Abstract: New Zealand's quota management system is based on transferable harvesting rights operating within regulated allowable harvest limits. The system has evolved since its implementation in 1986. One particular challenge has been the design of mechanisms to encourage the balancing of catch against quota. A model is developed for a target and by-catch fishery where managers can control overharvest using a regulated limit to harvest and a fiscal instrument, or penalty, that attaches to harvesting without the necessary right to cover the catch. The optimal penalty that attaches to the by-catch is found to be equal to the sum of the price of by-catch harvesting rights and the by-catch shadow value. New Zealand has adopted a system of deemed values to encourage fishers to balance their harvest against their quota rights. We use time series data for two fisheries, a target species (alfonsino) and a by-catch species (bluenose), to test the relationship between the annual price of harvesting rights and deemed values. Deemed values are found to influence quota prices in two of the four fisheries studied. A vector autoregressive model is used to highlight the need to regularly review deemed values. The data also reveal a pattern of within season behavior where fishers pay interim deemed values and balance their harvest at the end of the season using rights purchased in the market.