

# **神經與行為模型建構 (Neural & Behavioral Modeling)**

課號：Psy7277

識別碼：227M9280

教室：北 206

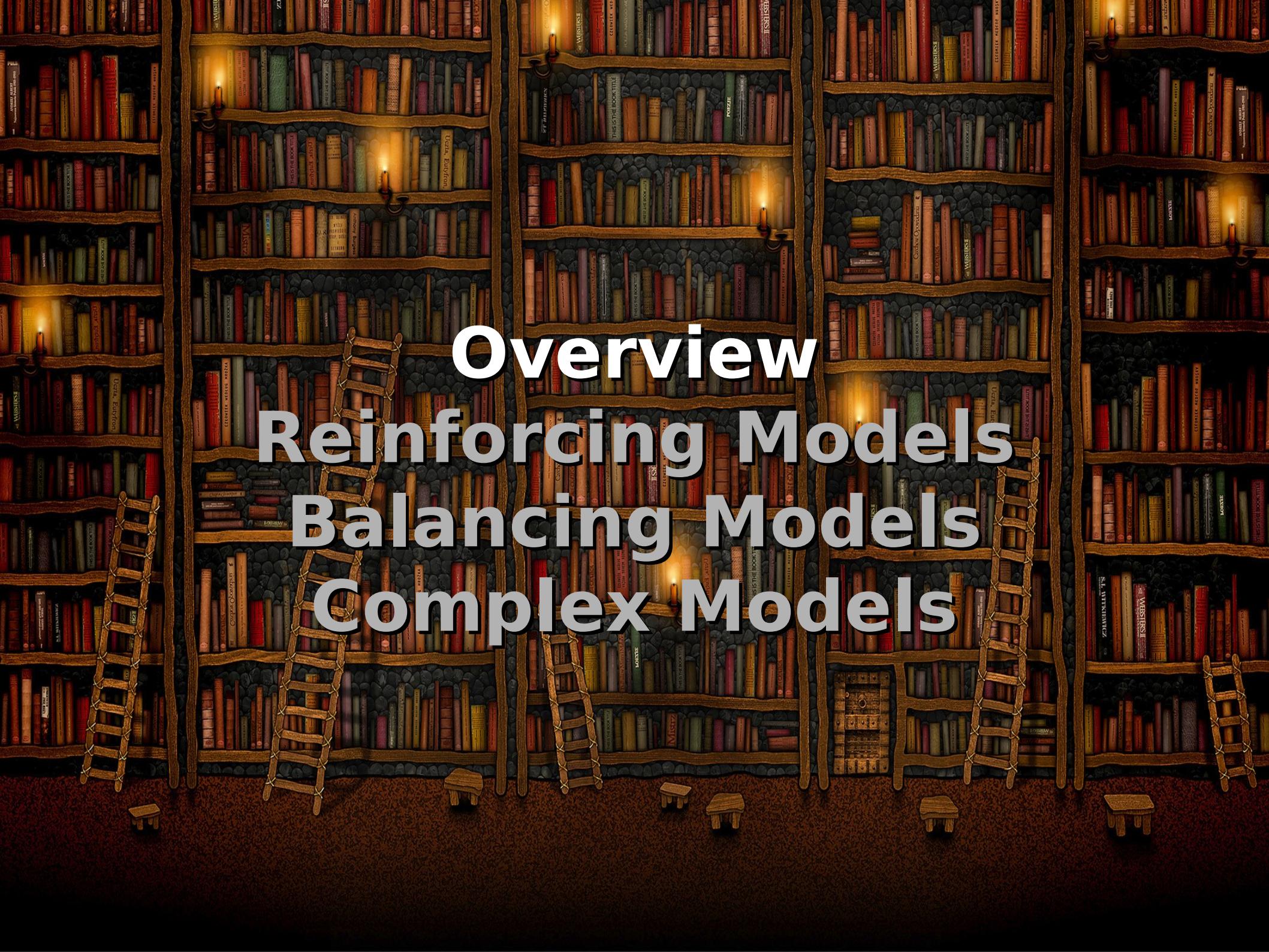
時間：五 234





雞生蛋還是蛋生雞

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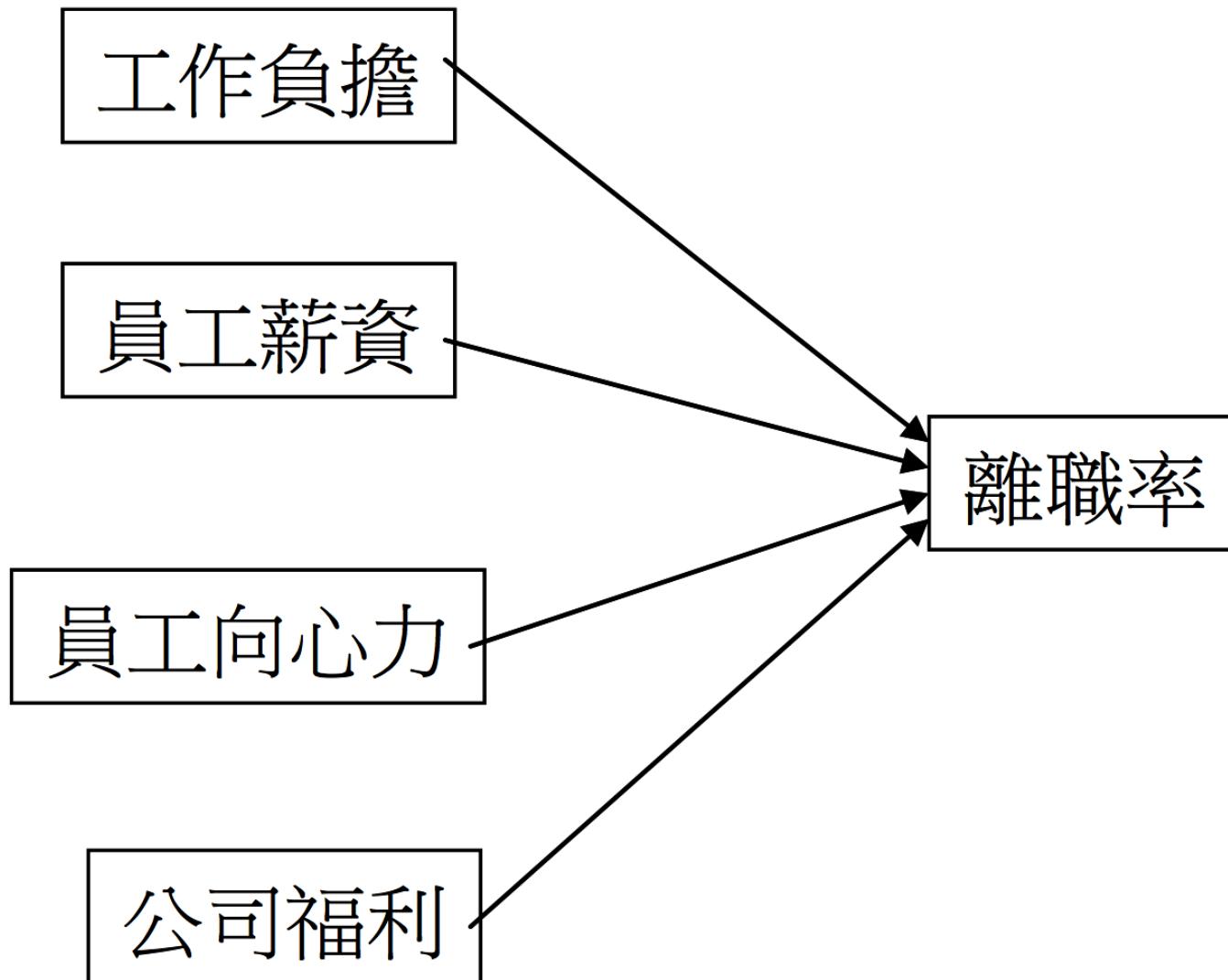
# Overview

