

research

supply chain management.

From their analysis, the authors concluded that it appears that the capacity-inflation relationship may be relegated to earlier times. More specifically, the relationship does not appear in the current “information engineering” era. The authors hypothesize that “reasons for this are likely due to greater efficiencies in the supply chain, especially due to information technology and the speed in which price information is incorporated into related products, materials, supplies and services along the supply chain.”

Interestingly, the analysis also showed that the steady-state capacity utilization rates have dropped in recent times. This suggests that companies can operate more efficiently than previously thought at lower utilization rates or that companies reserve capacity in order to be able to respond more quickly to customer demands.

CONTACT: Mark Thompson;
mark.thompson@ttu.edu;
(806) 742-1535; Texas Tech University,
Health Organization Management,
Lubbock, TX 79409

Subsidizing investments in security

Homeland security has received significant attention over the years. This has included investments in networks in order to improve security. This is a complicated problem since many entities must work together to achieve a comfortable level of security for the entire system. For example, a transportation or computer network requires that each node be secured in order for the system to be secure. As the nodes in the network may be owned or operated by a number of different players, the level of achievable security is dependent on the investment decisions of each player in the network.



Jun Zhuang of the University at Buffalo concluded that government subsidizing of security investment decisions decreases the social cost of the investment.

There has been significant research into examining the security investment decision in recent years. It has been shown that if investment costs are too high or the predicted returns on investment are too low, then the dominant strategy for a player is not to invest. Obviously, this can be detrimental to the common good, and thus, government entities often provide subsidies or incentives to promote investment. This action often can spur players to invest such that it becomes the norm for all players on a network.

In “Impacts of Subsidized Security on Stability and Total Social Costs of Equilibrium Solutions in an N-Player Game with Errors,” Jun Zhuang, an assistant professor of industrial and systems engineering at the University at Buffalo, examines the situation where some of the players, or agents, on the network invest while others do not. Those that do not are said to make “erroneous” investments, and this often can happen in practice. That is, a model may suggest investing, but the decision is ignored by those that must implement the decision.

The author investigates this phenom-

enon and shows that subsidizing or providing free security can reduce the effects of erroneous choices, decreasing the social cost of investment. Thus, it would appear that the government must continue to invest in security to ensure that all relevant agents participate.

CONTACT: Jun Zhuang;
jzhuang@buffalo.edu; (716) 645-4707;
University at Buffalo, Department
of Industrial and Systems Engineering,
403 Bell Hall, Buffalo, NY 14260

Susan Albin is a professor at Rutgers University in the department of industrial and systems engineering. She is editor-in-chief of IIE Transactions and a fellow of IIE.

Joseph C. Hartman is editor of The Engineering Economist. He is a professor and the department chair of industrial and systems engineering at the University of Florida. He has been a member of IIE since 1995 and previously served on the IIE Board of Trustees as senior vice president for publications.

ABOUT THE JOURNALS

IIE Transactions is IIE’s flagship research journal and is published monthly. It aims to foster exchange among researchers and practitioners in the industrial engineering community by publishing papers that are grounded in science and mathematics and motivated by engineering applications.

The Engineering Economist is a quarterly refereed journal devoted to issues of capital investment. Topics include economic decision analysis, capital investment analysis, research and development decisions, cost estimating and accounting, and public policy analysis.

To subscribe, call (800) 494-0460 or (770) 449-0460.