

# Economy of pig production

Wageningen Pig Class - Yuncheng University & Changrong, 7 December 2021

Robert Hoste, senior pig production economist

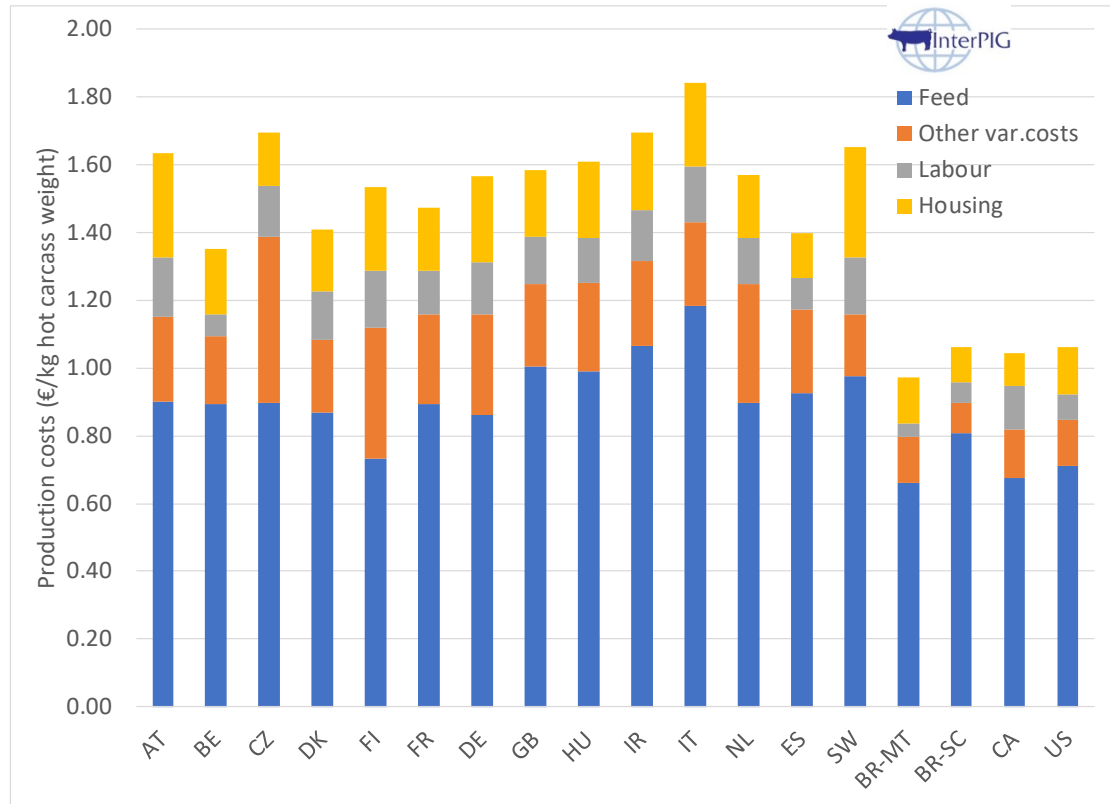


# Pig production costs internationally compared

Production costs (closed cycle) vary from €0.97 to €1.84/kg carcass weight

Avg. 70% is feed costs

EU higher costs than non-EU



Source: InterPIG / Wageningen Economic Research; year 2019

# Poll

What part of pig production costs in China relates to feed?