## Reinforcing Models

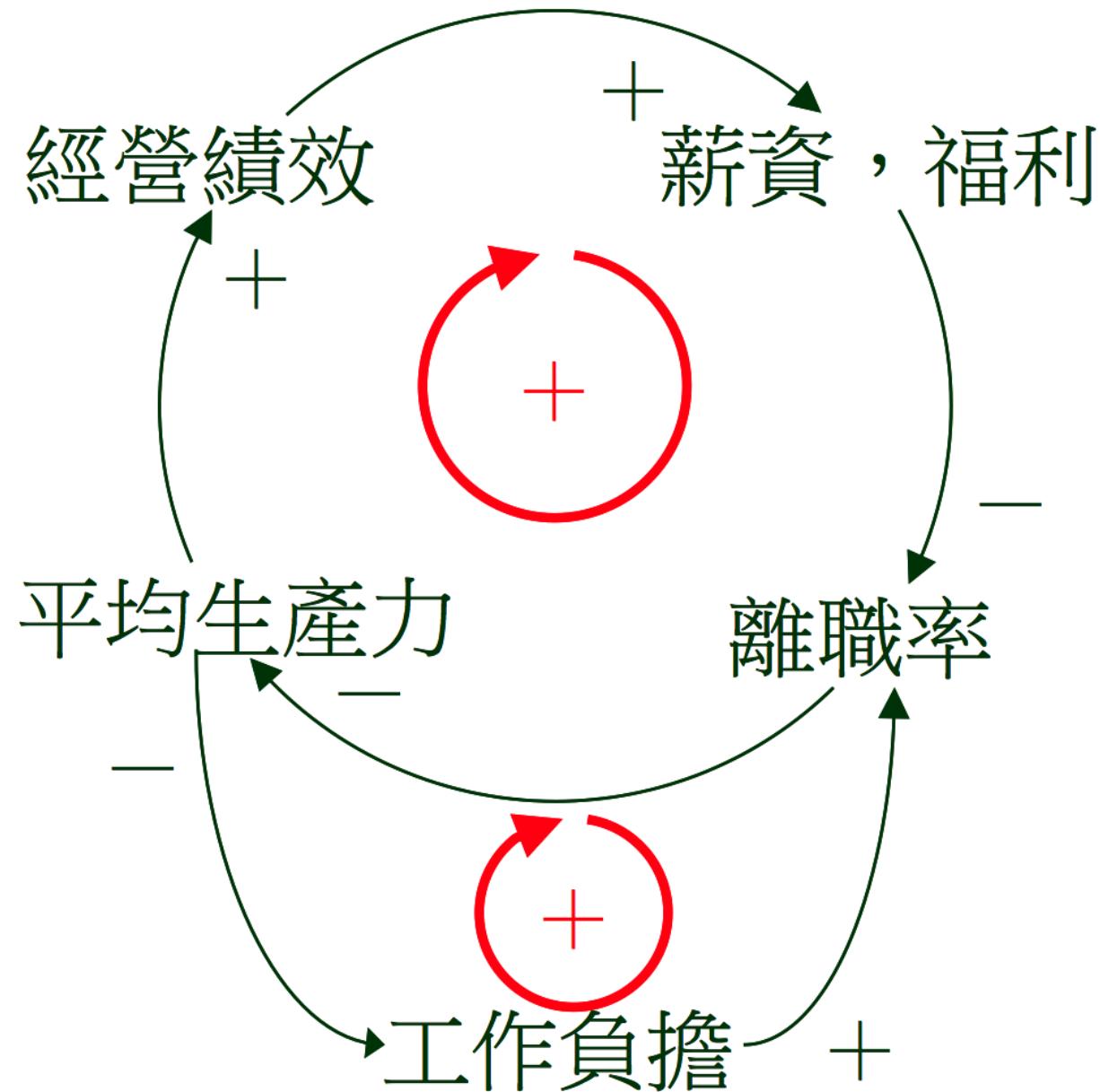
## Balancing Models

## Complex Models

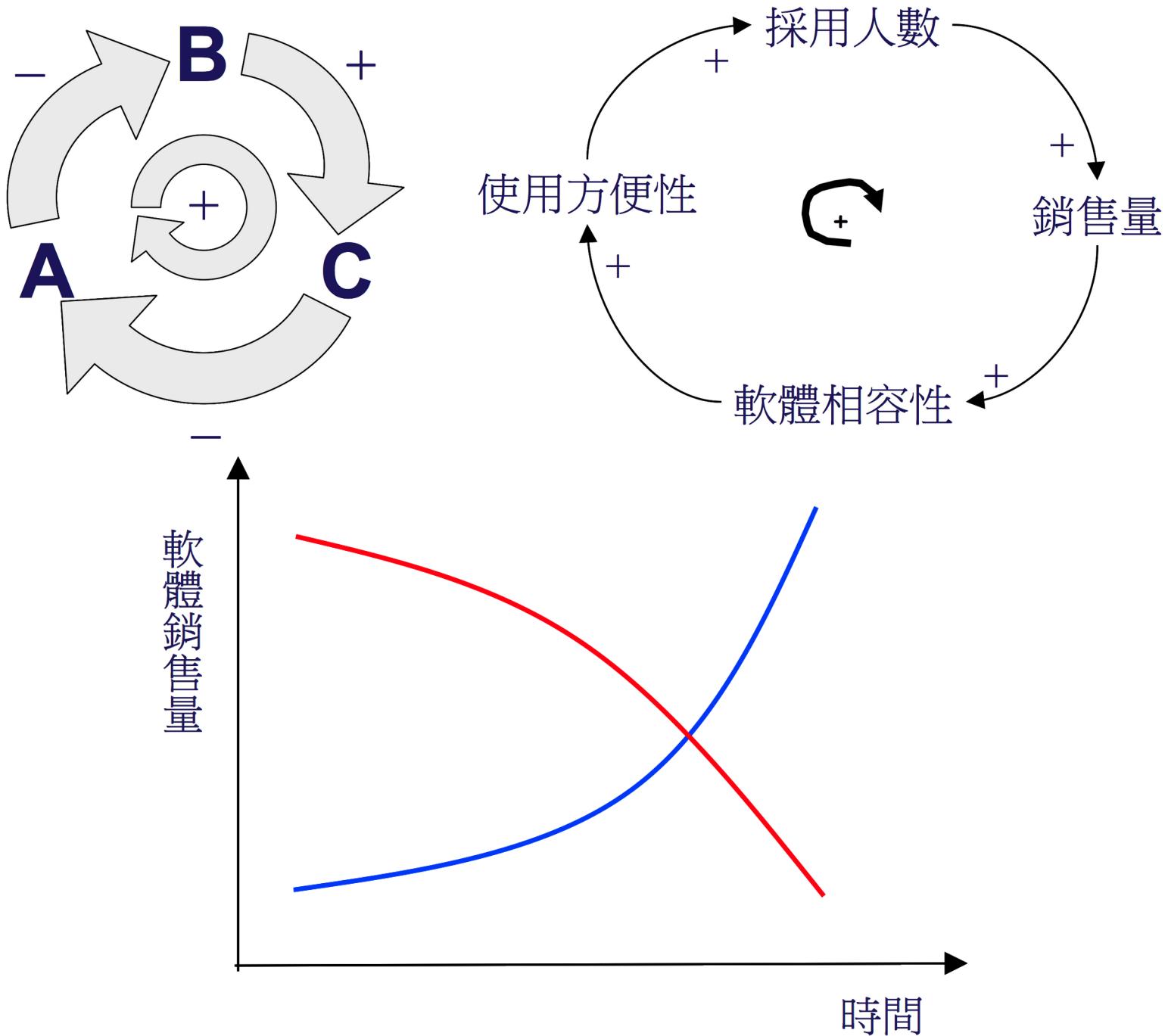
