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A theoretical framework for resource sharing between commercial and recreational fishers

Kasia Mazur and Robert Curtotti

Contributed presentation at the 60th AARES Annual Conference,
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Australian Government
Department of Agriculture
and Water Resources
ABARES

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Kasia Mazur and Robert Curtotti

05 February 2016

Acknowledgement

Georgeson, L, Moore, A, Ward, P, Stenekes, N, Kancans, R, Mazur, K, Curtotti, R, Tracey, S, Lyle, J, Hansen, S, Chambers, M, Finn, M & Stobutzki, I 2015, *A framework for regular national recreational fishing surveys*, ABARES, Canberra, November.

Ward, P, Mazur, K, Stenekes, N, Kancans, R, Curtotti, R, Summerson, R, Gibbs, C, Marton, N, Moore, A & Roach, J 2012, *A socioeconomic valuation of three eastern Australian game-fishing regions*, report to client prepared for the Fisheries Research and Development Corporation, ABARES, Canberra.



Background

- Recreational fishing is a popular activity
- Around 3.4 million Australians engage in recreational fishing annually
- Recreational fishers spend around \$2.76 billion in 2015/16 dollars on recreational activities each year



Measuring value of recreational fishing

- Incorrect interpretation of expenditure data;
- Diversity of approaches;
- Lack of a consistent or regular methodology in collecting data;

