Exploring variation in saleable meat yield

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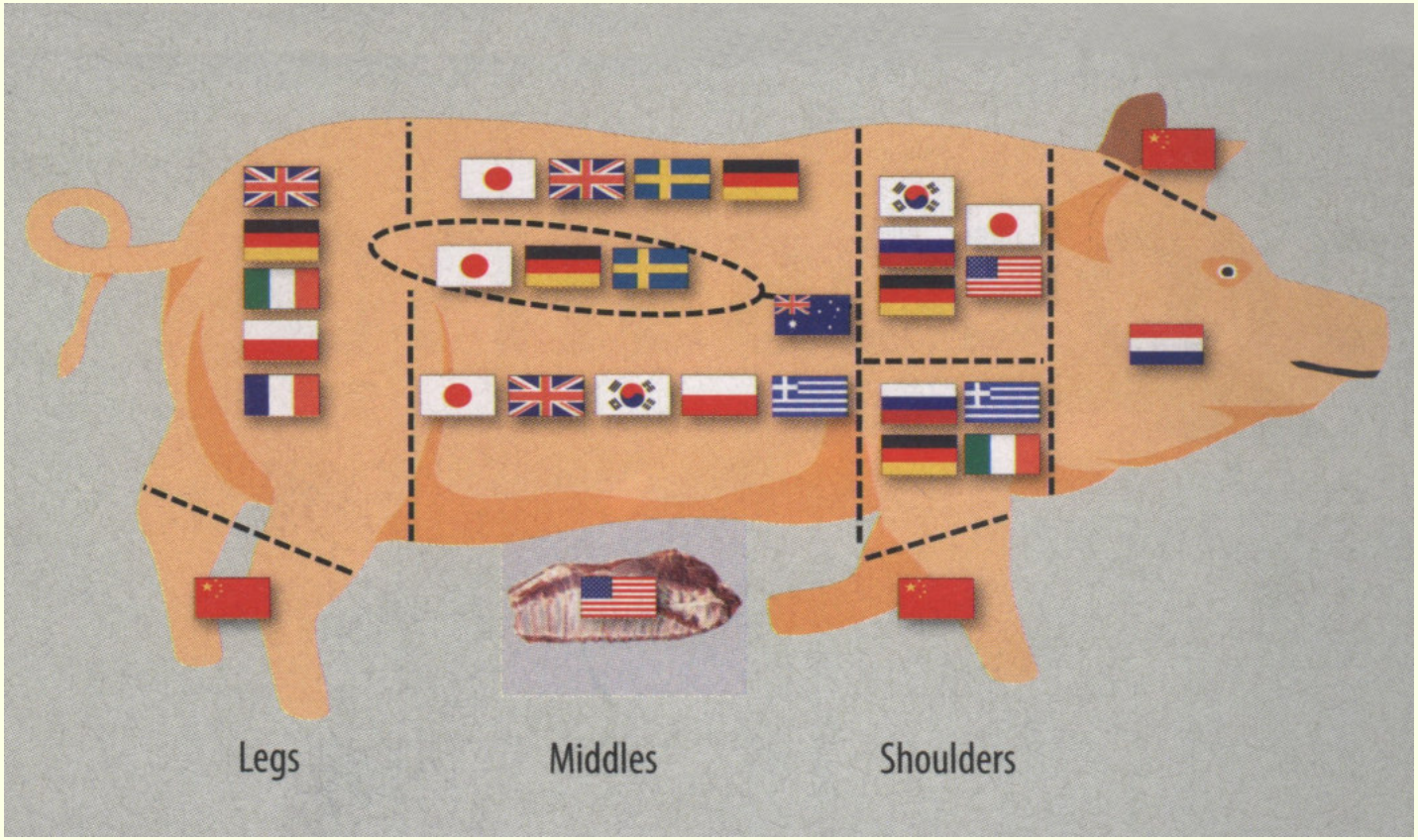
Description of carcase quality

- Lean meat percentage
  - Weight of lean meat expressed as % of carcase weight
  - Prediction often based on fat depth, (muscle depth) and carcase weight
- Saleable meat yield
  - Yield of bone-in or boneless cuts
  - More difficult to specify since it depends on market specifications
  - Farm-gate versus Wholesale versus Retail cuts

Market value of a pig carcase

- Overall lean meat content is still important
  - Consumers prefer lean cuts
- Higher weight in more valuable cuts is desired
  - For a given carcase weight and P2 fat depth (independent of lean meat content)
- (Extra) economic return depends on market specifications

Yield & value of saleable meat differs between markets



Distribution of meat from Danish abattoir in Horsens,

(Pig Progress No 2, 2008)