# 員工離職：單向因果的線性思考



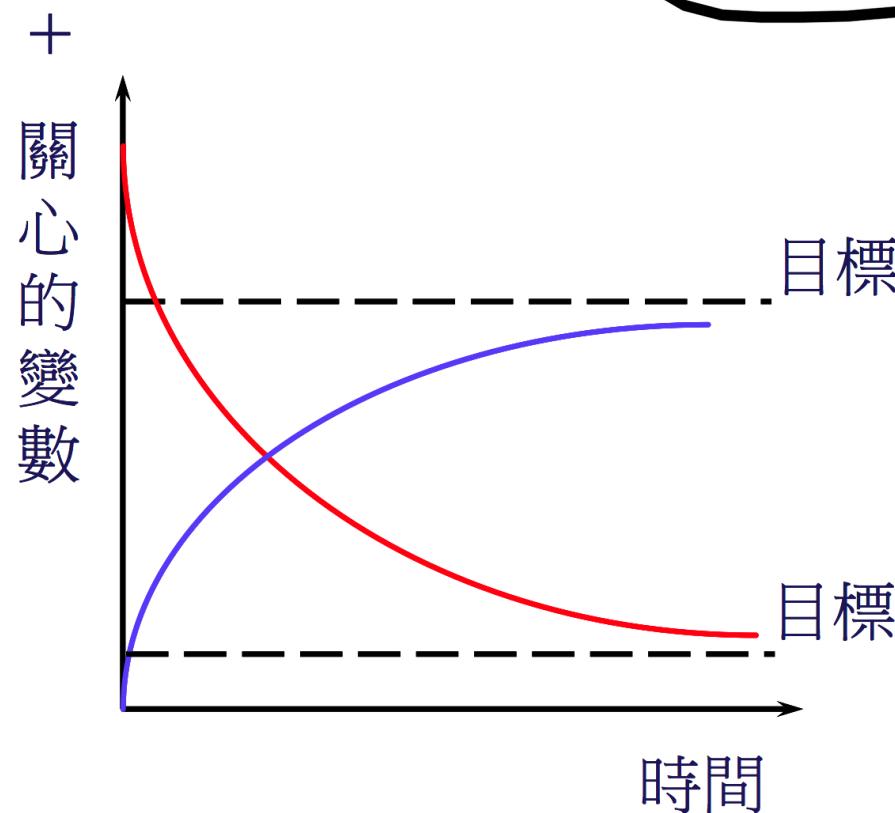
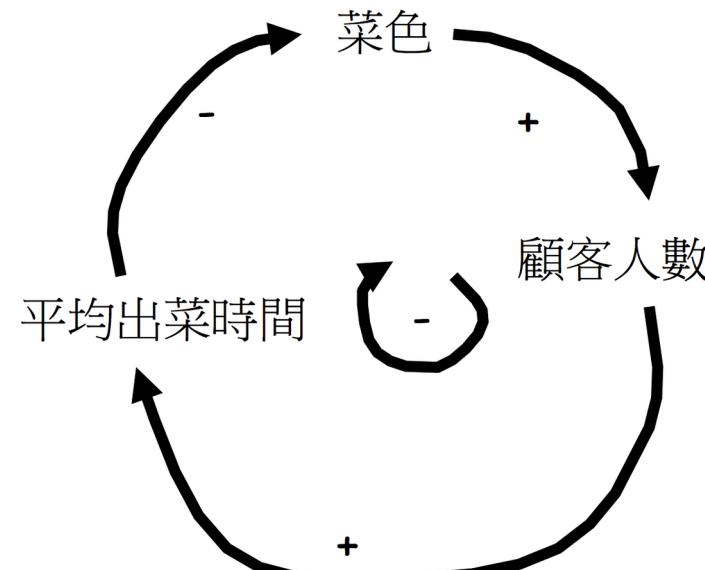
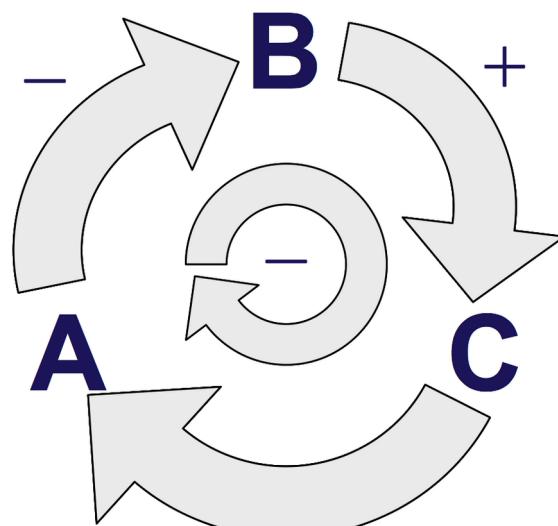
# 員工離職：互為因果的系統思考