- a. 50%
- b. 60%
- c. 70%
- d. 80%



# Production cost compared China-Netherlands

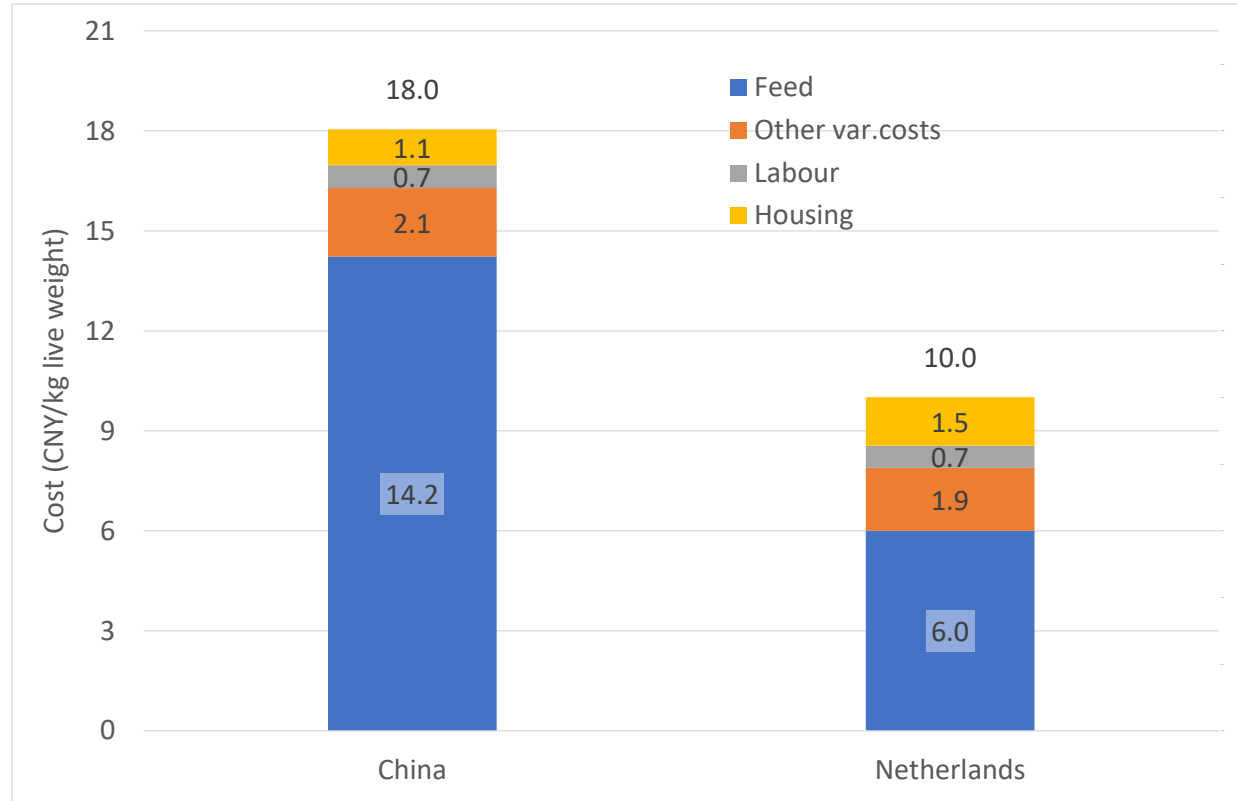
China: 18 Yuan/kg live  
(€2.5/kg)

Industrial production  
likely cheaper

NL: 10 Yuan/kg (€1.4)

Main difference: Feed  
14 Yuan (CN) / 6 (NL)

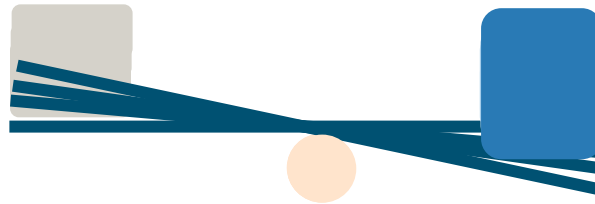
Prices Summer 2021



China: estimate!

# Price and efficiency leverage effect

- Feed efficiency -50% (-> FCR finishers +50%)
- Feed price +65%
- Slaughter pigs produced/sow/year -40%
- Leverage: more feed, higher feed price, less pigs produced
- Result: total cost of production +80%



# Economic effects piglet production Netherlands

<b>Parameter</b>	<b>Basis</b>	<b>Effect</b>	<b>Benefit €/sow/year</b>	<b>Benefit €/piglet</b>
Farm farrowing index	2.34	+0.01	1.6	0.05 \
Non-productive days/year	32	-1	3.0	0.10 /
Litter size -born alive	15.1	+0.2	10.9	0.36
Pre-weaning mortality	12.2%	-0.5%	4.1	0.14
Post-weaning mortality	2.3%	-0.5%	5.7	0.19
Feed price sow feed	31.5	-1	13.4	0.44
Feed price piglet feed	35.3	-1	8.5	0.28
Market price 25kg-piglets	24	+1	30.3	1.00

# Economic effect grow-finishing Netherlands

<b>Parameter</b>	<b>Basis</b>	<b>Effect</b>	<b>Benefit €/slaughter pig</b>
Days to market	114.6	-1	0.19
Feed conversion ratio	2.54	-0.05	1.3
Grow-finish mortality	2.5%	-0.2%	0.17
Market price slaughter pigs	1.24	0.01	1.0
Piglet price	25.0	-1	1.0
Feed price finishing feed	30.0	-1	2.5

