The Economics of Norwegian Salmon Farming:
A review of 30 years of Production Growth

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OUTLINE

• Motivation for the review

• Productivity growth

• Stages of development in Norwegian salmon aquaculture

• Concluding remarks
MOTIVATION FOR THE REVIEW

- Salmon aquaculture in Norway has been rather successful
- It exist an overwhelming dataset with farm data (panel) from 1982-2007
- The industry is carefully studied by economists for more than 25 years, reviewing these studies might provide new insight
- Experiences from Norwegian Salmon aquaculture might benefit other emerging aquaculture industries
MOTIVATION FOR THE REVIEW

Norwegian aquaculture production

- Production of farmed salmon
- Production of other farmed species

Year: 1971-2004
Tons: 0-700,000

www.umb.no
SALMON FARM DATASET

- Unbalanced panel data based on annual data collected by the Norwegian directorate of fisheries since 1982

- Covers more than 50% of total salmon industry in most years

- About 80 variables is reported

- Used in a number of Ph.D-theses: Salvanes (1988), Tveterås (1998), Guttormsen (2002), Roll (2008) and more than thirty per reviewed articles

MOTIVATION FOR THE REVIEW

- A rich source of literature discussing several aspects of the Norwegian salmon industry


SOME STUDIES

● Estimation of cost functions, examining economics of scale, input factor substitution, cluster effects etc.
  – Salvanes (1989, 1993)
  – Østbye (2000)
  – Guttormsen (2002)
  – Roll (2008)

● Estimation of production functions, risk evaluation
  – Asche and Tvetereås (1999)
  – Tvetereås (2000)
  – Kumbhakar (2002)

● Other
  – Vassdal and Roland (1998)
  – Tvetereås (2002)
  – Vassdal, in Asche (2006)
PRODUCTIVITY GROWTH

Development in cost and price

Source: The Norwegian Directorate of Fisheries
PRODUCTIVITY GROWTH

COST SHARES IN NORWEGIAN AQUACULTURE INDUSTRY

Source: The Norwegian Directorate of Fisheries
1. OWNER OPERATOR INDUSTRY

1. Structure of the industry
- Salvanes (1989, 1993)
- Roll (2008)

2. Environmental problems
- Tveterås (1993)
- Asche, Guttormsen and Tveterås (1999)
- Tveterås (2002)
2. SALMON CRISIS

1. Decrease in productivity
   - Vassdal (2006)
   - Roll (2008)

2. Risk and diseases
   - Tveterås (2000)
   - Asche (1997)
   - Asche, Guttormsen and Tveterås (1999)
3. PROFFESIONALIZING THE INDUSTRY

1. Structure
- Guttormsen (2002)
- Vassdal & Roland (1998)
- Roll (2008)

2. Trade disputes
- Asche (1997)
- Asche, Bjørndal and Sissner (2003)
4. HIGH PRICES, LOW PRICES, NEW CRISIS AND RESTRUCTURING
4. CONCLUSIONS

- Comparative advantages is important for successful production.
- Obstacles for growth has to great extent been handled by the industry and its partners.
- Knowledge and R&D has laid the foundation for the industry growth.
  - Technological growth has been impressive.
- The findings in the studies we have reviewed gives insight that might benefit other emerging farmed species.