Chapter Title: Incentives and Delegation of Control

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Abstract: Consider a production system in which autonomous economic agents undertake activities that consume resources and produce outputs. Because of differing objectives, these agents may not undertake activities at a level that would maximize the systems overall objective. Therefore, the problem is to determine mechanisms that will coordinate the system in the sense that the activities taken by the agents will lead to system-optimal outcomes. In this chapter, we will present a general model for decentralized decision making in a production system, and then formulate a mechanism design problem to identify that incentive system that induces coordination.

1. Introduction: Describe the general model
   a. The general model is the Harrison static planning model with the extension that decision-making authority for individual activities are assigned to autonomous economic agents.

2. Relevant Economics Background:
   a. Externalities
   b. Traditional Solutions to the Externality Problem
   c. Private Information and Second-Best Solutions
   d. The Mechanism Design Problem

3. Literature Review: Discussion of relevant literature from OM

4. Formulation of the Mechanism Design Problem for the General Model
   a. Solution in Simple Cases
   b. Description of main insights

5. Directions for future research

Keywords: Production planning; decentralized decision making; externalities; mechanism design; linear programming; resource allocation