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# Changes in Technology Use in the Beef Industry

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# Changes in Technology Use in the Beef Industry

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## Motivation

Technology used to enhance beef production

- **Hormone implants**
- **Beta-agonists**

Trade disruptions due to production practices

- Consumer driven or protectionist policies?
- Trade agreements: **TPP, TTIP**

Economic benefits of technology

improvements in the US cattle industry

- Most studies fail to fully characterize all stages of the cattle industry

## Objective

To build a detailed theoretical model to describe the US beef industry to analyze welfare changes due to technology use

## Assumptions – Beta-agonist ban

Beta-agonist used as a substitute for feed

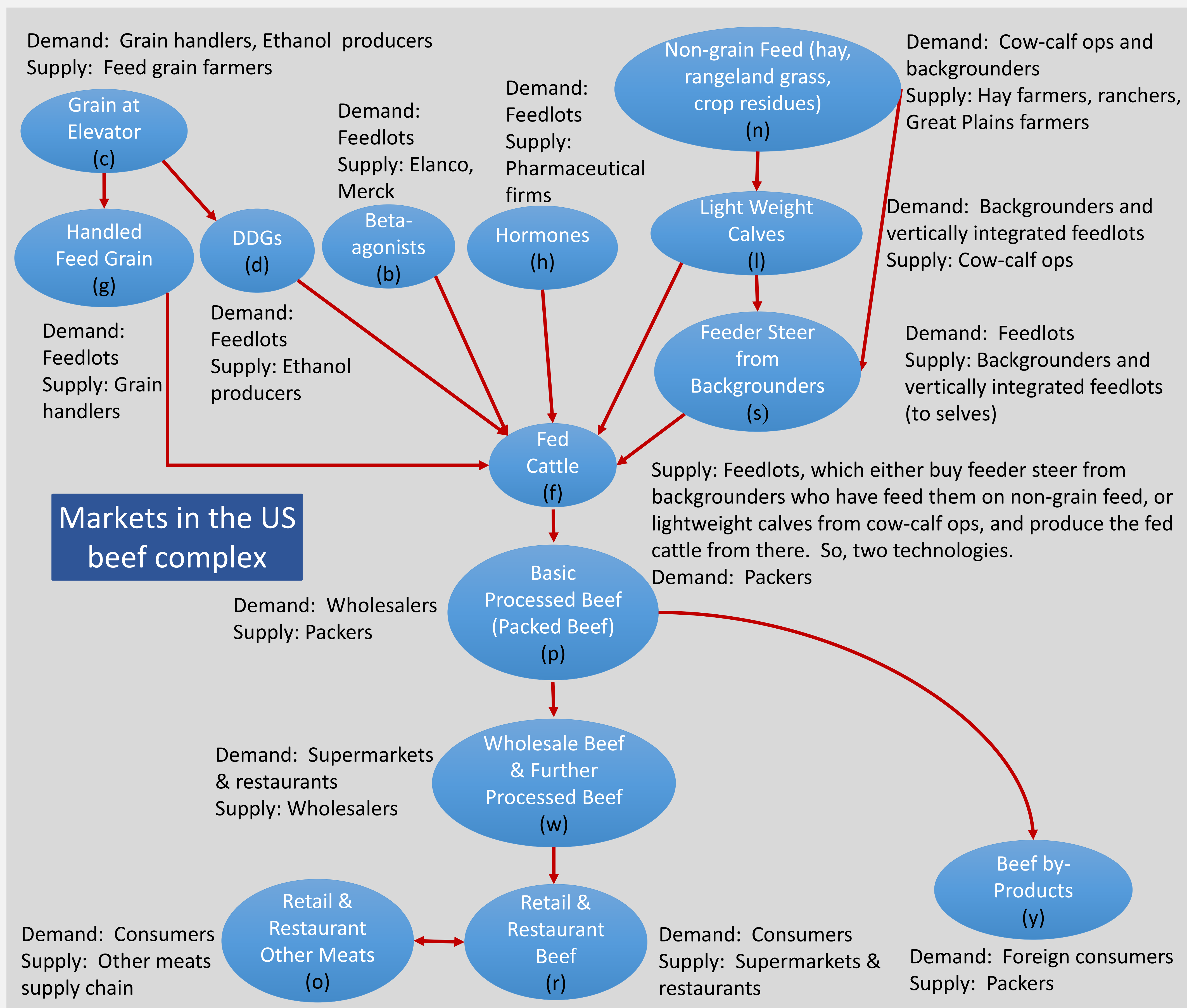
- Handled feed grain and DDGs:  $D \rightarrow, P \uparrow$ 
  - Feed grain at elevator:  $P \uparrow$
- Fed cattle:  $S \leftarrow, D \rightarrow, P \uparrow$
- Packed beef:  $S \leftarrow, D \rightarrow, P \uparrow, Q_s \downarrow$
- Wholesale & retail beef:  $S \leftarrow, D \rightarrow, P \uparrow, Q_s \downarrow$