Exploring saleable meat yield

- Data from French National Pig Breeding Program
- Recorded at 3 central test stations from 1999 until 2007
- Four breeds:
  - French Landrace – dam line (LF)
  - Large White – dam line (LWF)
  - Large White – sire line (LWM)
  - Pietrain – sire line (PP)

Results were presented at AGBU pig genetics workshop (Mérour and Hermesch, 2008) and are available at:

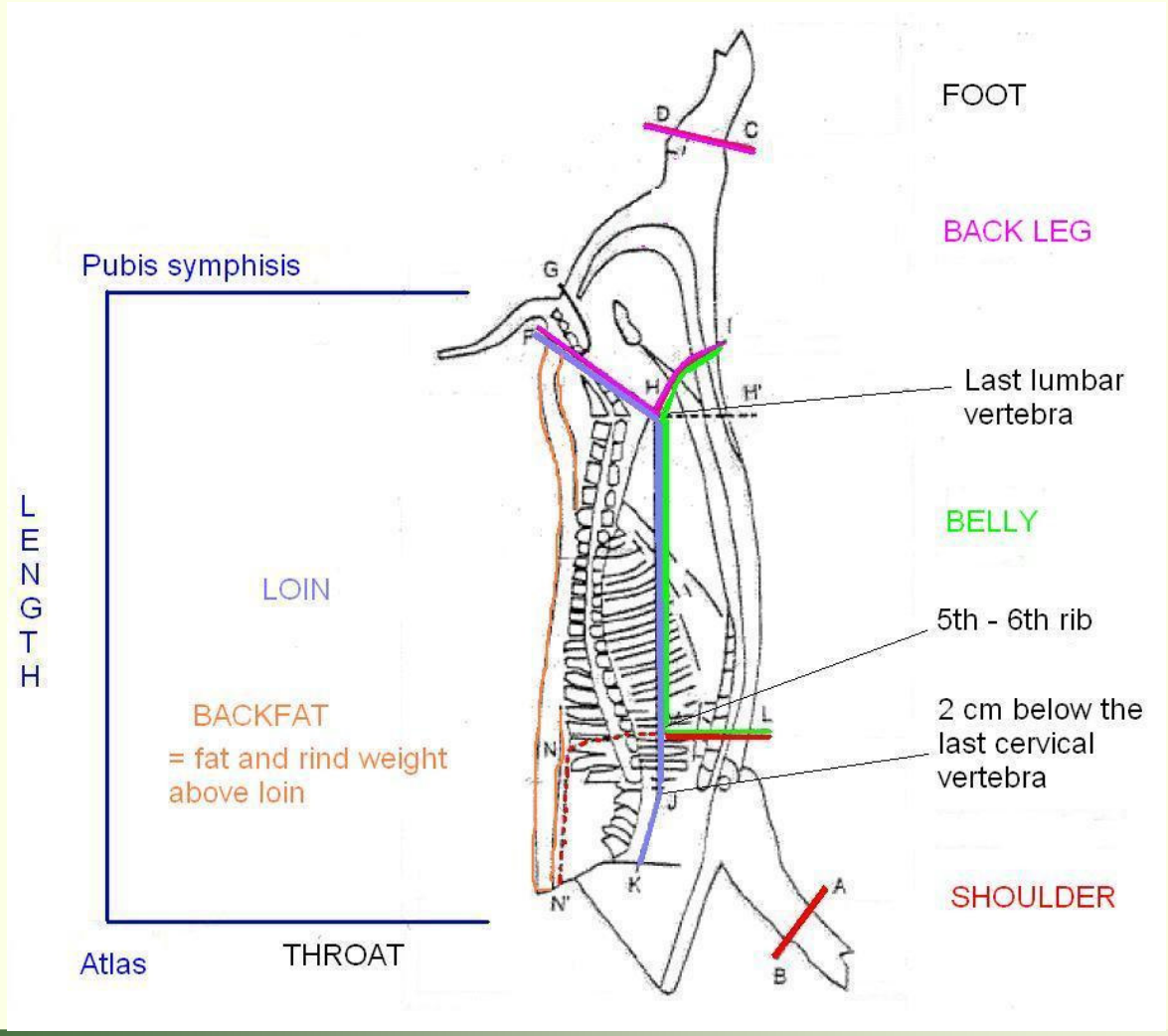
http://agbu.une.edu.au/pigs/pigblup/work.php