# If a pig is to die, what is the optimal time?

- In the abattoir
- Otherwise: as early as possible



[https://www.pig333.com/articles/vaccination-failures-in-the-control-of-pcv-disease\\_8533/](https://www.pig333.com/articles/vaccination-failures-in-the-control-of-pcv-disease_8533/)



Market value: €42



€54



€68

€175

Source: Hoste and Puister (2020) (Value tables, price level April 2020)

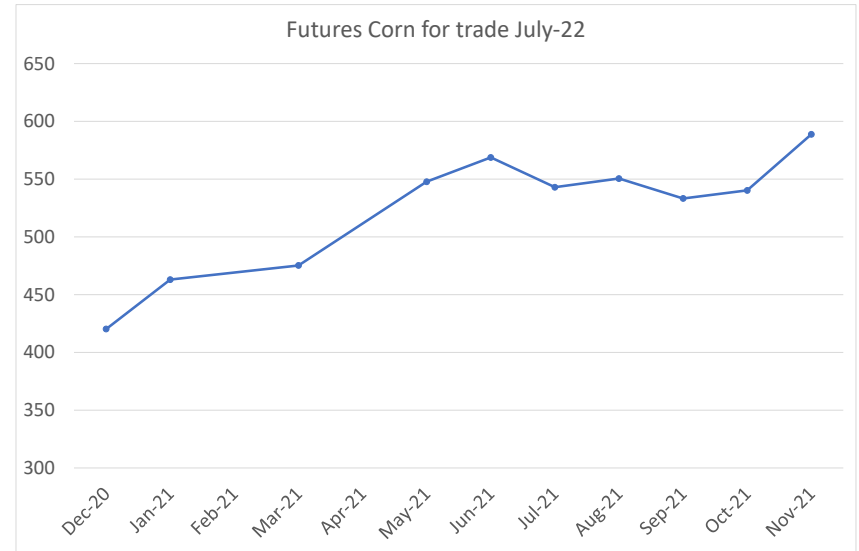
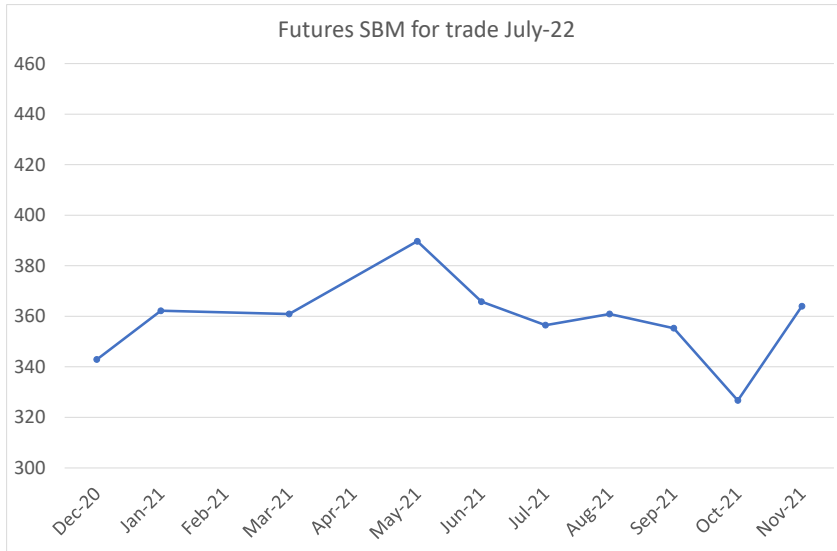


# Price course pig feed in NL

- Sep.21 feed ration €307/ton
- In 2020 avg. €267/ton
- Difference €40/t = €10/slaughter pig
- Futures SBM +USD14/t, Corn +USD30/t till July2022. Further increase of feed price to be expected.