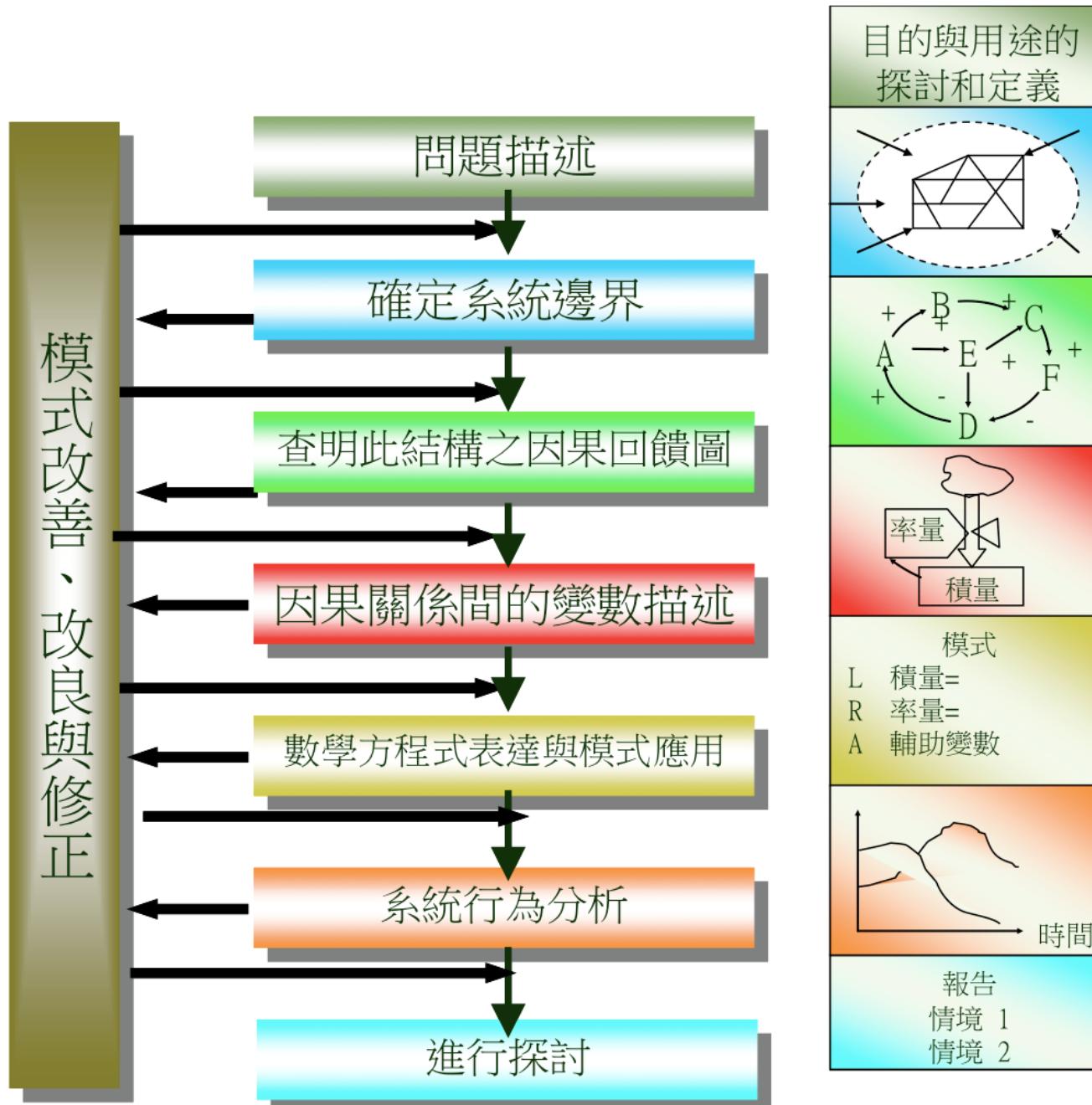
# 正迴路 (Positive Loop)



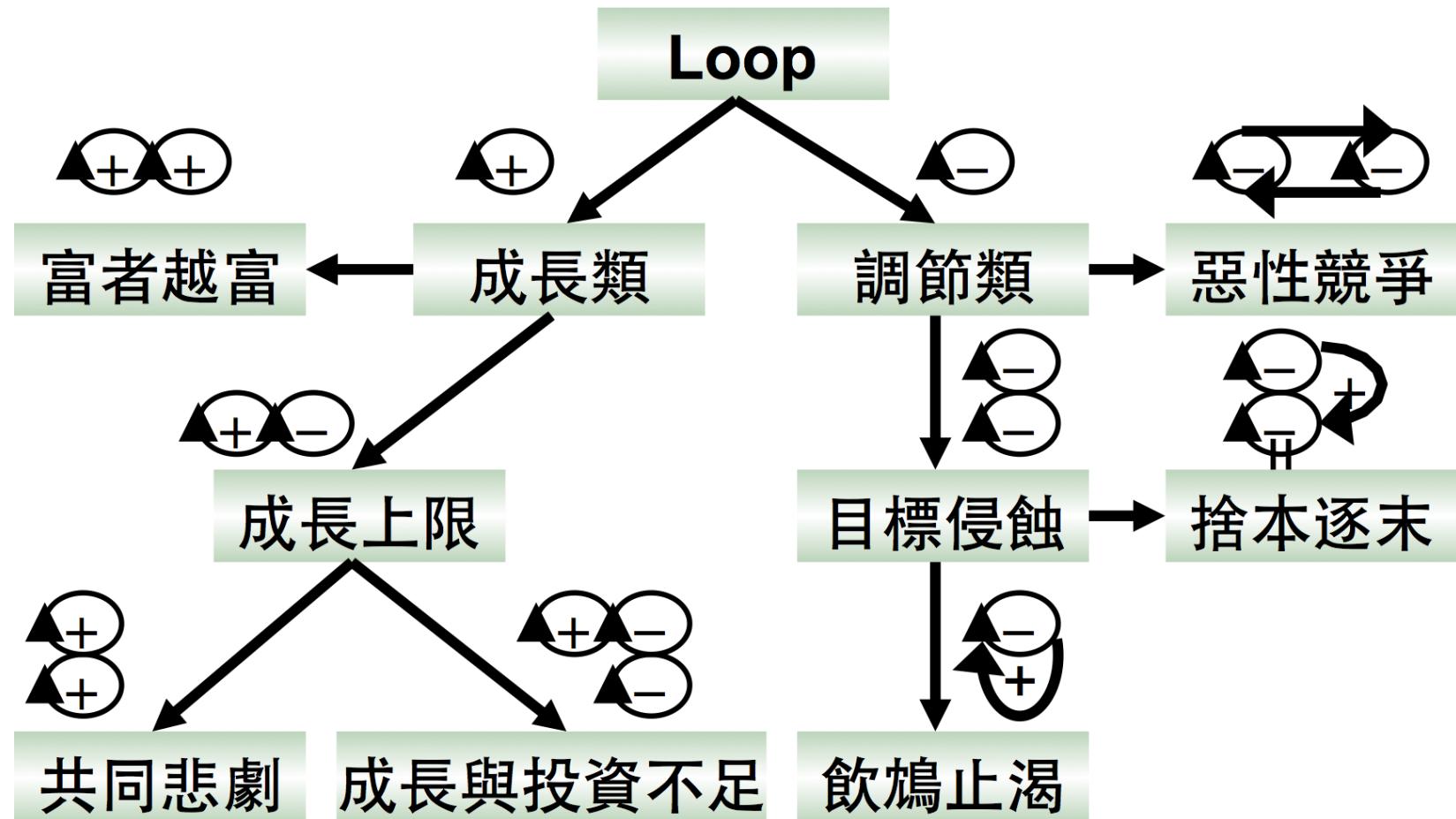
# 負迴路 (Negative Loop)

