

# Economic Impact of Foreign Animal Diseases

Philip L. Paarlberg, Purdue University  
Ann Hillberg Seitzinger, USDA:APHIS:VS  
John G. Lee, Purdue University  
Kenneth H. Mathews, Jr, USDA:ERS

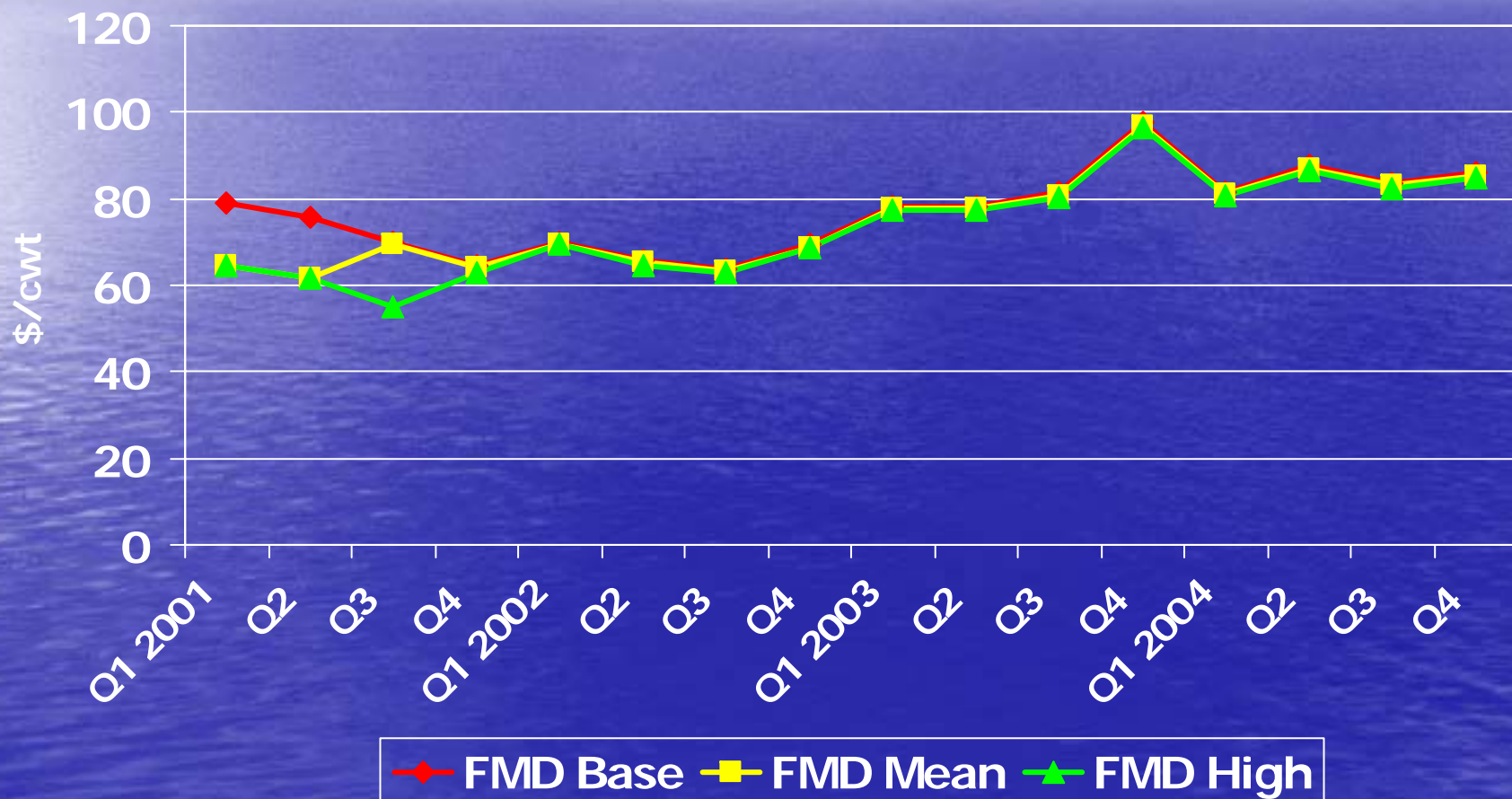
# Introduction

- Objective is to estimate the economic impacts of select livestock disease outbreaks and control strategies
- Method integrates animal disease simulation models with a quarterly agricultural sector model