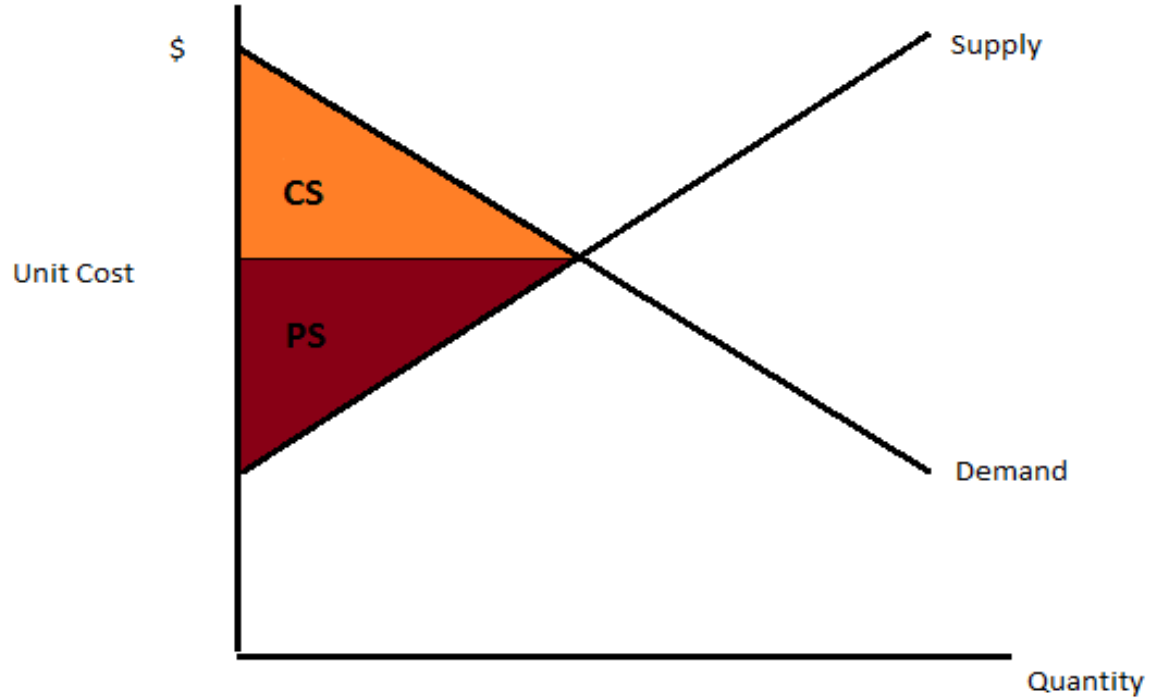


Objectives

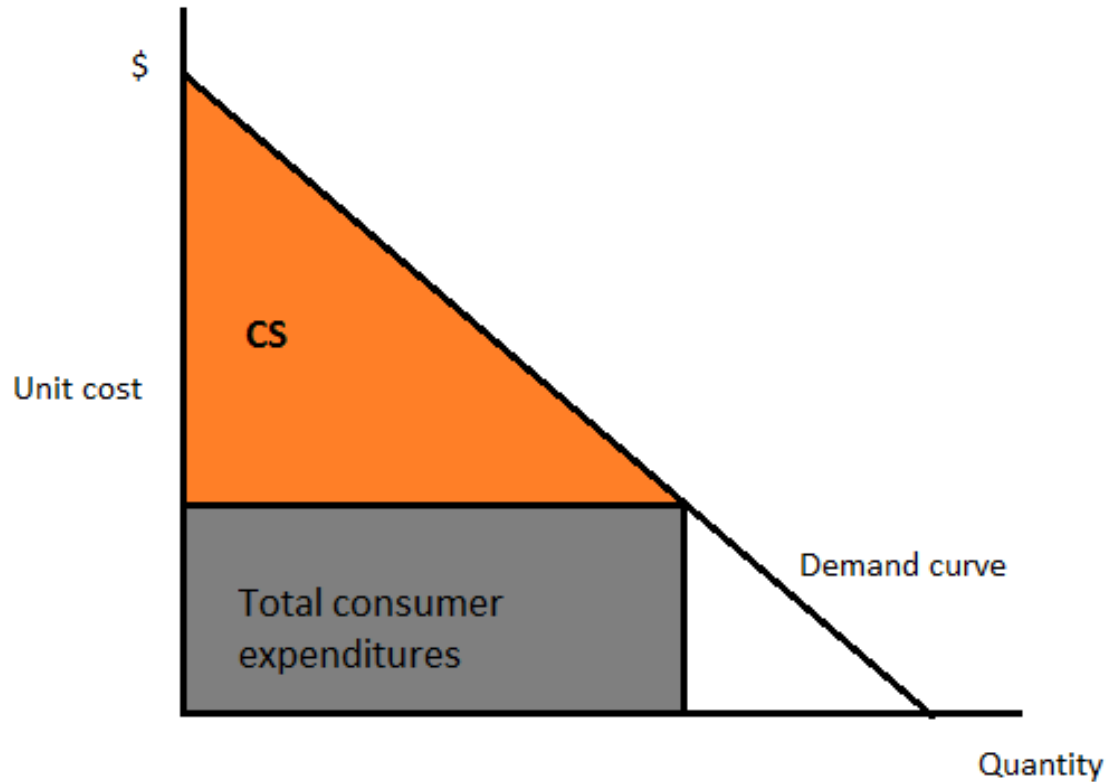
- To present a framework for how non-market values associated with recreational fishing can be used with economic information from the commercial sector to derive an efficient allocation of a fish stock
- To demonstrate how the tradeoffs in net economic values can be made in order to determine an efficient resource allocation
- To provide clarification of the concept and method applicable to benefit cost analysis of fisheries allocation between competitive users



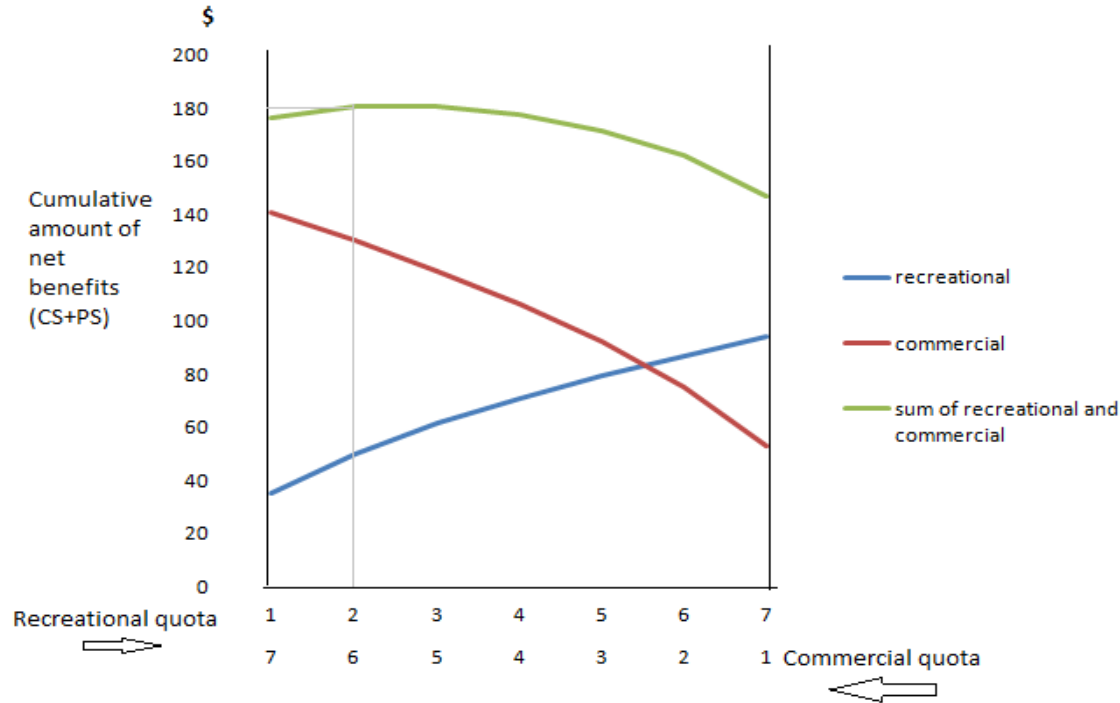
Supply and demand model for market goods