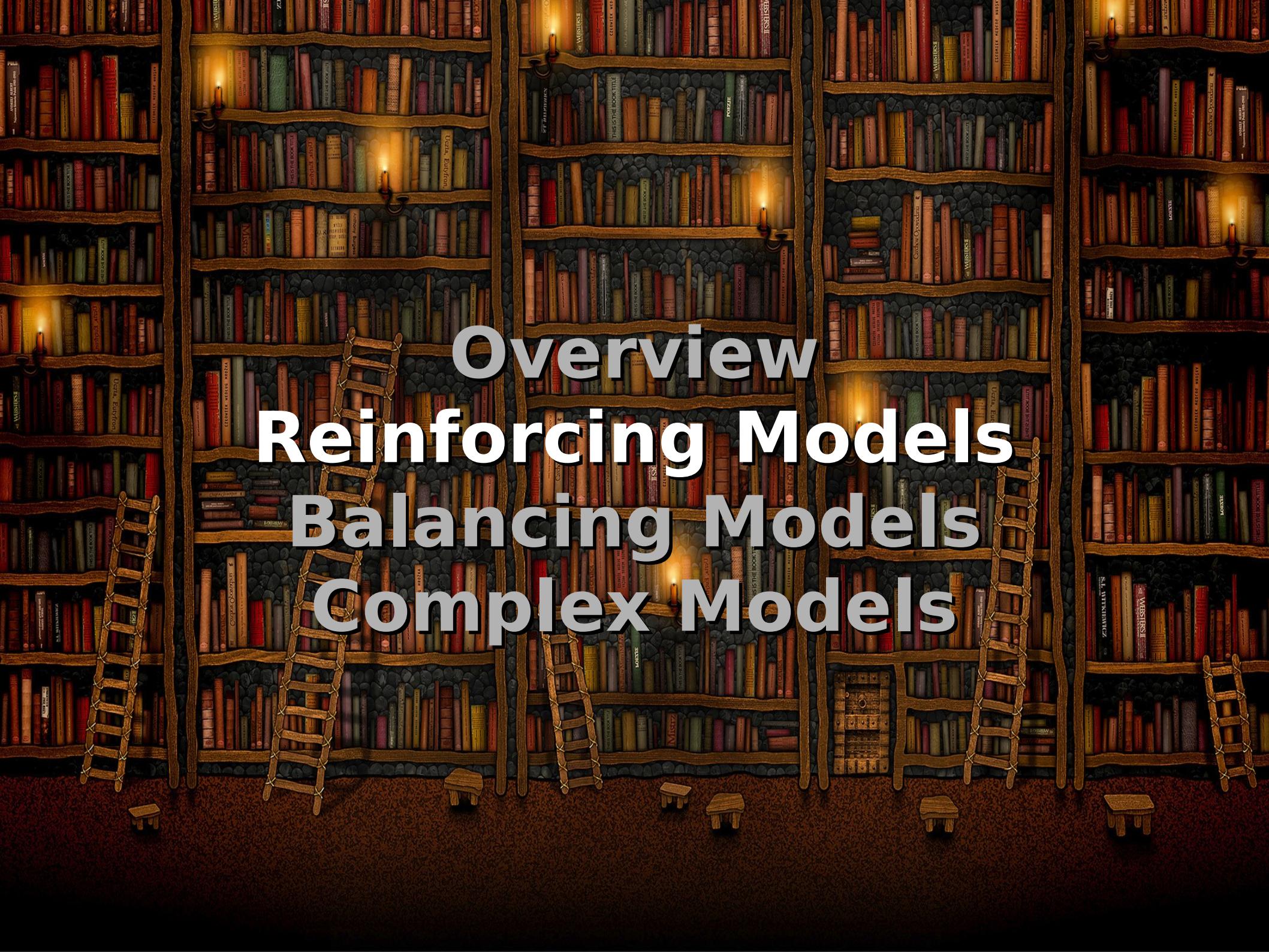


# 系統模型建構：流程



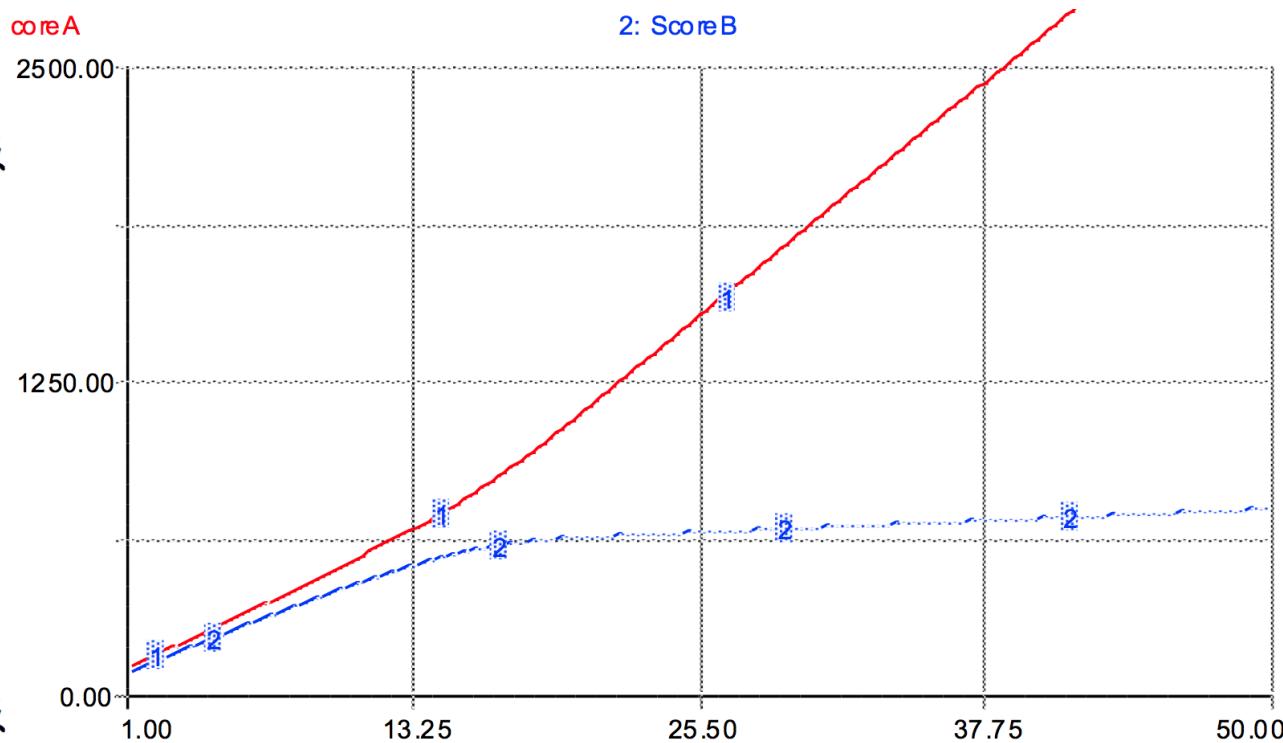