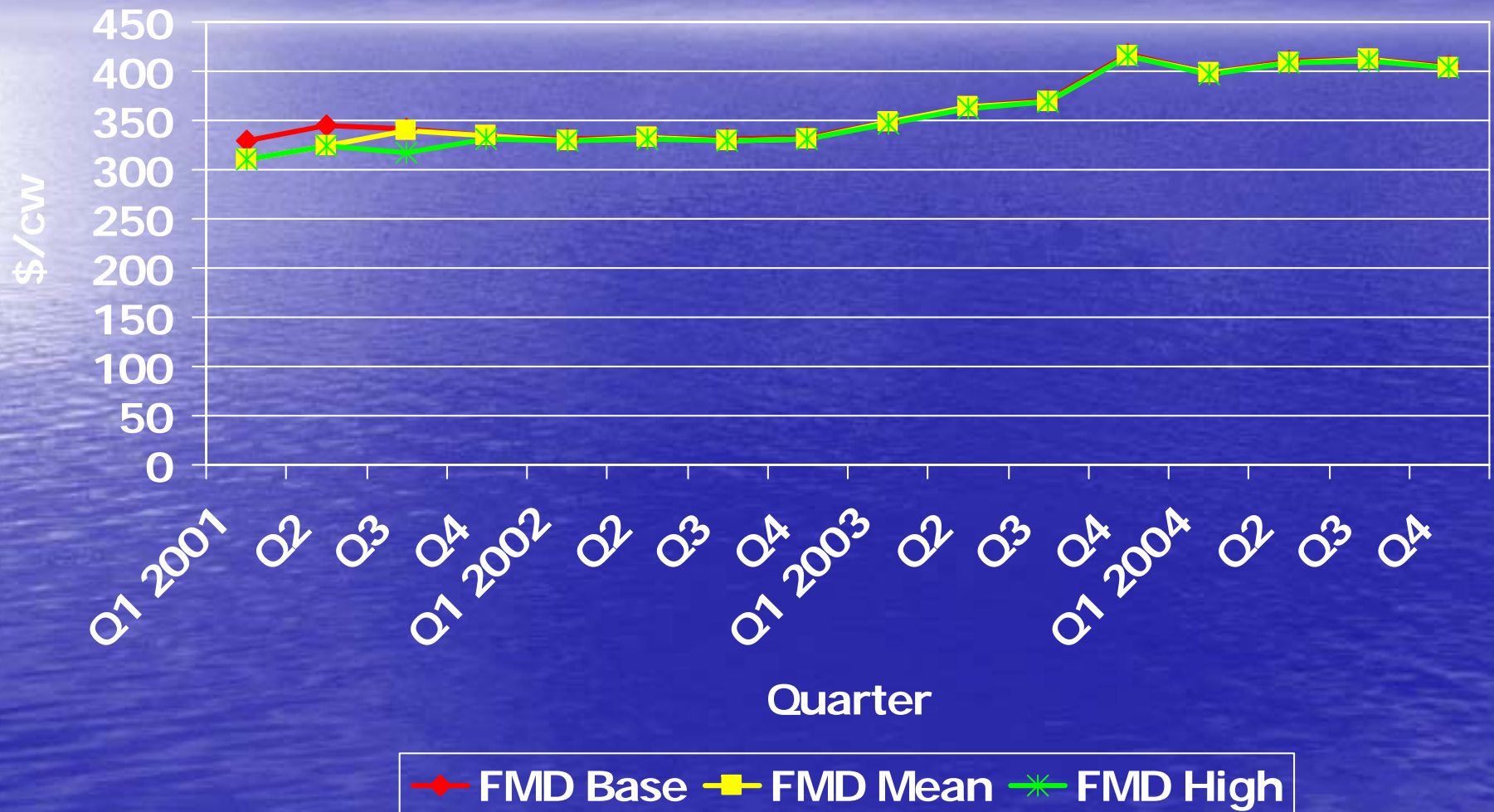
# Foot and Mouth Disease Scenario

- Outbreak initiated in four small Midwest swine operations
- Alternative control strategies
  - Destruction of direct contacts with 50% probability of successful traceback
  - Destruction of direct and indirect contacts with 50% probability of successful traceback
  - Ring destruction around infected operations of 1 km
- Export embargo for beef, pork, lamb meat, cattle, swine, lambs, and sheep extend 3 months beyond outbreak

