

Introduction

Over the last two or three decades, economists and other social scientists have given increasing attention to institutions, defined as humanly-devised rules, as critical determinants of economic, social and political growth and development. Economic institutions, defined as rules that govern economic behaviour, have been dramatically reformed over this time period. Globally, some of these reforms include the collapse of communism in eastern Europe, the growth of institutions for market capitalism in China, Vietnam and other communist states, the influence of the World Trade Organization in multilaterally reducing barriers to trade, the rise of regional trade agreements and the freeing up of world capital markets.

Economic institutions for the governance of natural resources have also experienced dramatic reforms. Such reform has often been stimulated by increased competition for resource access and exploitation, leading to emerging resource scarcity. This scarcity has prompted managers to focus on strengthening private property rights and relying on markets for allocating and adjusting these rights amongst potential users. The increased focus on individual transferable quotas (ITQs) is evidence

of this. Globally, this push towards strengthening property rights for fishery resources has led to the formation of a number of agreements and laws such as the 1982 United Nations Convention on the Law of the Sea and the 2001 United Nations Fish Stocks Agreement. While economic institutions for fisheries governance is still evolving, there is still a strong need for continued reform, as evidenced by the vast body of literature citing failed fisheries governance and resource scarcity.

The fisheries management literature is primarily focused on biological research. This research is important and necessarily vast, given the difficulty involved in accurately measuring and monitoring fish stocks. However, the management of most fisheries stops short of using the biological data to inform economic analysis. Often the maximum sustainable yield is used as a benchmark for establishing a total allowable catch (TAC), and little attention is given to how this TAC should be efficiently and equitably allocated and distributed amongst potential resource users.

Fishery economics is often perceived to be a discipline entirely focused on developing and exploiting the resource for maximum short-term monetary gain. Fishery economists, in general, have failed to successfully market their discipline as one focused on long-term sustainability of economic returns which generally requires the biological sustainability of stocks. Moreover, in most cases, the annual harvest rate that maximizes these long-term economic returns of a fishery (the maximum

economic yield) is less than the maximum amount that can be harvested annually without decreasing biological stocks (the maximum sustainable yield). Hence fisheries economists generally advocate harvest rates less than those advocated by biologists, espousing the precautionary principle. Economists have not successfully extended this message, and most fisheries are managed according to maximum sustainable yield principles. Moreover, economics research can provide significant benefits to a fishery in encouraging property right structures, entitlement systems and mechanisms for allocating and adjusting these entitlement systems.

Perhaps this economics research is relatively sparse, compared with biological research, for the following reasons. First, good economics research cannot be conducted without sound biological knowledge. Second, there are often simplistic and polar views amongst economists on the appropriate roles of markets and governments. Third, economics research has, until recently, been bounded by conventional neo-classical economic analysis. The new institutional economics has historically been outside the bounds of conventional economics and ignoring it has led to economic analysis that is a rather blunt and inflexible instrument for decision-making. Current progress in new institutional economics is still limited. For example, institutional economics relies on the measurement of transaction costs for comparing different institutional structures, however there are no analytical tools available for *ex ante* measurement of these transactions costs.

Hence, *ex ante* institutional analysis is difficult and often subjective. This is made more difficult when dynamic transaction costs (costs associated with reforming an existing institutional structure) are high. However, the new institutional economics is now established as an important and non-trivial sub-discipline of economics. The growing amount of research is likely to have a positive impact on economics and natural resource management, especially fisheries management, in the decades to come.

About this book

The purpose of this book is to contribute to biological and economic sustainability of fish resources worldwide, by providing an analysis of fisheries management in the context of new institutional economics. The analysis can be applied to fisheries management in any application. For clarity, the Western and Central Pacific tuna fishery is used as a case study. The general premise of the book is that sound fisheries management requires, first, a clear definition of policy goals for the fishery (common policy goals include long-term biological sustainability and maximization of sustainable economic returns) and, second, a set of institutions for achieving these policy goals. Without these policies and institutions, there is likely to be resource conflict and over-exploitation, both biologically and economically.

The book comprises seven chapters. Chapter 1 introduces a theoretical background to the new institutional economics in the context of natural resource management. An outline of its development and the seminal works of literature are provided. The three general institutions for natural resource management are introduced as property rights, entitlement systems, and mechanisms for allocating and adjusting entitlement systems. The concept of transaction costs for determining institutional choice is then presented in the context of these three institutions for natural resource management.

Chapter 2 provides a description of the case study fishery. Material presented in Chapters 3 to 6 is considered first with reference to the basic paradigms, and then in relation to its application to the case study fishery. Chapters 3 and 4 focus on the general theme of the book: getting the policy objectives right (Chapter 3) and developing institutions for achieving these policies (Chapter 4). It is argued that different policy objectives will result in different governance structures. Moreover, sound policy objectives can lead to sound governance structures, just as inappropriate policy objectives can lead to inappropriate governance structures.

In Chapter 3 it is noted that it is difficult to be prescriptive regarding defining an appropriate extractive policy for a fishery, as this depends on the individual characteristics of the fishery and fishers, and on the specific objectives of the property right holder. However, two economic theories that have been proven to be true and non-trivial but are

frequently misunderstood by policy-makers are presented. These are the theory of comparative advantage and Tinbergen's principle of one policy instrument per policy objective. These theories are described, and the impacts of misunderstanding or ignoring them are outlined. Fisheries policy in the Western and Central Pacific tuna fishery is then reviewed, with discussion on possible policy reform.

Chapter 4 moves on to the development of institutions to achieve the policy goals. The current property rights structures for multilateral fisheries are outlined, and the current institutional structures for governance of the Western and Central Pacific tuna fishery are presented, with some discussion on hindrances to institutional reform. The chapter then progresses by presenting a model for analysing rent generation in a multilateral fishery. This model is applied to the Western and Central Pacific tuna fishery by presenting a proposed cooperative governance structure. The structure is likely to provide significant benefits, including resource sustainability (by setting a regional total allowable catch and encouraging the harvest of older age classes of tuna), significantly higher economic returns, removal of 'race to fish' incentives, and economies of size and scope in the management and monitoring of tuna resources.

In Chapter 5 the issue of managing resource revenues is discussed. This issue is often intensely debated, especially in fisheries where a significant proportion of resource rents accrue to government.

Without strong institutions for managing resource revenues, they can be wastefully spent on consumption, poor quality investments and, in worst cases, civil conflict, corruption and poor economic growth. It is argued that economic and fisheries development is influenced less by fishing *per se* than by the management of fishery revenues. A trust fund approach for managing fishery revenue is given particular attention in this chapter.

A special issue relating to fisheries management in developing countries is presented in Chapter 6: the exchange of subsidizing fishing access for foreign aid. It is argued that this exchange effectively disempowers a country's own efforts towards development by decreasing the transparency of fishing right allocations, placing the developing country in a weak bargaining position with regard to allocating fishing rights and reducing the flexibility of government spending. Often these results are in the best interests of the aid-giving nation and are encouraged by it. It is argued that development financed through fisheries revenue is likely to be stronger and more sustainable than aid-financed development, and avoids the political constraints associated with foreign aid flows.

The book concludes in Chapter 7 with a discussion of the role of fishery resources in economic development. It is argued that good economic policies and institutions for fishery governance is necessary but not sufficient for fisheries, and broader economic, development. They must be coupled with broader strengthening of economic policies and

institutions for social and economic governance. These broader institutions include, amongst others, the security of property and contractual rights, a competent and honest bureaucracy, and a reliable and independent judiciary. In the absence of strong broader institutions for social and economic governance, natural resource revenues can result in poor economic growth and civil conflict.