# Price expectation feed ingredients fluctuates



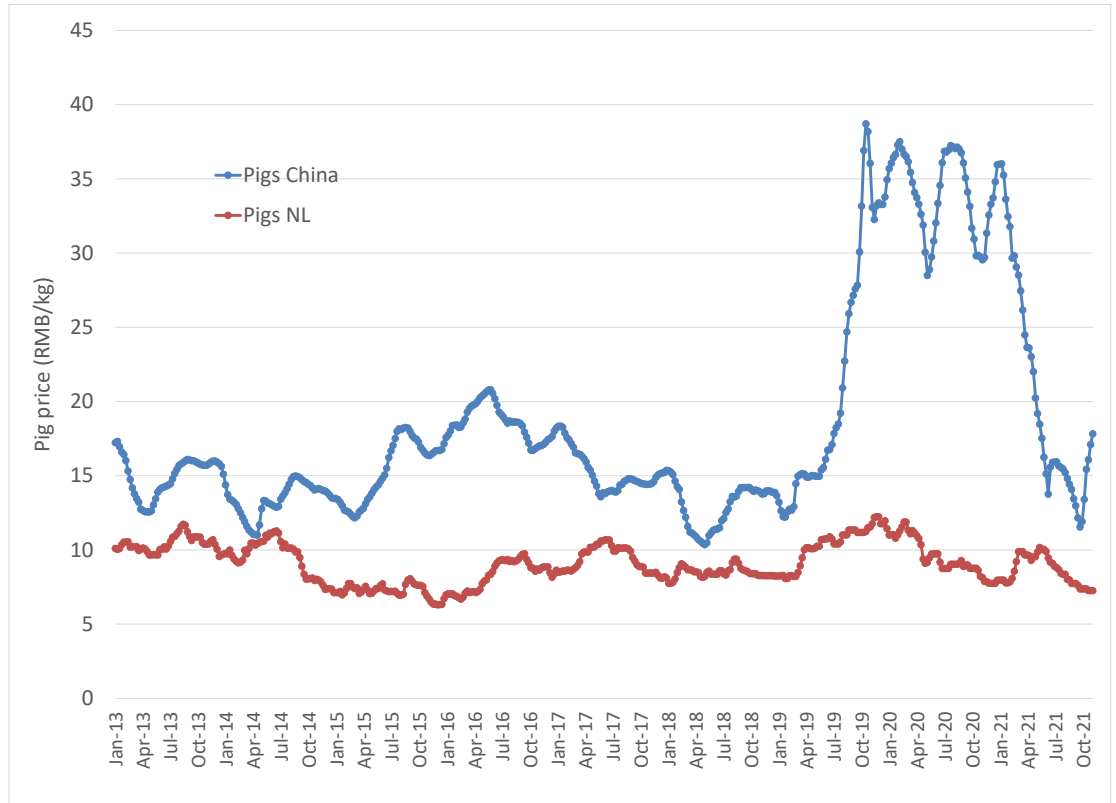
# Price level slaughter pigs

Market price for pigs fluctuates strongly

Price in China clearly higher than in Netherlands

Reflects differences in cost of production

Price in NL partly correlated to Chinese price



# Price level feed and pigs in China

	CNY/kg	EUR/kg	Price NL	factor CN/NL
Corn	2.90	0.380	0.287	132%
Soy bean meal	3.87	0.507	0.38	133%
Finisher compound feed	3.63	0.475	0.285	167%
Live pigs (kg live)	12.97	1.699	1.302	130%
Pork	22.76	2.981		