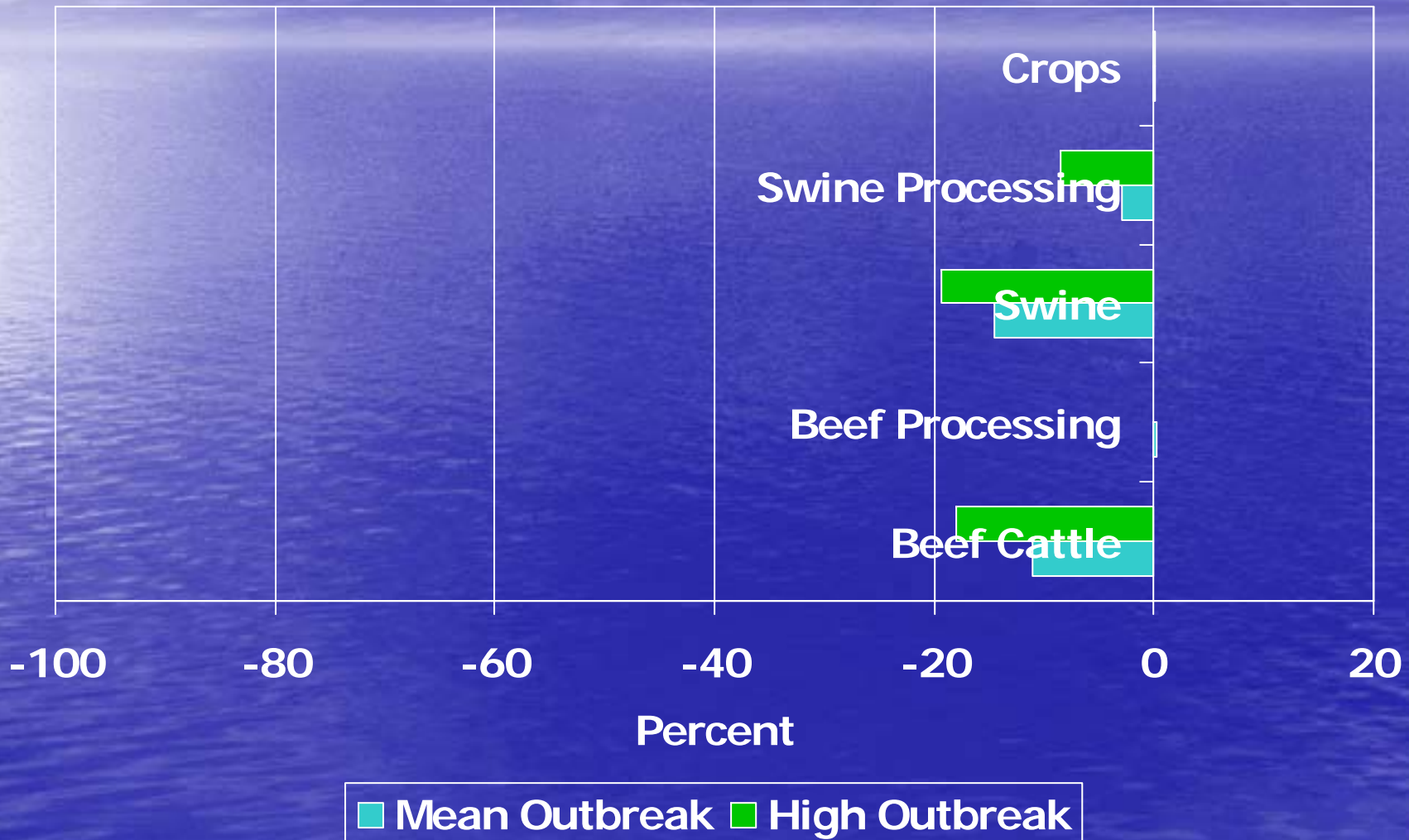
# Cattle Price



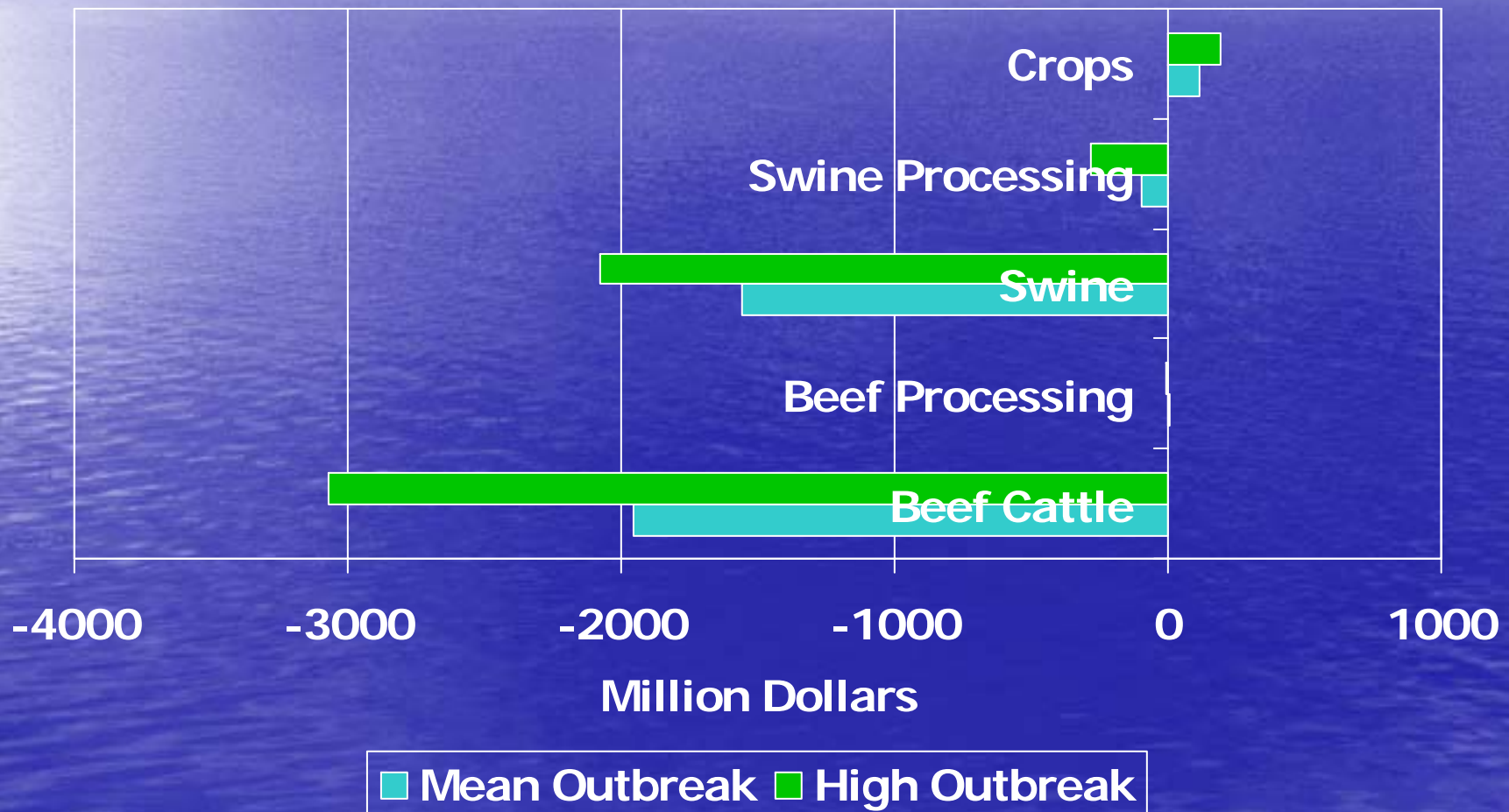