Data description

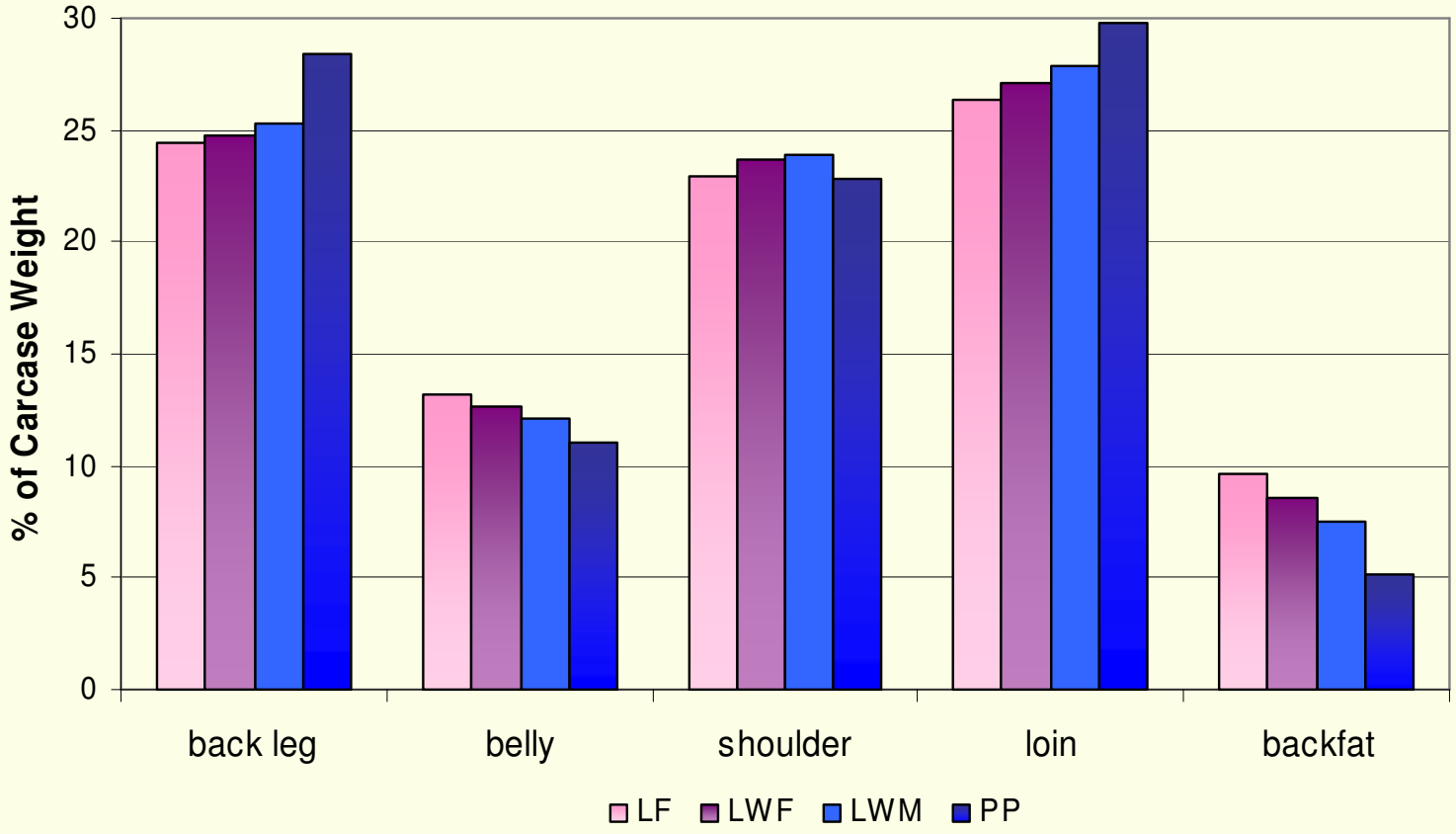
	LF	LWF	LWM	PP
N	7 386	11 803	2 714	2 400
Sex	Castrate			Female

- Carcases divided into
  - 4 primal cuts : loin, back leg (ham), shoulder, belly
  - + weight of the subcutaneous fat above the loin (backfat)

Carcase dissection



Between-breed variability



All differences between breeds were significant ($p<0.001$)

