

Data Collection in Rationalized Fisheries

by

Ron Felthoven

Alaska Fisheries Science Center

Seattle, WA

Main Points

- Numerous factors can affect costs and revenues in the pre- and post-rationalization periods.
- One needs relatively detailed data to isolate the effects of rationalization.
- Even when such a data collection is successful there are still hurdles and pitfalls to consider:
 - properly interpreting or using data collected from industry
 - Making appropriate assumptions in behavior model
- These issues need to be considered prior to design of the data collection, during analyses, and when discussing findings.

Framing the Analysis

- Typical focus of analysis is at the vessel (or plant) level.
- Quota may be allocated to individuals/owners, not vessels, which may encompass multiple vessels.
- To assess “overall” impacts on companies, owners, etc. may need to link the multiple vessels.
- Info also necessary to compare ownership % with caps
- Vessel registration databases may have some of this information but when there are multiple owners it may be difficult to make the necessary linkages.
- Best one can do here is to construct performance measures (profits, quasi-rents, etc.) at the vessel level and try to aggregate up.

Framing the Analysis (cont.)

Alternative is to focus on firm-level data and use some tools based on financial performance of firms.

- Can rely on pre-existing financial statements...but:
- Measures may be confounded with other indicators outside of the fishery of concern
- Aren't as amenable to microeconomic, econometric models to disentangle policy effects from market effects.
- Don't incorporate behavioral responses.

Owner-based survey can be awkward when asking about operating costs/revenues.

- Need to keep reported info relevant to a subset of fisheries or vessels
- High level financial records (e.g. tax records) may not be helpful and smaller companies may have limited financial statements.

Policy Questions as Foundation for Data Collection

What do you expect to happen?

- Speak to a wide range of individuals about what they anticipate and which impacts are most critical.
 - How might one measure the extent of these impacts and what data one would need for that measure?

What can't you foresee?

- What type of information will you need to capture unanticipated impacts?
- Disaggregated information is key so you have flexibility in the strata you examine
- May need to set aside resources/time for special studies to respond and investigate such impacts

Cost and Earnings Surveys

Even though cost data is most elusive, data on total costs (or even cost categories) is not sufficient to identify impacts of rationalization.

- Costs change due to changes in the price and quantity of the inputs – need to be able to disentangle the two.

Can you get information on all of the vessel's activities?

- Rationalizing one fishery may change the cost and revenues generated in other fisheries.
 - It is this whole picture that dictates how a vessel has been affected by rationalization.
- Akin to looking at the full range of substitution possibilities in profit function versus a cost function (no output change)

Cost and Earnings Surveys

Accounting for Capital Stock

- Models typically require a measure of capital stock.
- Vessel characteristics may be used as a proxy.
 - Ignores the vintage and quality/technological characteristics.
- Even if one collects data on the value of new capital investments, how to integrate into characteristic-based model?

Accounting for Capital (cont.)

- May need to define capital as the replacement or market value of the vessel.
 - Combine with data on new investments in vessel (capital stock) to avoid biased measures of labor productivity.
 - Decreased labor costs could be interpreted as increasing labor productivity if capital investment is ignored.
- **What about processing plants?**
 - One doesn't have proxy "characteristics"
 - assessed plant value may reflect characteristics unrelated to processing equipment/capabilities (stores, bunks, etc.).
 - May not have natural fit in production model.

Fixed Costs

- If focusing on subset of fisher's total activities, how to apportion fixed costs?
 - These costs may encompass all their fisheries.
 - Should one apportion by revenue, variable costs, landing volume, etc.?
 - Different apportionment methods give different costs (no industry standard).

Fixed Costs (cont.)

- When fixed cost data unavailable or methods of apportionment generate large differences, one option is to focus on quasi-rents (revenue less *variable costs*).
 - However, fixed costs of fixed inputs may be the driver behind changes in variable costs.
 - May not be wise to ignore all fixed costs.
- Even then, one must make assumptions about what constitutes a “variable” cost. One definition that is relatively clear is those costs that vary directly with the amount of fish caught.

Markets

Quota Markets

- Accounting for what is happening in quota market can be important.
 - What other data collection mechanisms are in place? Do *you* need to account for quota?
 - Consolidation of effort
- Prices of quota can give a reduced form indicator of profitability and how it changes.
- Can be difficult to track this information when ITQ allocations made directly to co-ops.
 - In crab we only have info on aggregate quota issued.
 - Co-op reports may fill in some gaps but we're having to collect supplemental info on transfers.

Markets (cont.)

Fish Markets

- What is expected to happen to the price of fish?
- Will changes be due to temporal dispersion of fish to market (no gluts)?
- Will changes be due to heightened quality that wasn't feasible/viable before?
- May need more detailed records on quality or temporal price data.
 - Fleet may begin producing higher quality products at a higher cost – but a greater return
 - increased per-unit costs alone should not be interpreted as a sign of decreased efficiency.

Behavioral Assumptions and Models

- What assumptions are reasonable in pre- and post-rationalization periods?
- If assumptions differ one must be careful about using one model for all periods.
- Choice over a primal or dual model needs to be carefully considered.
 - Just because you have cost data doesn't mean all assumptions of a dual approach will apply.

Behavioral Assumptions in Dual Models

Factors that may violate profit max. or cost min. assumptions (even under DAPs):

- Vertical/horizontal integration may affect price responsiveness of product mix
- Time of, and participation in, other fisheries still affect strategies in a rationalized fishery
- Prices may not be exogenous if market power exists, or if quality is endogenous.

Problems with Aggregate Data

Cost-earnings data should be obtained and utilized in a disaggregated format because:

- Not possible to spot or correct data anomalies such as outliers or data entry or response errors that may bias results.
- Can't describe # of firms that gained or lost according to a particular metric.
- Cannot be certain whether a majority of firms are better or worse off.

Problems with Aggregate Data (cont.)

- If aggregated/stratified in a particular way it's not possible to change the point of reference for other groupings of interest.
- Decreases the amount of observations available for statistical models.
- The assumptions implicit in aggregation, if inaccurate, can bias the results of the economic models.
 - e.g., all plants or vessels and decision making entities are “identical” (in terms of their costs, risk preferences, the type of technology they use, etc.).

Conclusions

- We need data on everything! Not Really...
 - Accept that it won't be cost effective or politically viable to collect data on everything.
 - Focus on a specific set of analytical goals from the very beginning.
- Consider what data is most critical to answer these questions
- Be able to state what range of information you will be able to provide with different ranges of data collection.
 - Can inform policy makers on the trade-offs between management information and reporting burden of fishers.