

Monte Carlo Simulation Model for the Economic Impact of an **Inventory-Dependent Business using s,S Inventory Policy**

Introduction

In business risk assessment, the lack of information often leads to unfavorable decisions. Incorporating business aspects in simulations helps reduce risks. This work introduces a multiperspective Monte Carlo simulation model, integrating logistic and economic points of view. Finally, including behavioral economic aspects and the s,S inventory policy, an analysis of the capital level at the end of the simulation is performed.

Triggering questions

Are different economic scenarios identifiable? How do different input parameters affect the capital flow? Is the capital flow heteroscedastic?

Methodology

Model Description

The s,S policy states that when the inventory level falls below a threshold s, an order must be scheduled, the size of the order equals an inventory level S minus the current inventory level.

Three events are considered: (1) Control (checks whether to schedule an order), (2) Customer Arrival, and (3) Order Arrival.

Results

Four business economic scenarios were considered: (1) Profit without Losses (PNL), (2) Profit with Losses (PL), Break Even (E), and Loss (L). For each scenario 100 runs were performed.



The model presents four types of variables:



 $\times 1.0$

Conclusions

The lower the *Control Frequency*, the higher the profit. Low *Initial Stock* does not imply breaking even or losing.

Stock Floor, and Stock Ceiling were close to the maximum stock possible in both profitable scenarios

To break even or losing, *Stock Ceiling* must be low, or *Control Frequency* must be high.

The higher the *Initial Stock*, the higher the profit.

The variance increases over time, implying heteroscedasticity, reflecting that long-term forecasts are less precise than short-term predictions.

Universidad Tecnológica Nacional Facultad Regional Rosario

Autores: Ezequiel L. Castaño Gastón Amengual

RILIC Sisten as de los	confecto confecto Ensejo Federal de Decanos de Ingeniería República Argentina	150 Is Argentina celebra su ingeniería 1870-2020	AN I Y E R S A R I O FACULTAD REGIONAL SAN ERANCISCO
------------------------	--	--	---



ESCANEAR PARA

LOS AUTORE