

The Government's Role in Stabilizing Beef Supply when BSE Strikes

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Introduction

- **Bovine Spongiform Encephalopathy (BSE)**
 - **Affecting the central nervous system of adult cattle**
 - **Causing a variant of Creutzfeldt-Jakob (vCJD) disease in human**
 - **No known cure for vCJD**



History of BSE

- **First identified in UK in 1986**
- **Consumption of meat and bone meal was identified as the cause of BSE epidemic in 1987**
- **In 1989, an official investigation concluded that BSE pose no threat to human**
- **In 1996, the relationship between BSE and vCJD was recognized**

BSE Crises and Intervention

- **In 1996, UK ordered the destruction of all cattle older than 30 months**
- **EU banned the use of MBM in 1997 and all cattle over 30 months old are tested**
- **Canada U.S. banned the use of MBM in 1997**
- **From 1996 to 2001, UK spent more than £2 billion on OTM**

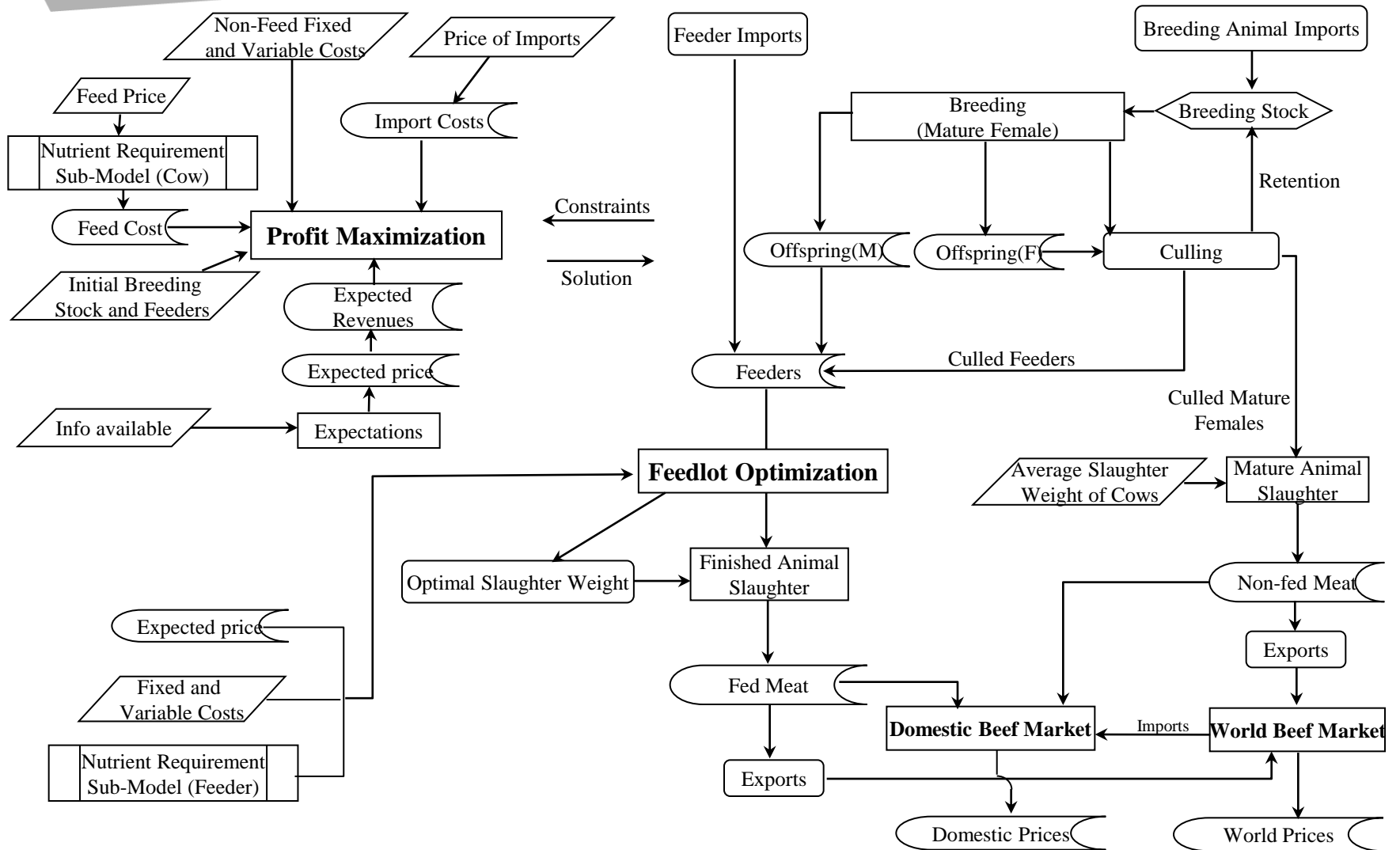


Current Situation

- **Large scale outbreak is no longer likely**
- **Sporadic occurrences**
- **Dramatic economic consequences**
 - **2003 Canadian BSE crisis was costing \$25 million per day**
 - **Recent discovery of one BSE case caused the major beef export market loss**

Sources of Economic Impact

- **Loss of export markets**
- **Temporary or permanent declining of beef demand**
- **Instability in beef production**
 - **Increasing adjustment cost**
 - **causing inefficiency in feeding and slaughtering facilities**
- **Government's role in providing stability?**





Model Specification—Breeding

- **Population dynamics defined on annual intervals**
- **Breeding stocks differentiated by age**
 - **9 years of productive life**
 - **Reproduction begin in the third year**
- **Optimal production plans**
 - **Due usages of heifers—feeder and breeding**
 - **Equal returns from alternative usages**
- **Increasing marginal adjustment cost**

Model Specification—feeding

- **Feeders go through backgrounding and a fixed ration feeding program**
- **Growth and body composition of feeders predicted using Nutrient Requirements**
- **Quality and yield grade predicted to fit the grid marketing system**
- **Linear search to determine the optimal days on feed**

Model Specification—Market Structure

- **Single-equation CES domestic demand for both fed beef and cow beef**
- **Four beef export markets—Canada, Mexico, South Korea, and Japan**
- **Three foreign beef suppliers—Australia, Canada, and New Zealand**
- **Feeder and fed cattle import from Canada and Mexico**
- **Breeding cow export to Mexico**