Between-breed variability

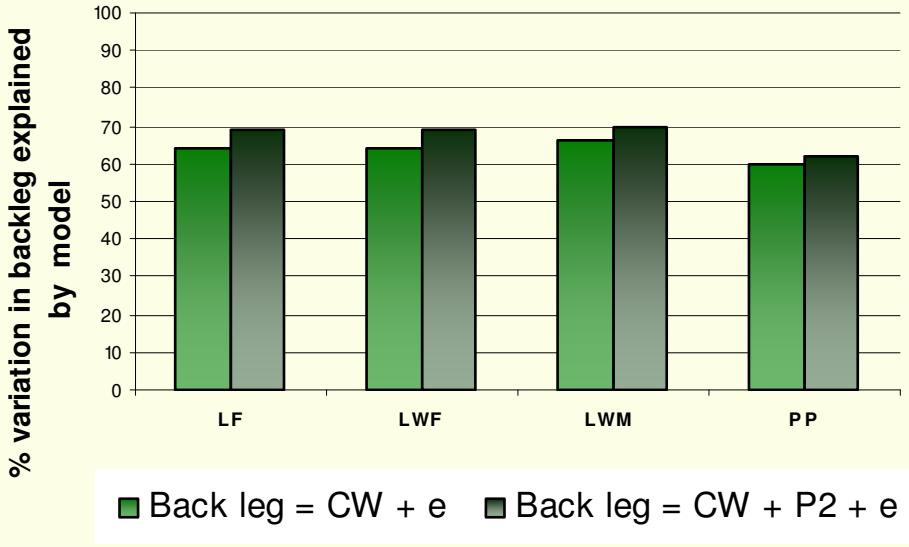
Landrace		Pietrain
		
102.3	Length (cm)	94.2
52.4	Lean meat percentage	64.6
18.8	Back leg (kg/pig)	21.9
20.3	Loin (kg/pig)	23.0
10.1	Belly (kg/pig)	8.5

Carcase weight is major influence on primal cuts

- How much variation in primal cuts is explained by carcase weight and fat depth?
- What is the change in weights of primal cuts with increasing carcase weight?
- Does the relationship between weight and primal cut weights differ between breeds?

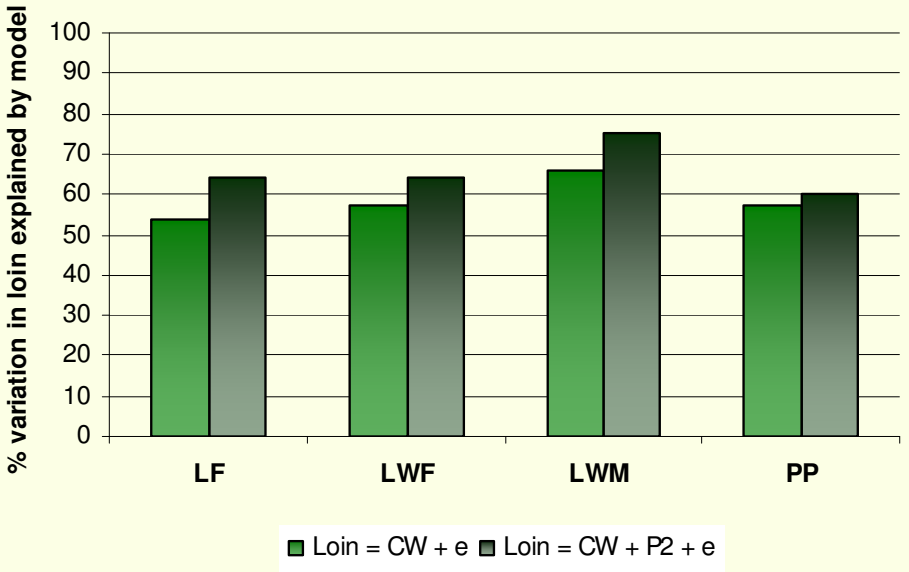
The effect of carcase weight on back leg

- Carcase weight accounted for 60 to 66 % of variation
- Further 2 to 5 % of variation was explained by fat depth
- Minimal extra variation was explained by fitting muscle depth or carcase length
  - On the phenotypic level



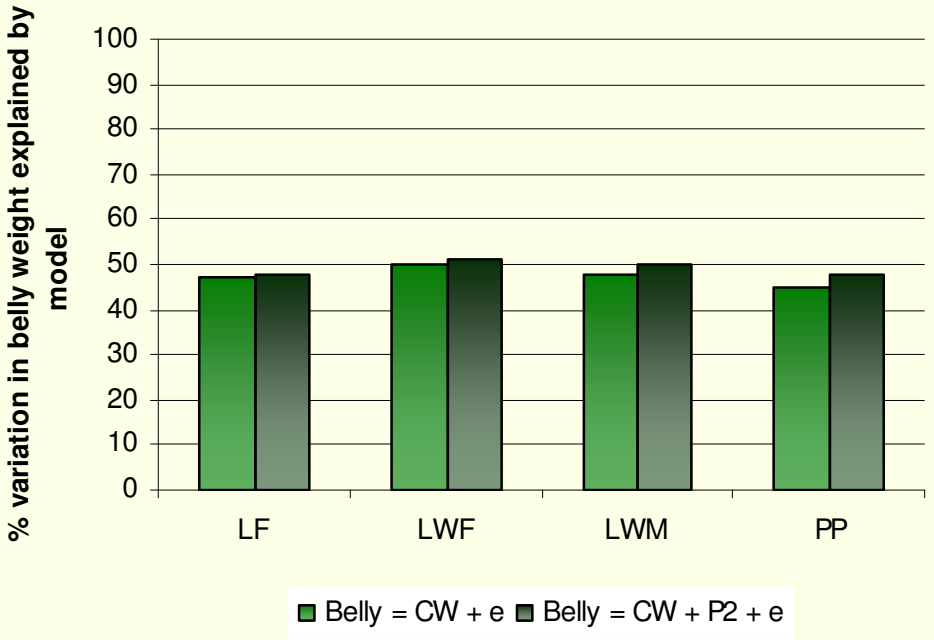
The effect of carcase weight on loin weight

