Research Abstract

“ANALYSING THE EFFECT OF CONTRACTUAL AND STRUCTURAL DESIGNS IN HEALTH CARE SUPPLY CHAINS”

The market introduction of new medical treatments oriented at treating chronic conditions (the largest component of health care spending) is surrounded by various sources of uncertainty, including:

· Size of the potential market

· Number of treatment doses required per patient in order to complete a treatment

· Heterogeneity within patients, either because a drug may apply to patients from more than one disease state who are expected to benefit differently from receiving the same drug, or even because patients belonging to a common disease state may respond differently to the same treatment due to exogenous factors or unknown patient characteristics.

The latter conditions, in combination with the growing pressure to control health care spending, further complicate the negotiation process between pharmaceutical manufacturers and health-payers (e.g., national governments, large insurance companies, HMO’s), often resulting in the delayed introduction and even overall rejection of innovative treatments. This has given rise to questions about the validity of price-only contracts, driving some manufacturers (particularly in the cardiovascular and oncology sectors) to explore more sophisticated agreements, where risks are more efficiently shared.

It is within this context, using a mathematical modeling approach, that our research aims to contribute to the health care industry and the operations literature in the following essential manners:

· Analyze the effect of the decision-making criteria used by the health-payers (e.g., fixed expenses budget, balancing total expenses with total health-benefits, value-based pricing) on access level (i.e., which patients are eligible to be prescribed, and reimbursed for, a new drug) and service level (i.e., how much capacity is built/how many drugs are purchased, in order to meet patient demand).

· Analyze the appropriate design and implications of risk-sharing contracts under the different settings considered above.

· Understand the effect of contract design on the incentives to exert marketing, innovation, and efficiency-enhancing effort, and the resulting manufacturer’s profit, health care spending, and patient welfare.