BSE Outbreak Scenarios

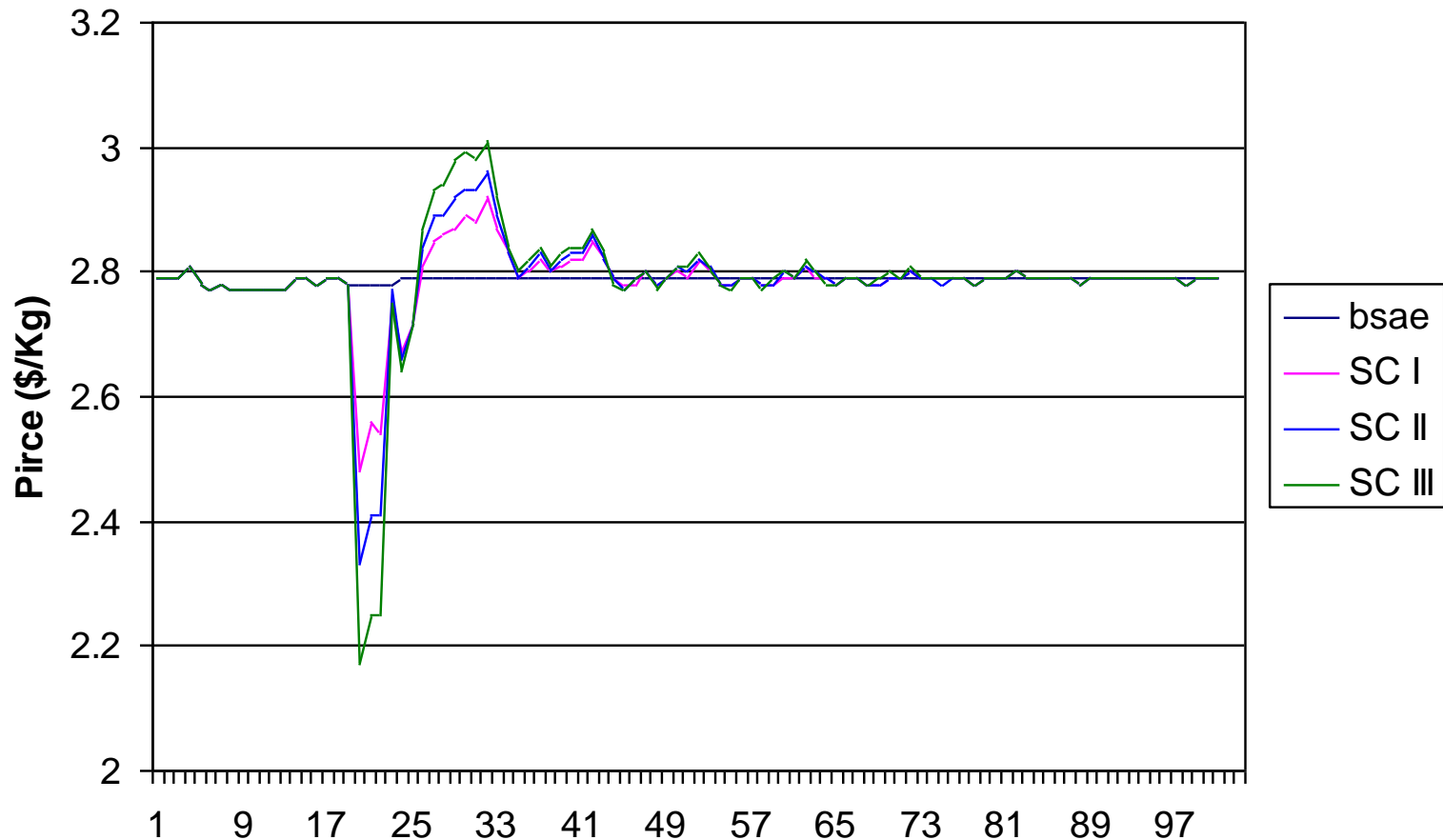
- **Outbreak results in loss of all beef and live cattle exports for 3 years**
- **Scenario I: no domestic demand loss**
- **Scenario II: 5% proportional decrease in domestic demand**
- **Scenario III: 10% proportional decrease in domestic demand**

Simulation Results—Welfare Loss

<i>Scenario</i>	<i>CS</i>	<i>PS</i>	Total
I (No Demand Reduction)	4397.736	-3000.44	1397.295
II (5% Demand Reduction)	-3167.94	-4780.84	-7948.78
III (10% Demand Reduction)	-10514.4	-6954.35	-17468.7



Simulation Result—Price Response



Scenarios—Government Intervention

- **Government implement a price support for feeder cattle for the period of export loss**
- **Comparison of scenario III and IV: 10% demand reduction without and with the price support**
- **Comparison of scenario V and VI: 10% temporary demand reduction and 2% permanent demand reduction without and with price support**

Simulation Results

<i>Scenario</i>	<i>CS</i>	<i>PS</i>	<i>Gov</i>	Total
III (10% Demand Reduction)	-10514.4	-6954.35	0	-17468.7
IV (III+Price Support)	-2411.11	54.32707	-13322.2	-15679.0
V (III+2% Permanent Demand Reduction)	-28069.5	-10271.1	0	-38340.6
VI (V+Price Support)	-19957.3	-3346.91	-13322.2	-36626.4



Conclusions

- **BSE outbreak can create long term fluctuations in beef production**
- **Government interventions can absorb the effect of temporary distortions**
 - **Stabilize beef supply**
 - **improve social welfare**
- **Stable beef production helps to maintain the peak efficiency of feeding and slaughtering facilities**



Conclusions

- **A variety of government transfers can be used to achieve the goal as long as the transfers are tied to the number of feeder produced**
- **Over-subsiding the beef cattle producer is counter productive**