September 2021

Source: MARA, elaborated

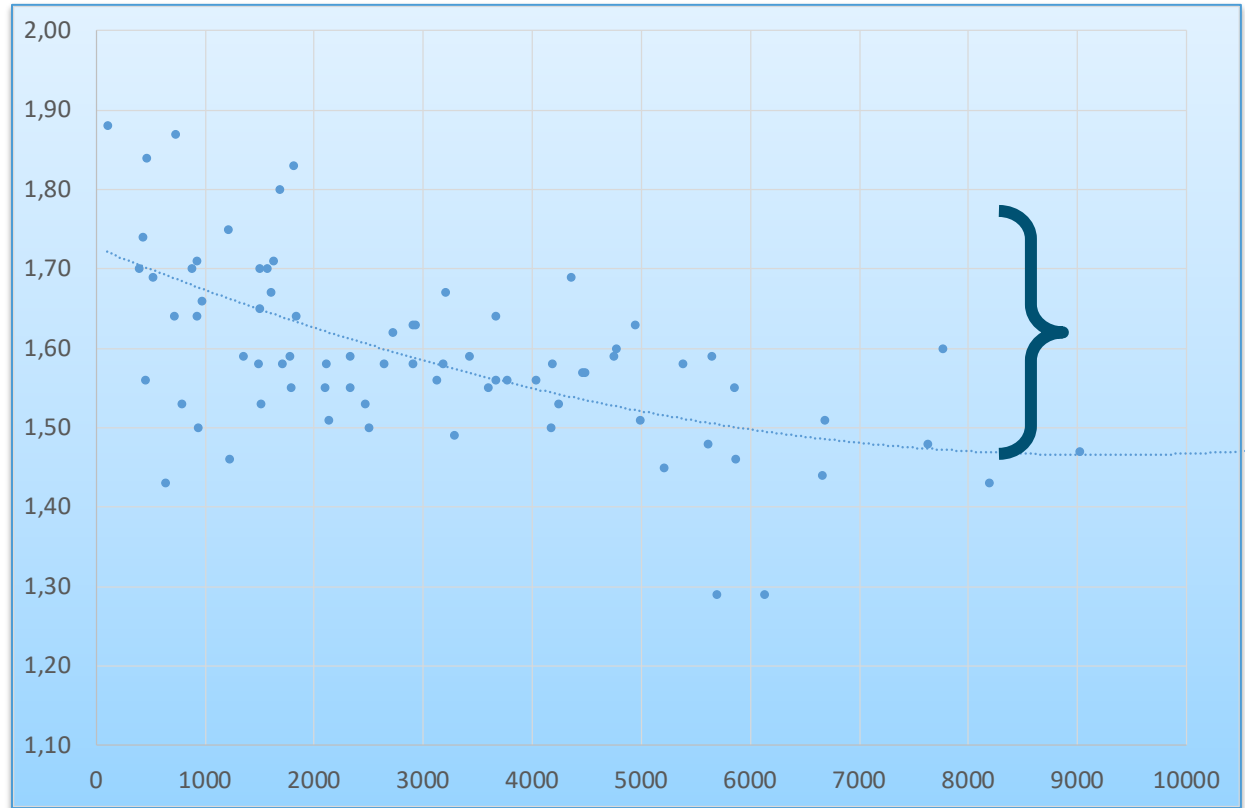
# Hog-Corn ratio

- Based on importance of Corn as cost factor
- Ratio 6:1 break-even
- Price levels September 2021: 12.97 (hog) – 2.90 (corn)
  - Ratio amounts to ~4.5
- Government alert: blue alert: 5.1-5.5, yellow: 4.5-5.1, red: <4.5
  - Red alert: gov't to buy meat and support market demand

# Large variation in cost of production among farms

Bandwidth (80% farms)  
amounts to €0.25/kg  
carcass weight

Total difference for a  
4,000 finisher farm  
amounts to 270,000 euro  
per year



Source: FADN, 2017, elaborated

# Benchmarking to improve economic benefit

- Earning money is main aim of a company
- Data are necessary for objective measuring
- Benchmarking = comparing to good reference
- Benchmarking leads to higher performance: insight
- Comparison: within farm, over time, among farms

# Some theory: Cost of production

**Cost of production** refers to the total cost incurred by a business to produce a specific quantity of a product or offer a service



# Some theory: Investment

- Investment is a one-time spending for long-term use, e.g. a building
- Costs of an investment are to be calculated based on depreciation and interest
- Depreciation: investment amount spread over lifespan:  $\text{cost}/\text{year}$
- Interest: calculated costs of borrowed capital

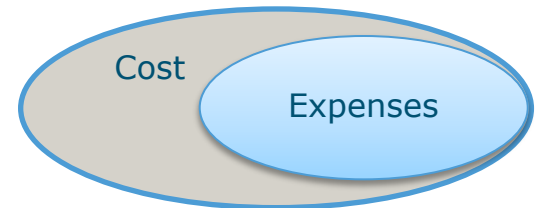
# Some theory: Fixed and variable costs

- Variable costs relate to production volume, e.g. feed
- Fixed cost continue even if there is no production. E.g. empty barn due to disease. Still payback of loans, and family income



# Some theory: Costs and expenses

- Costs are calculated for all inputs for production, e.g. feed, housing, labour, transport
- Expenses are costs, but some costs are calculated costs
- Feed purchase is an expense (need to pay the bill)
- Farmers' own labour is no expense, still a cost



# Some theory: Margin over feed costs

- Margin over feed costs:
  - margin left for labour, depreciation, energy, vet, transport etc.
- Revenues minus direct costs:
  - margin left for fixed costs labour, depreciation, payback loans
- Industrial benchmarks: ROI, EBITDA etc.

# Poll

What is the pork cycle?

- a. A pigs' living area in a pen
- b. Circular production: feed – pigs – manure – feed etc.
- c. Pig price influence production volume and vice versa
- d. Life cycle: piglet to sow, producing piglets etc.

