

# Summer Summary

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# Plan

Introduction

JASSS Review

Learning Marginal Costs/Benefits

Inventory Control

This Week

# Summer wrapup

1. Waiting for JASSS review

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2. Learning Marginal Costs/Benefits

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1. Waiting for JASSS review
2. Learning Marginal Costs/Benefits
3. Inventory Control + Price Determination

# Plan

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This Week

# JASSS Article

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- ▶ Haven't heard back yet
- ▶ When I do, I might have to stop what else I am doing to revise and resubmit.

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This Week

# Why Learning?

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# Why Learning?

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- ▶ Hill-climber is too limited, doesn't work with supply chains.
- ▶ Switched to periodically checking marginal benefits versus marginal costs of hiring a new worker.
- ▶ Current prices and wages are a poor indicator of the real marginal benefit and marginal costs, so the firm needs to learn them separately

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- ▶ I didn't want to code two separate behaviors, so instead I wanted a learning behavior that would predict fixed prices for competitive firms and variable prices for the monopolist
- ▶ Each firm a (simple) econometrician.

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**Inventory Control**

This Week

# Inventory Control + Price Determination

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- ▶ What if the number of customers is not visible? PID still works using

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- ▶ Focus only on  $\Delta$  of the inventory, not its stock
- ▶ What if the firm wants to target a specific level of inventory while at the same time find the right price?

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- ▶ The adjustment is 0 when inventory is at the right level, otherwise it's a proportion of how distant we are from target inventory.
- ▶ This way the PID automatically finds a price that generates an inflow when we need to increase our inventory and viceversa.

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- ▶ As soon as we move to supply chains, inventories just cause over-production and then crashes

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# this week plan

- ▶ Literature review: inventories and cycles

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- ▶ Sensitivity analysis: does inventory size matter in supply-chains fluctuations?