5. Summary

This study attempts to develop a systematic framework for assessing countries' comparative advantage in competing aquaculture species. The framework is based on two common approaches used in economics for comparative advantage assessment. One is the "domestic resources cost" (DRC) or "benefits-costs" (BC) approach; the other is the "revealed comparative advantage" (RCA) approach.

The DRC/BC approach evaluates and compares the social profitability of activities that compete for limited resources. The lower the DRC ratio for an activity is, the more efficient the activity utilizes domestic resources; hence the stronger its comparative advantage would be. Also, a low DRC ratio indicates a large profit margin and thus greater sustainability. Due to lack of data we have not provided an empirical application of the DRC/BC approach, which is conceptually straightforward and empirically well-developed with many references.

The RCA approach compares countries' specialization patterns to reveal their comparative advantage patterns. A country with a relatively high specialization in an activity is assumed to have a strong comparative advantage in that activity. Dynamically, a country that has increased its specialization in an activity more than other countries is presumably gaining comparative advantage in that activity. Data availability allowed us to illustrate two empirical applications of the RCA approach. One was an assessment of major shrimp farming countries' comparative advantages in exporting cultured shrimp to three major international markets; the other is an assessment of countries' comparative advantage in production of three freshwater farming species.

The RCA and DRC/BC approaches can provide complementary information useful for commercial and policy decision-making. An RCA assessment can help identify specialization patterns that deserve attention, while a DRC/BC assessment can focus attention on the factors that shape these patterns. For example, the RCA assessment in section 4 shows that Sri Lanka's freshwater fish farming is completely specialized in tilapia while its South Asian peers (e.g. Bangladesh, India, Nepal and Pakistan) have virtually no specialization in the species. These striking differences beg questions on existing inefficiencies in regional aquaculture development. Although the possibility exists that tilapia is inherently unsuitable for South Asian countries except Sri Lanka, it is also possible that the former countries have not fully exploited their potential for tilapia farming. To better understand why aquaculture development has diverged, further investigation on regional tilapia farming is warranted.

In this regard, the DRC/BC approach may help. The cost structures of tilapia farming in Sri Lanka and shadow prices in India can be used to calculate the DRC ratio for potential tilapia farming in India; this ratio could then be compared to other freshwater farming enterprises such as carp (or perhaps shrimp farming, which tends to compete with tilapia farming for resources). If potential tilapia farming has a lower DRC ratio than other species in India, then aquaculturists and policymakers need to consider whether to give tilapia farming a first-push. From another angle, Sri Lanka may want to look into its underperformance in carp farming in a region with high specialization in this species.

There are many such patterns deserving similar attention. The following are just a few examples: Madagascar's complete specialization in carp while carp farming is losing ground in SSA in general; gradual decline in specialization in carp farming in Honduras, Guatemala, and Panama while Mexico manages to maintain its specialization in the species; the changes in Malaysia's freshwater fish farming specialization patterns

and the similarity of Malaysia and Thailand's specialization patterns (Figure 8); SSA countries with relatively high specialization in catfish (e.g. Uganda, Kenya, Nigeria, Ghana) versus those with relatively low specialization in this species or those whose specialization in it is declining (e.g. South Africa).

A thorough identification and analysis of these patterns are beyond the scope of this study. Yet the comparative advantage assessment framework developed here provides a useful tool for the task.

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