# Pork cycle

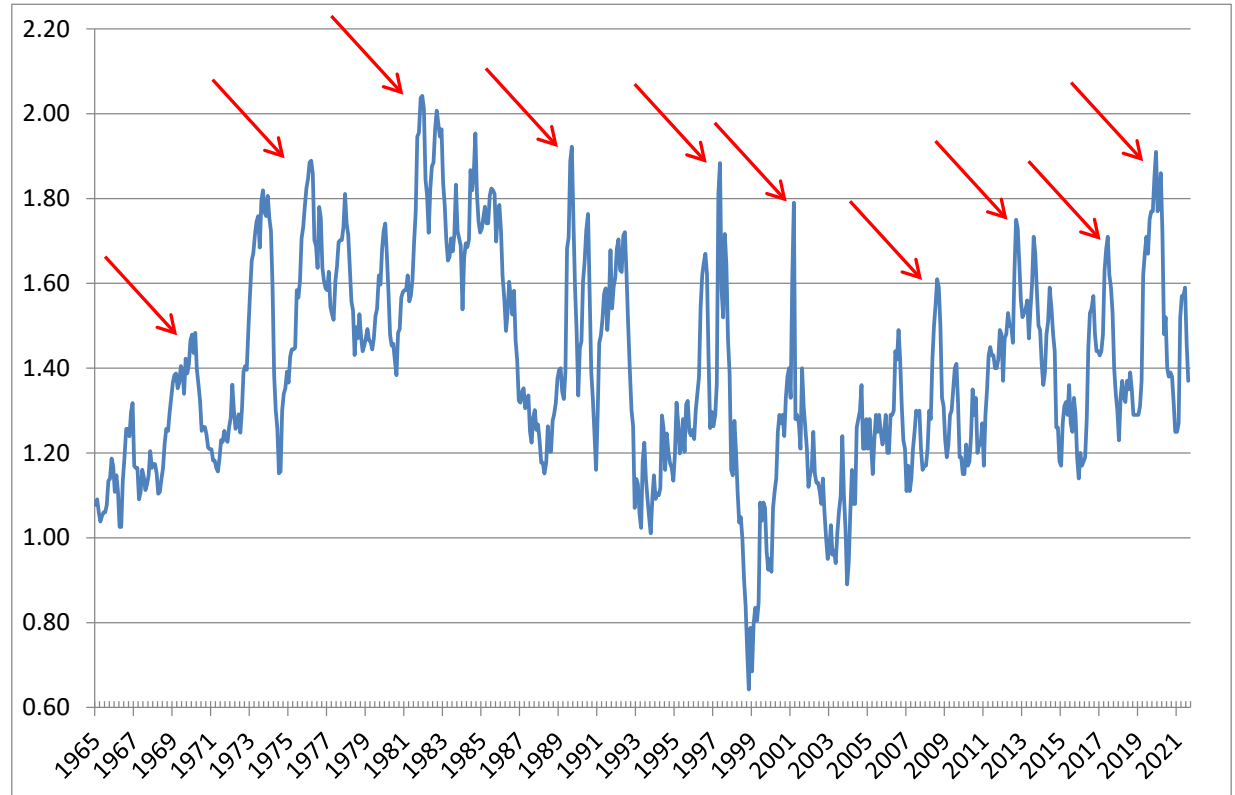
First described: Ezekiel (1925); Hanau (1927)

Market price follows fluctuations in supply and demand AND supply follows market price

Reaction time: 4-6 years

Disruptions: ASF, feed price etc.

Further reading: Peels et al., in press



Pig price in the Netherlands (€/kg carcass weight)