- Carcase weight accounted for 54 to 66 % of variation
  - Breed differences
- Further 3 to 10 % of variation was explained by fat depth
  - Breed differences
- Muscle depth and carcase length explained some additional variation
  - On the phenotypic level

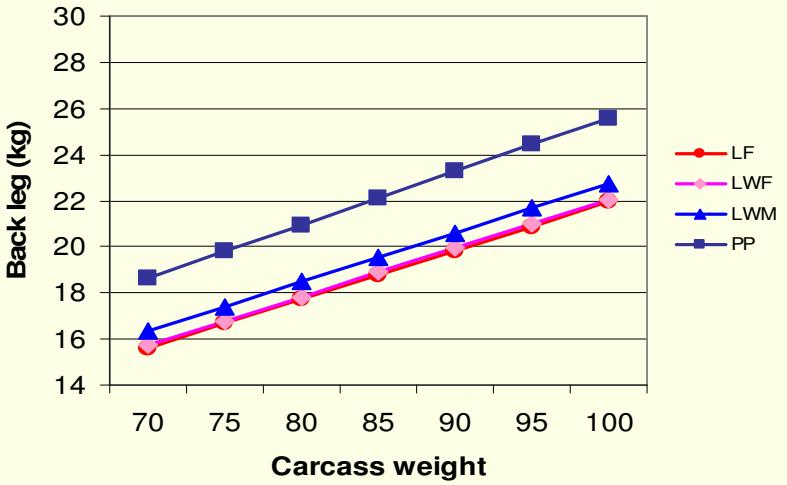


The effect of carcase weight on belly

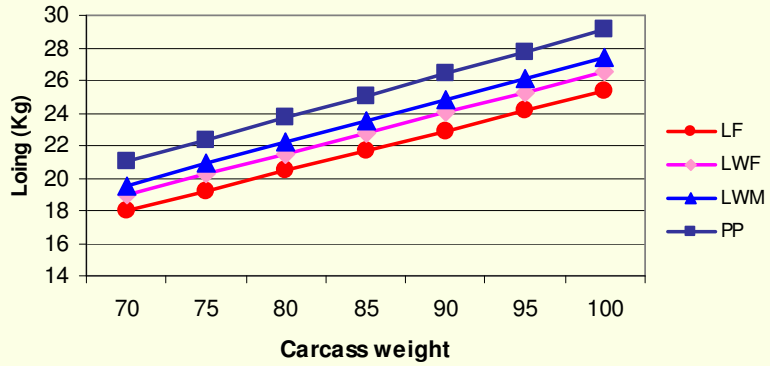
- Carcase weight accounted for up to 50 % of variation
- Fat depth explained further 1 to 2 % of variation
- No extra variation was explained by fitting muscle depth or carcase length
  - On the phenotypic level