TCM -theoretical concepts



Theoretical concepts - tradeoffs in net economic values



Valuing fisheries resources

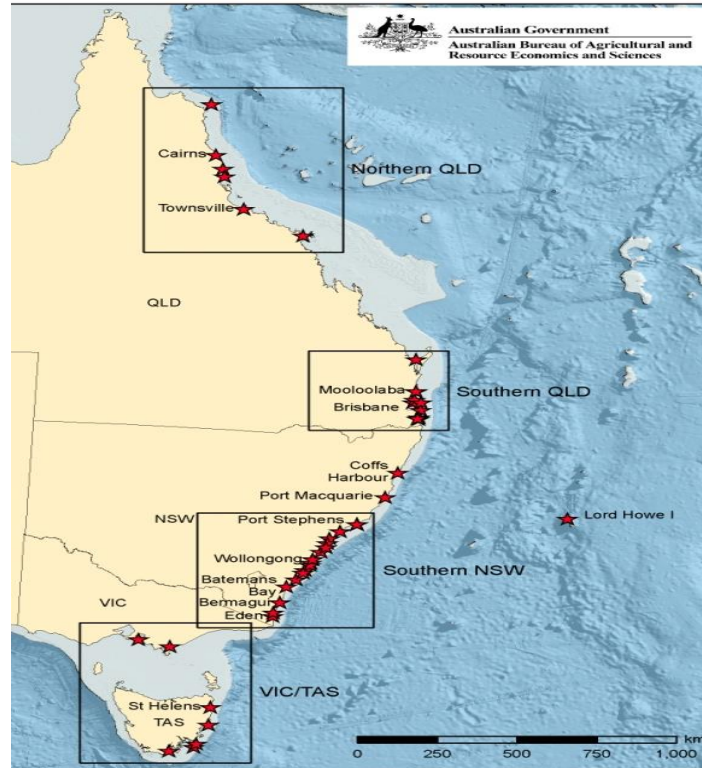
Non-market (recreational) value of fisheries resources

Travel cost method:

- Based on expenditure to visit a site
- Common problems : multi-purpose trips, multi-destination trips, calculation of distance costs, holiday-makers versus residents, availability of substitute sites



Case study regions: Game fishing tournaments in eastern Australia



Application of TCM

Survey collection:

158 valid survey forms from Bermagui ,

149 valid survey forms from Port Stephens;

Modelling :

Zero Truncated Poisson

$$\mu_i = \exp(\beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \beta_3 x_{i3})$$

Zero Truncated Negative Binomial Regression

model

$$\mu_i = \exp(\beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \beta_3 x_{i3}) \exp(\epsilon_i)$$



Negative Binomial TCM- Bermagui

Variable	Coefficient
TC per trip (return)	-0.0030***
Club member	1.1627***
With family	0.7135***
Gamefishing as main reason	-1.0782**
First time	-2.3149***
Constant	1.0341***
Observations	158
Log-likelihood	-323.11
Chi2	41.72
Alpha	1.6510

Consumer Surplus

Consumer Surplus	Bermagui	Port Stephens
per trip	\$334	\$168
95% confidence intervals	\$207–\$869	\$123–\$265
per adult /per trip	\$124	\$67
95% confidence intervals	\$77–\$321	\$49–\$105

Conclusion

- The expenditure should not be interpreted as the economic value of the sector;
- Efficient allocation between commercial and recreational fisheries should be based on trade-offs in net economic value;
- A reliable, consistent data on recreational fishing is required;
- Given the complexity of the issue a careful research for each application should be conducted;
- The framework may not be practicable for all scenarios.





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