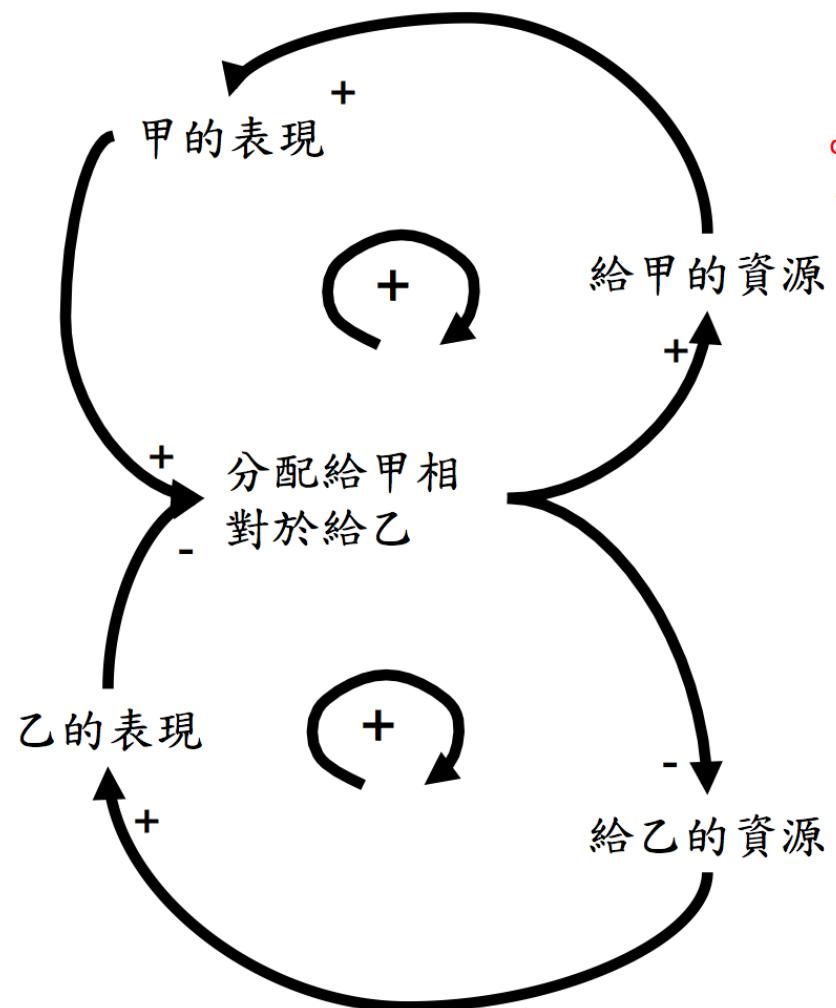
# 系統基模 (System Archetypes)