Influence of carcase weight on primal cuts

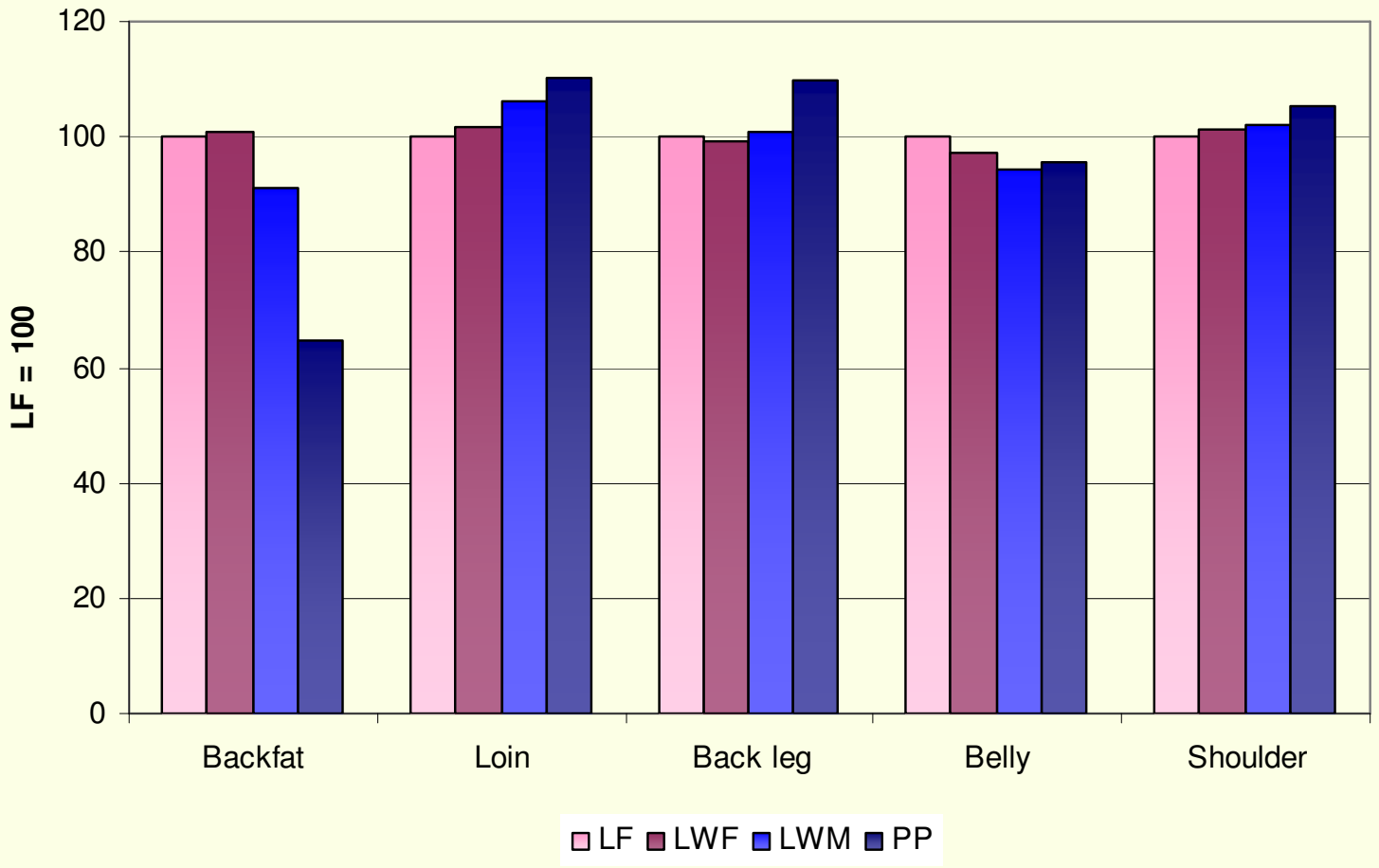


- Increase in back leg per kg carcase weight
  - LF, LWF, LWM: 0.21
  - PP: 0.23



- Increase in loin per kg carcase weight
  - LF, LWF: 0.25
  - LWM: 0.26
  - PP: 0.27

Breed differences for the increase in primal cuts with higher carcase weight



Breed differences reflect selection emphasis

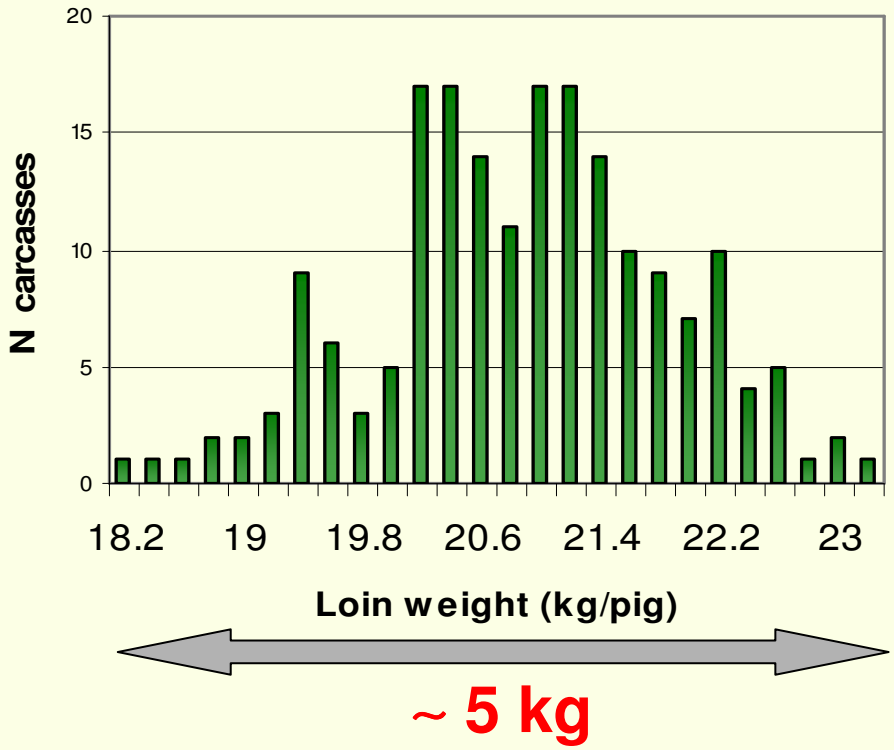
- Largest differences for fat weight
  - Selection for lean meat percentage mainly based on fat depth measurement
- Increase in loin weight with heavier carcases was larger in sire lines (LWM and PP)
  - Muscle depth has been recorded on farm since 1999 in France
- There were minimal differences in primal cut gain with higher carcase weight for back leg, belly and shoulder
  - Pietrain have larger back leg but other breeds did not differ