# Retail Beef Price



# FMD – Change in Net Returns to Capital and Management



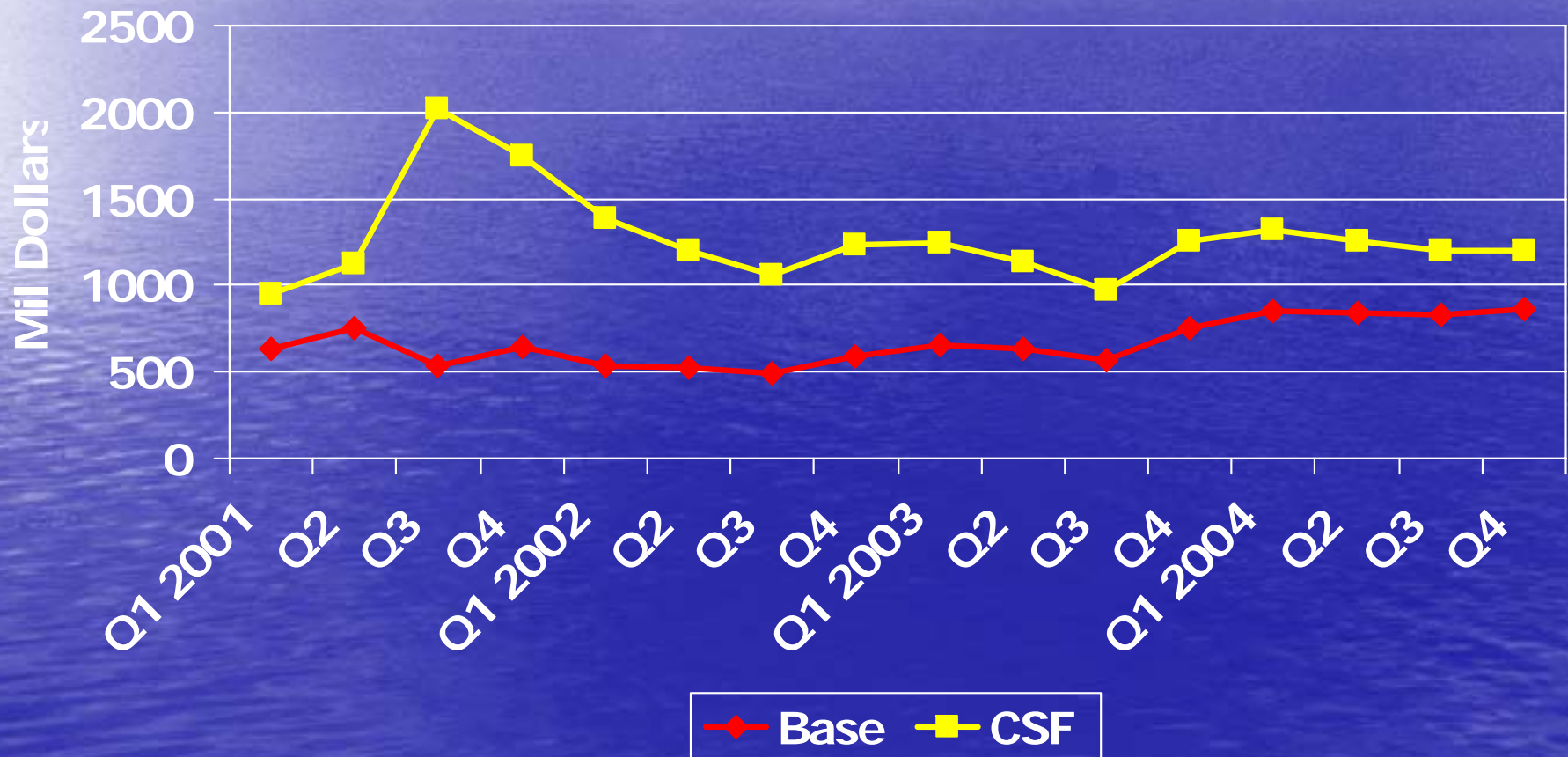
# FMD – Change in Net Returns to Capital and Management