## Model

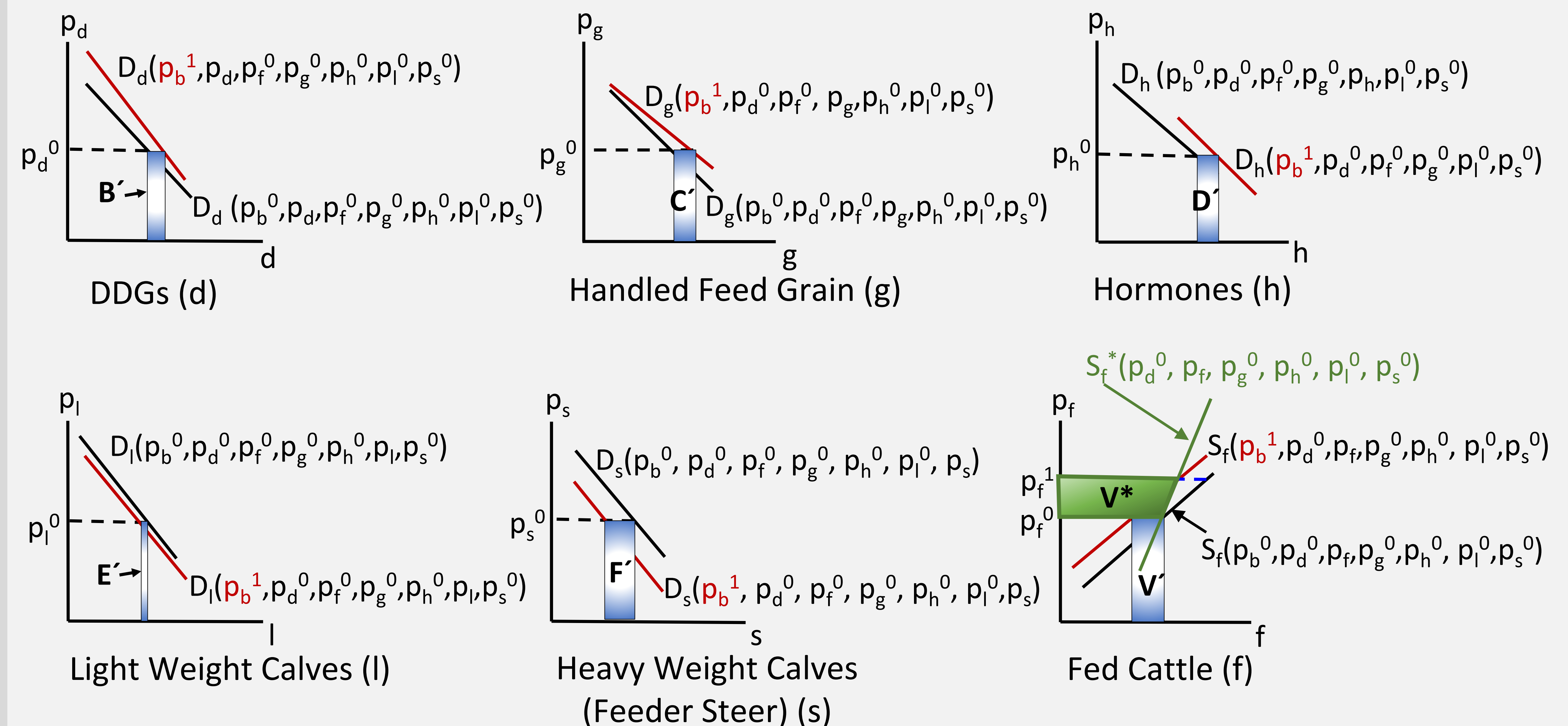
New measure of the change in producer welfare

- Does not generally require estimation of the supply curve **beyond the range of data**
- Increased statistical confidence on the estimation of the change in producer welfare

**Key is to use data from input markets in the measurement of producer welfare change**



## Effect of Beta-agonist ban ( $p_b^1 = \infty$ ) on feedlot welfare, measured using new method



## To analyze ban of hormones and Beta-agonists:

1. Calculate and compare the cost of US beef production
2. Determine how the supply curve and input demand curves would shift with ban
3. Quantify consumer and producer welfare changes