Additional economic return from saleable meat yield?

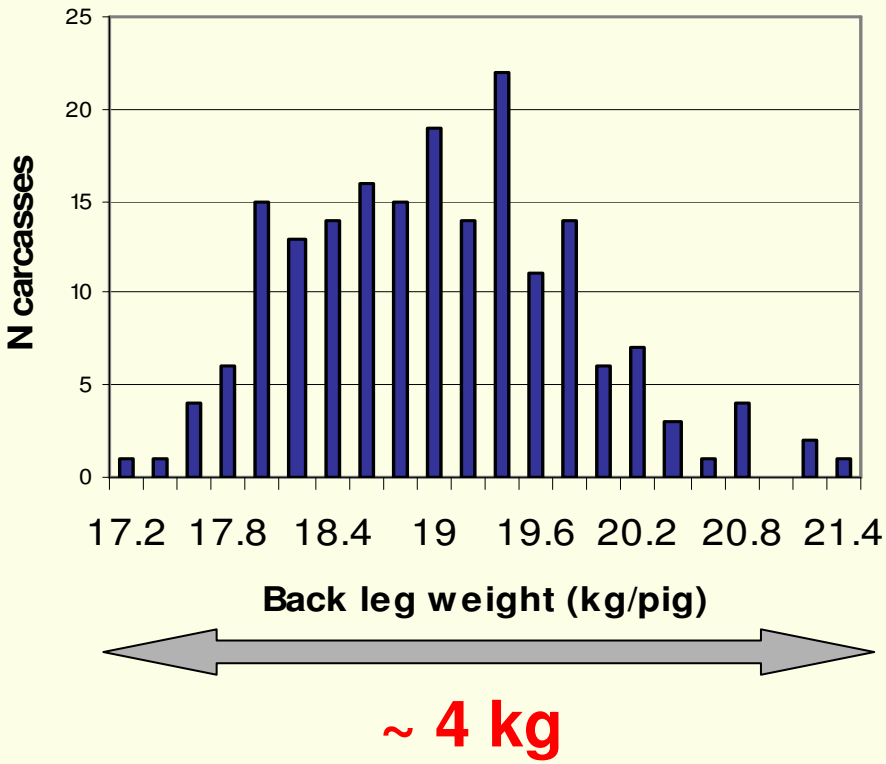
- Australian payment system based on carcase weight and P2 fat depth
- For carcases with the same carcase weight and fat depth:
  - Variation in primal cuts?
  - Variation in return?
    - Based on farm-gate prices versus wholesale/retail prices

Variability for constant weight and fatness

- Only LWF animals (189 pigs) with limited variation in
  - weight [81 - 82 kg]
  - fat depth [14.5 -16.5 mm]