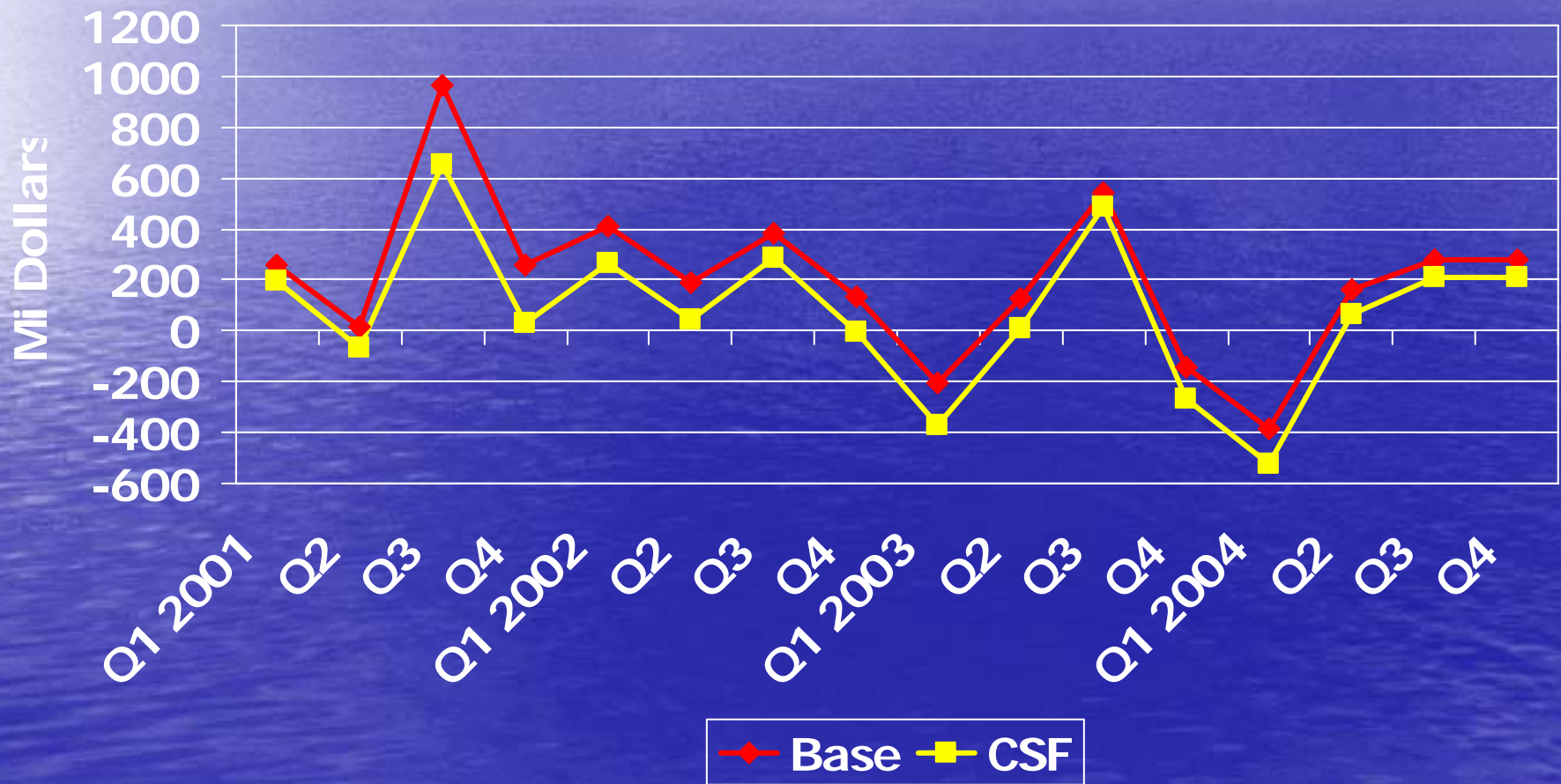
# Classical Swine Fever Scenario

- Patterned after Netherlands 1997 outbreak
- 11 million hogs destroyed
- 5 quarter outbreak
- Export embargo on all live hogs

