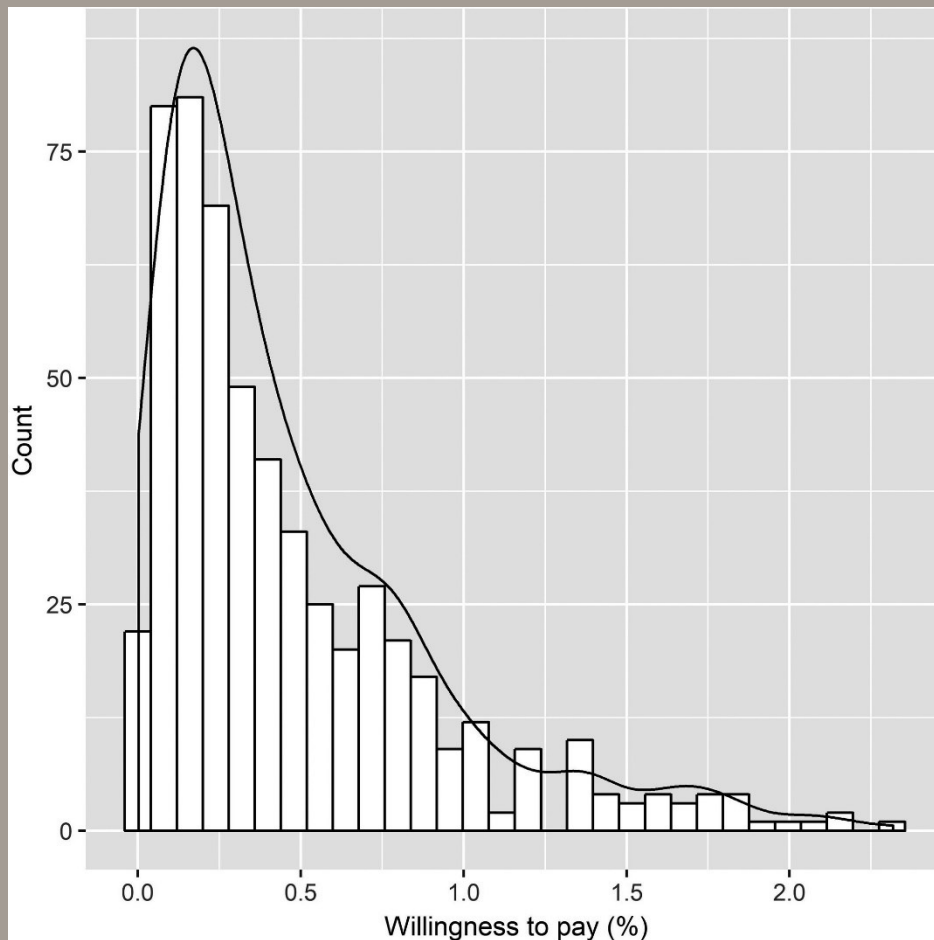
High animal welfare standards in the EU
and international trade – How to prevent potential
‘low animal welfare havens’?

Harald Grethe *

The private good approach



Willingness to pay for more welfare



- 94 papers
- 555 estimates
- Large variation
 - Region
 - Type of product

JAE Journal of Agricultural Economics

Journal of Agricultural Economics, Vol. 70, No. 3, 2019, 618–639
doi: 10.1111/1477-9552.12323

Consumer Willingness to Pay Price Premiums for Credence Attributes of Livestock Products – A Meta-Analysis

Wei Yang  and Alan Renwick¹

Current approach: labels

- Labels are always a compromise
- Perceived welfare (marketing) vs real welfare
- Lead to segmentation of the market
 - More types of products – luxury vs basic
- Retail are price-making, profit-maximizing companies



Contents lists available at SciVerse ScienceDirect

Food Policy

journal homepage: www.elsevier.com/locate/foodpol



Reconsidering the political economy of farm animal welfare: An anatomy of market failure

David Harvey*, Carmen Hubbard

To maximize profit, retail abuses this knowledge. E.g., – eggs (2019)

Off-farm price: € 0.065 vs € 0.145 per egg - $\Delta \sim € 0.08$



Biologisch Eieren

10 stuks

3.⁶⁹

Voeg toe +

$\sim € 0.37/\text{egg}$

$\Delta \sim € 0.21 (!!!)$

AH Witte scharreleieren

Witte scharreleieren

10 stuks

1.⁶³

Voeg toe +

$\sim € 0.16/\text{egg}$



Solution?

- Animal welfare is not that expensive
- **Regulation & certification to ensure minimal requirements of animal welfare in retail**
 - Can be produced everywhere
 - Level playing field
 - WTO!!!!???
- We should:aim to have animal welfare as a non-trade concern in WTO agreements. Enables EU/national animal welfare demands for imports.



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Animal welfare is

- Both a public and a private good
- A win-win situation is possible
 - Through improvement of animal health
- If we want to really improve animal welfare:

We have to change our markets

- 1) EU Regulations + closed borders
- 2) Regulations on welfare of marketed products



Thank you for
your attention