~ 5 kg



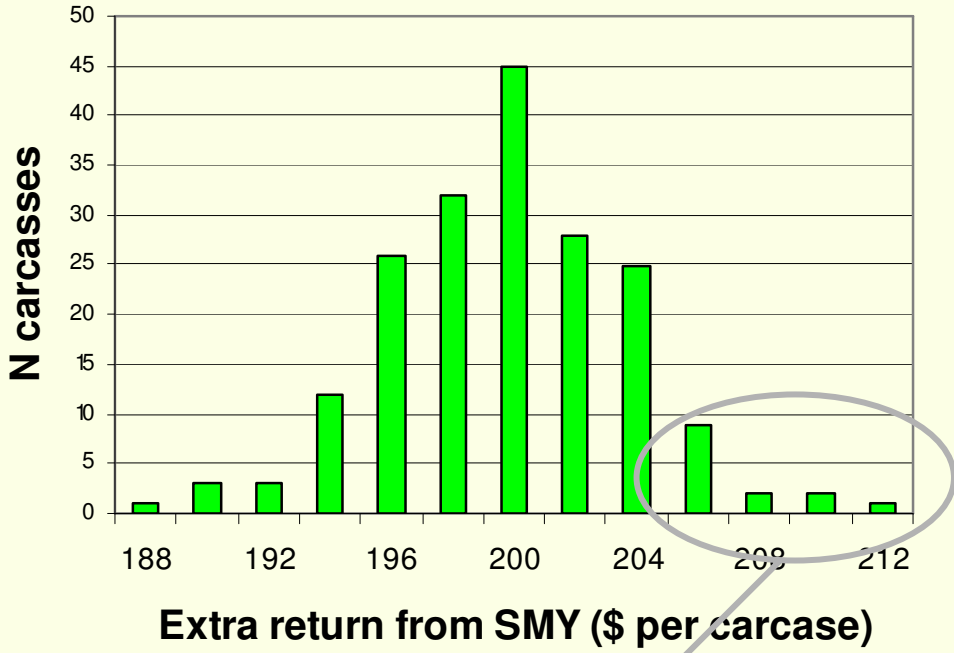
~ 4 kg

Variation in extra return from saleable meat yield

Farm gate prices ($/kg)

Loin	Back leg
4.20	2.45
Belly	Shoulder
4.20	1.40

(Green, 2008)



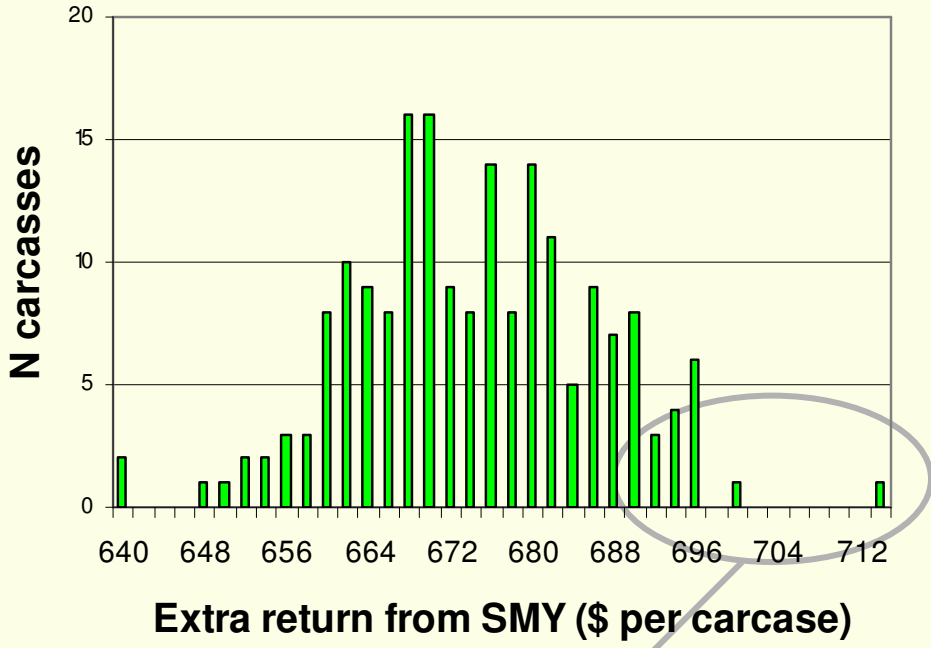
Top 10% = + 6.7 $ per carcase in comparison to an average carcase

Variation in extra return from saleable meat yield

Wholesale/Retail prices ($/kg)

Loin	Ham
13.99	7.99
Belly	Shoulder
8.99	7.99

(Green, 2008)



Top 10% = + 20.4 $ per carcase in comparison to an average carcase

Take home messages

- Lean meat percentage and saleable meat yield determine market value of a carcase
- Breed differences reflected selection emphasis
  - Biggest differences for fat weight and increase in fat weight with higher carcase weight
- Variation in saleable meat yield can be used to capture extra returns per carcase
  - Example: extra 6.7 $ and 20.4 $ for top 10% versus average pigs using farm-gate and wholesale/retail prices

Acknowledgements

- Special thanks go to staff at test stations of Argentré, Le Rheu and Mauron in France for diligent data recording

- Isabelle Mérour is on sabbatical leave from IFIP to AGBU from September 2008 until March 2009