# CSF - Net Returns to Capital and Management for Hogs



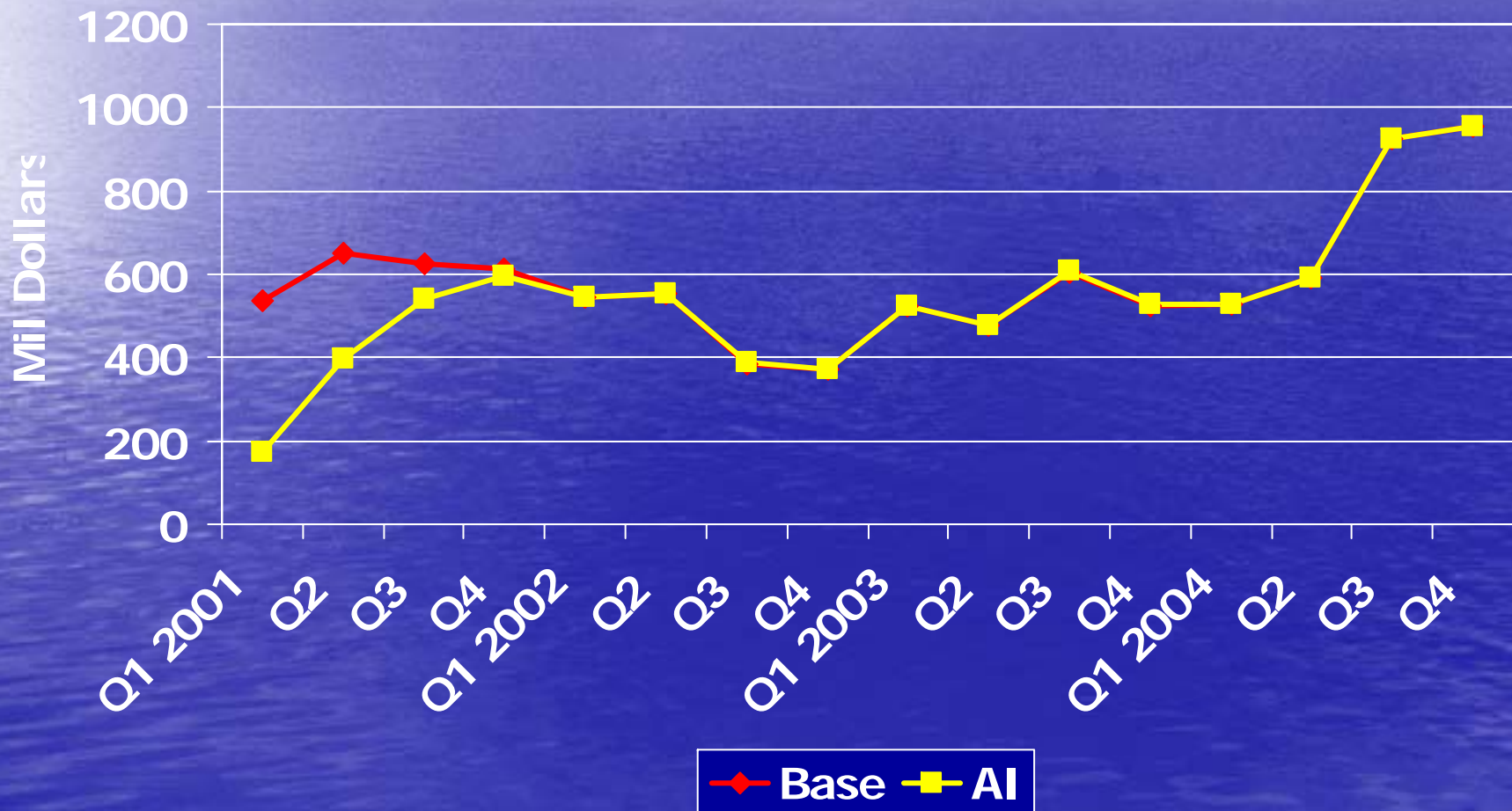
# CSF – Net Returns to Capital and Management for Pork



# Highly Pathogenic Avian Influenza Scenario

- 3 percent production loss for poultrymeat and eggs
- 89 percent reduction in poultrymeat exports
- Withdrawal of poultrymeat and egg consumers
  - Q1, 20 percent
  - Q2, 10 percent
  - Q3, 5 percent

# AI – Net Returns to Capital and Management for Poultrymeat



# AI – Poultrymeat Producer Returns and Consumer Surplus

Loss in Returns to Capital and Management	-\$717.4 million (-7.6 percent)
Consumer Surplus Gain for Continuing Consumers	+\$152.8 million
Consumer Surplus Loss for Nonconsuming	-\$711.9 million
Total Consumer Surplus Loss	-\$559.1 million (-2.5 percent)

# Conclusions

- FMD results highlight the role of outbreak length
- CSF results show the long run impacts of loss of breeding inventory
- AI results pick up the consumer response in addition to loss of exports