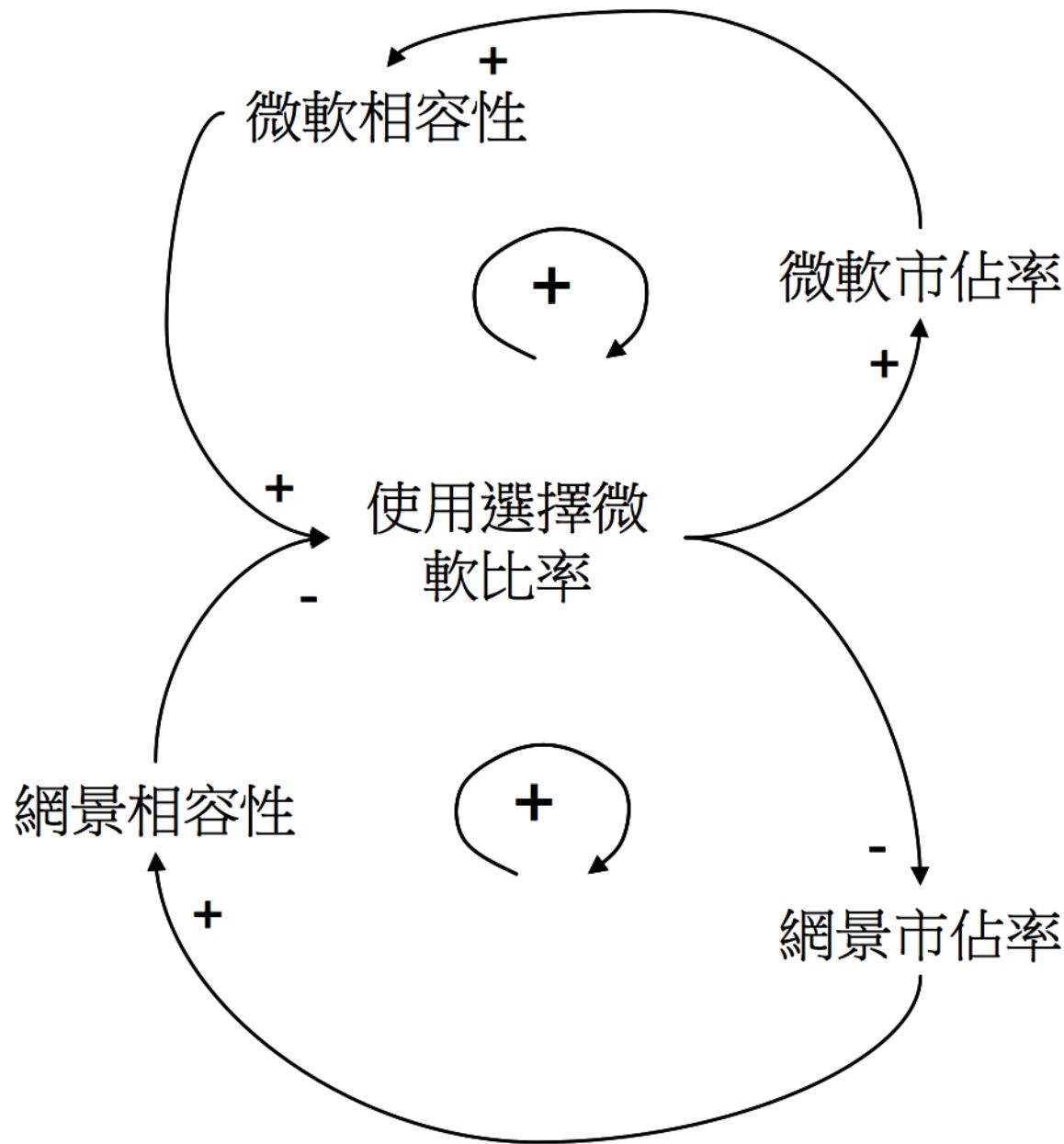


# Overview Reinforcing Models Balancing Models Complex Models

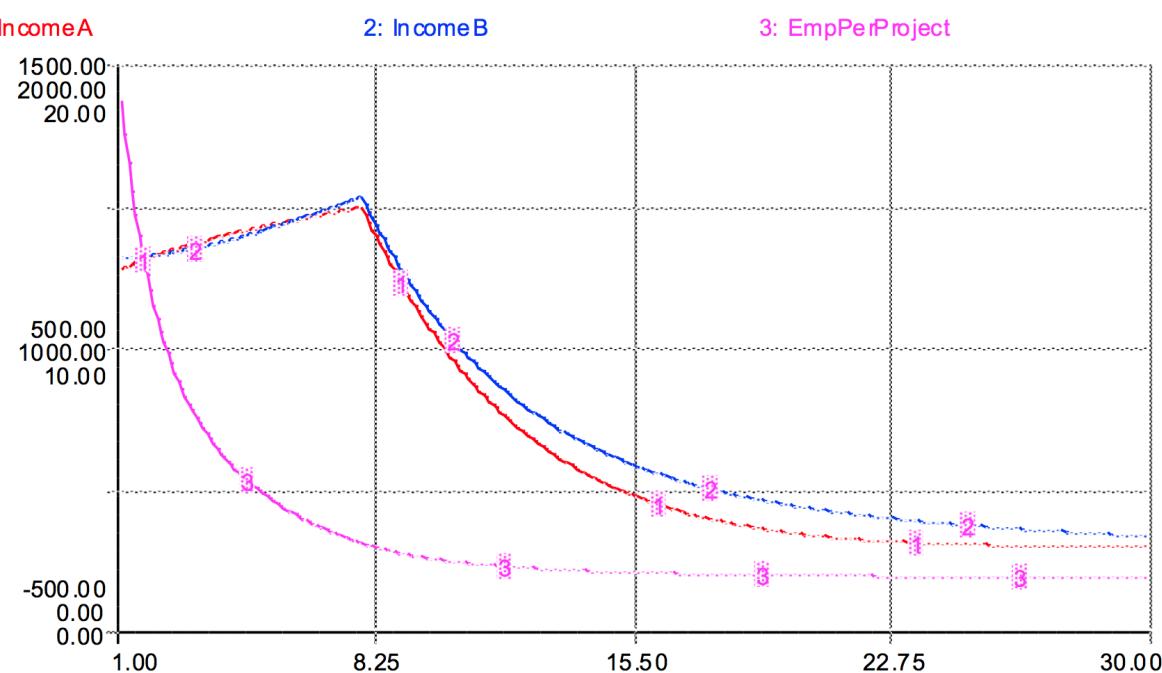
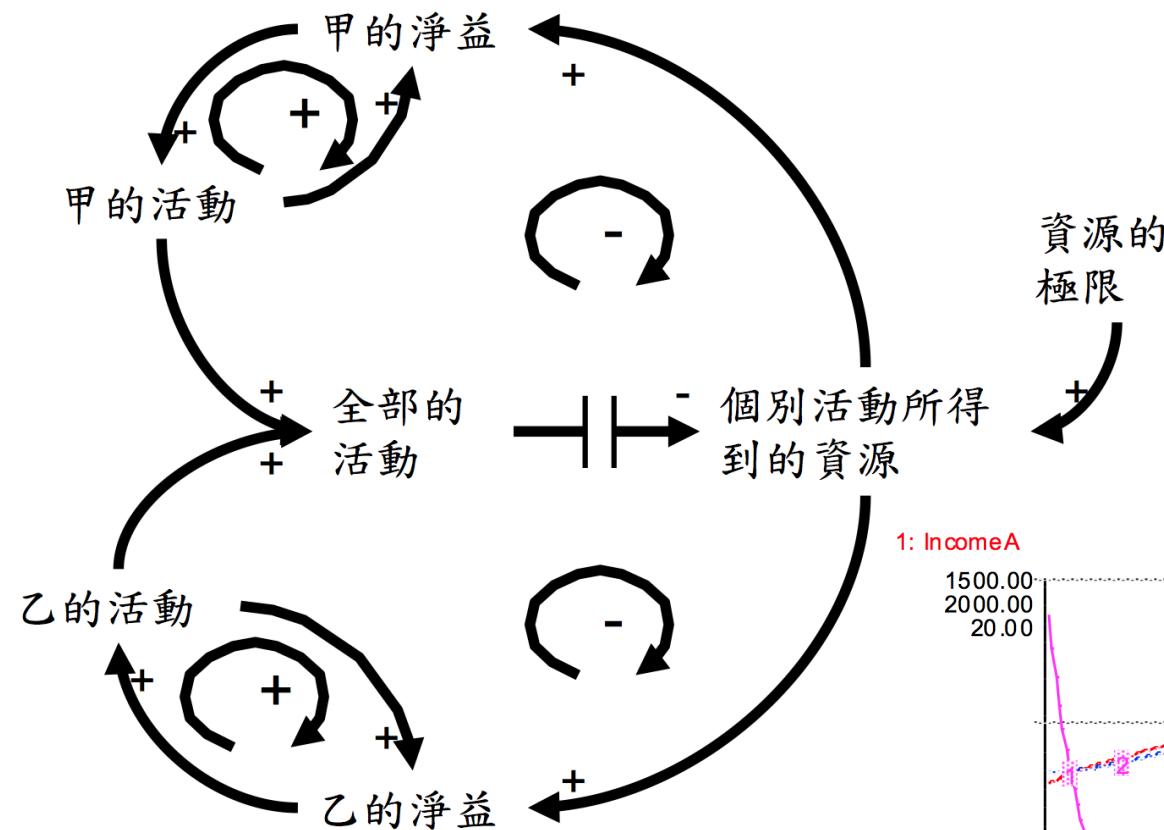
# 富者愈富：M型化 (success to the successful)