# Economy of scale

Cost and price advantage with larger scale of production

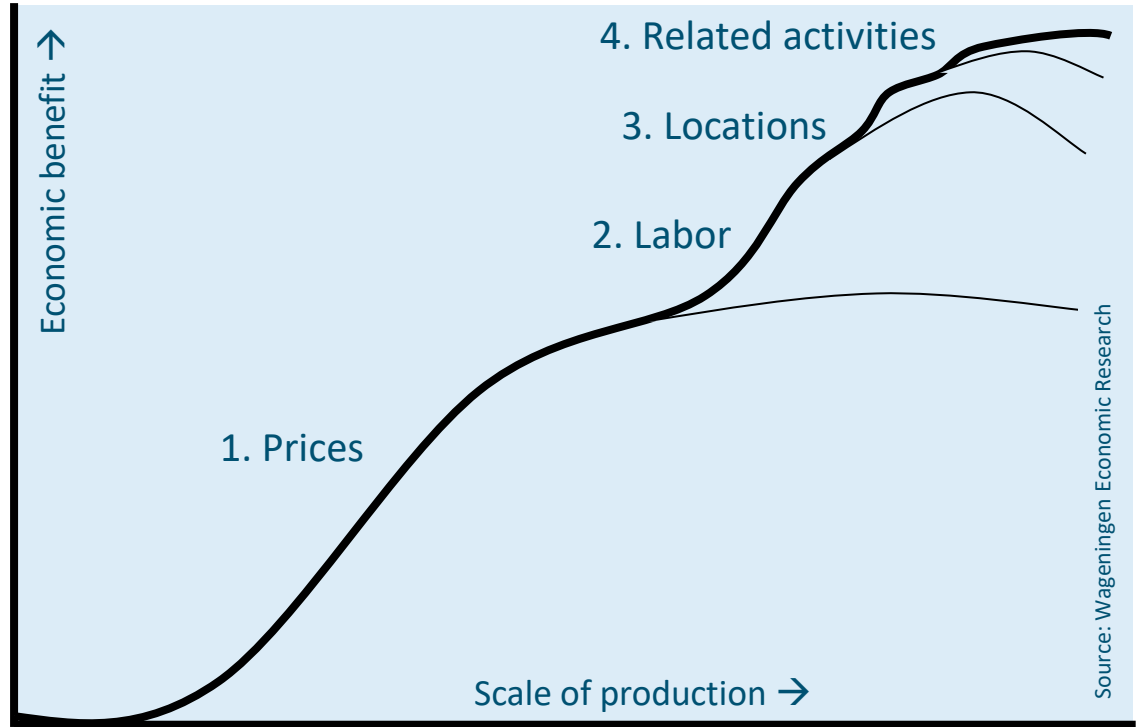
E.g., Feed in bags -> bulk

Diminishing effect

Requires increasing skills of entrepreneurship

May turn into disadvantage

Large-scale industrial approach not shown; additional benefit expected



Study clubs

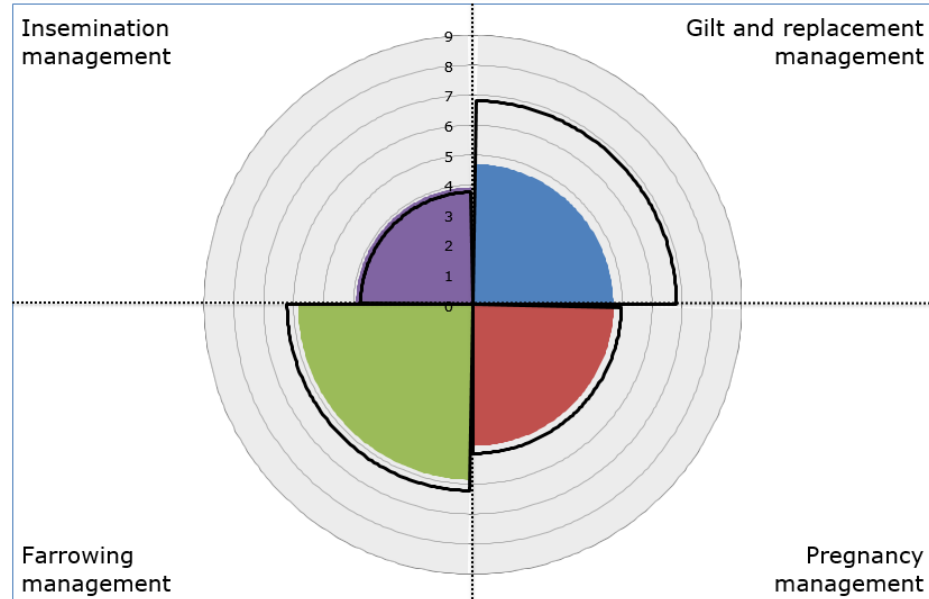
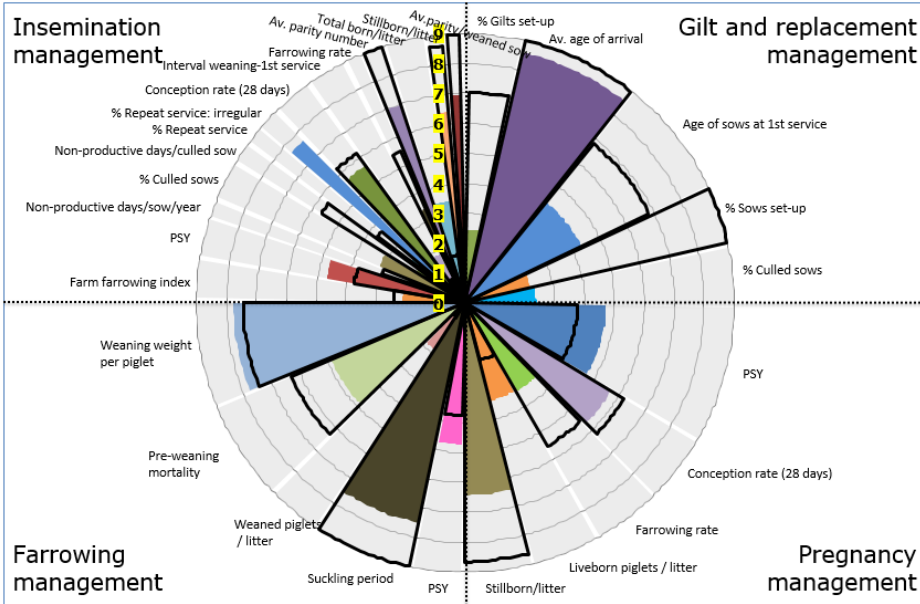
Information is  
value

Information  
*sharing* is more  
valuable

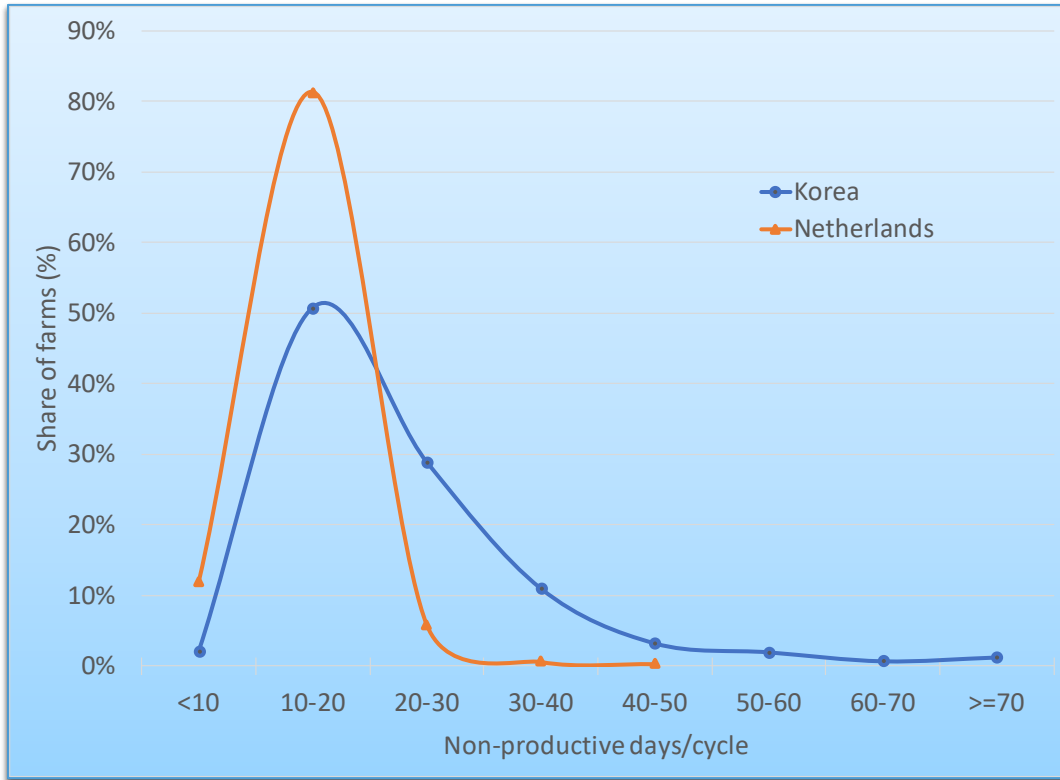




# Benchmark tool developed by WUR & NIAS



# Example: Non-productive days per sow



Korea	Netherlands
23.1	13.3

A photograph of several pink pigs in a farm enclosure. The pigs are lying on a metal grate floor. The enclosure has wooden walls and a vertical wooden post. A blue semi-transparent box is overlaid on the image, containing text.

## Wrap-up

- Feed has large share in pig production costs in China
- Leverage effect of prices and productivity
- Feed price expected to further increase in near future
- Be prepared for the pork cycle: margins will ever fluctuate
- Benchmarking gives insight into improving profits

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