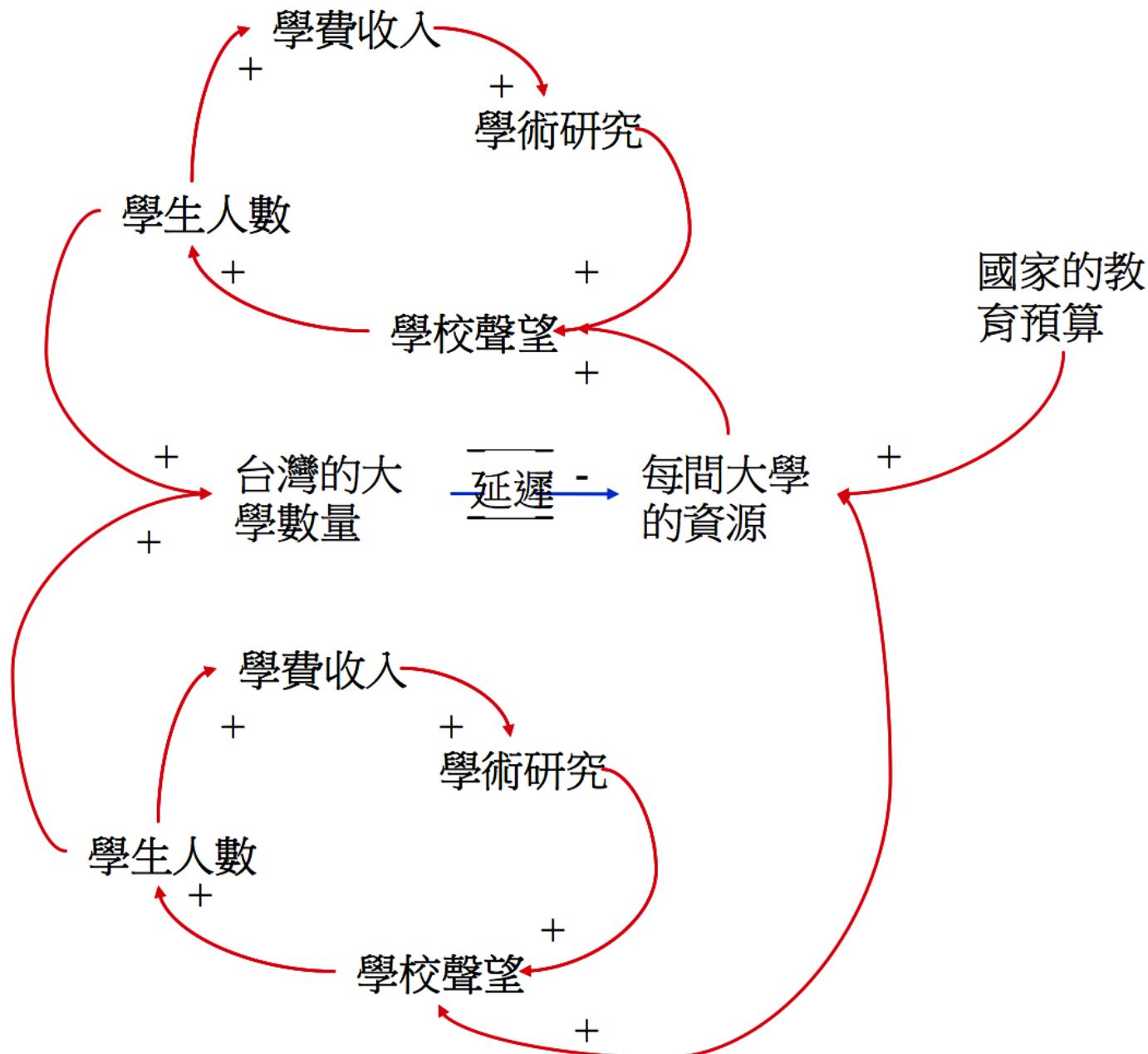
# 富者愈富：範例



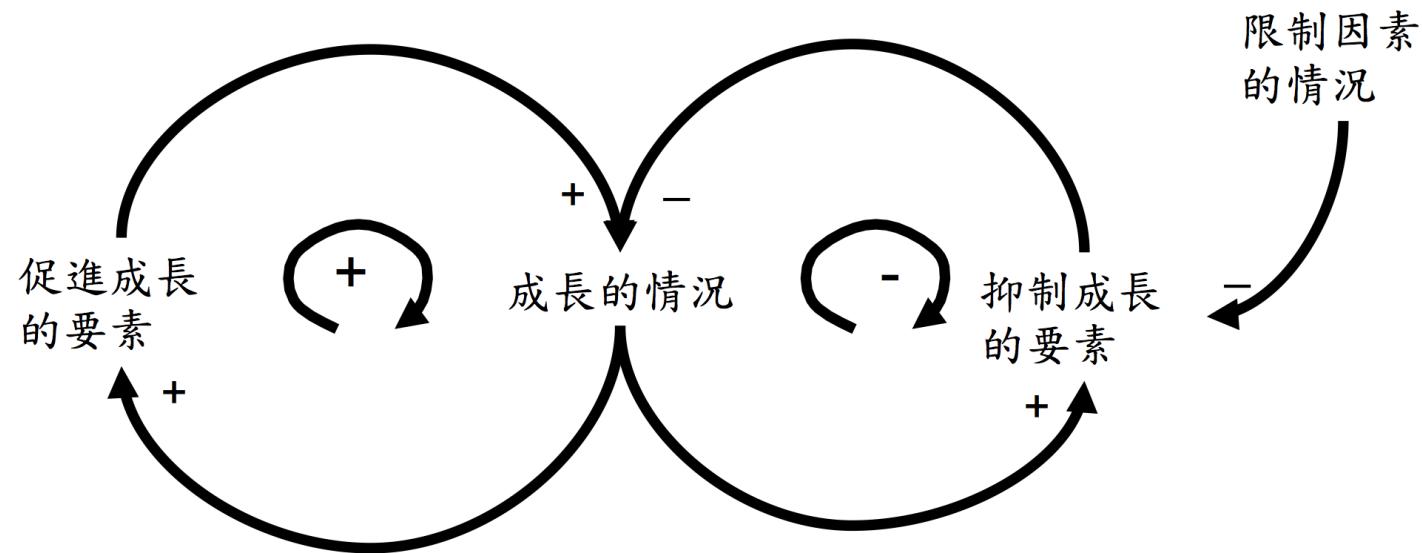
# 公地的悲劇：表面贏了其實雙輸 (Tragedy of the Commons)



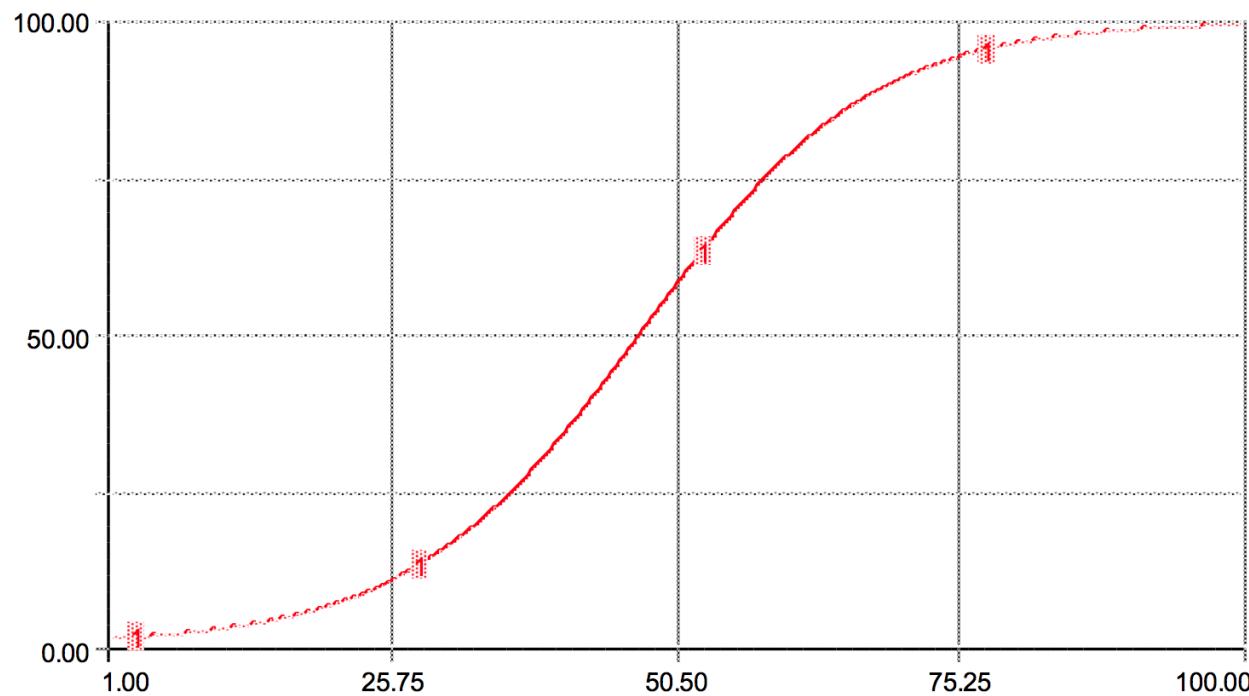
# 共同的悲劇：範例



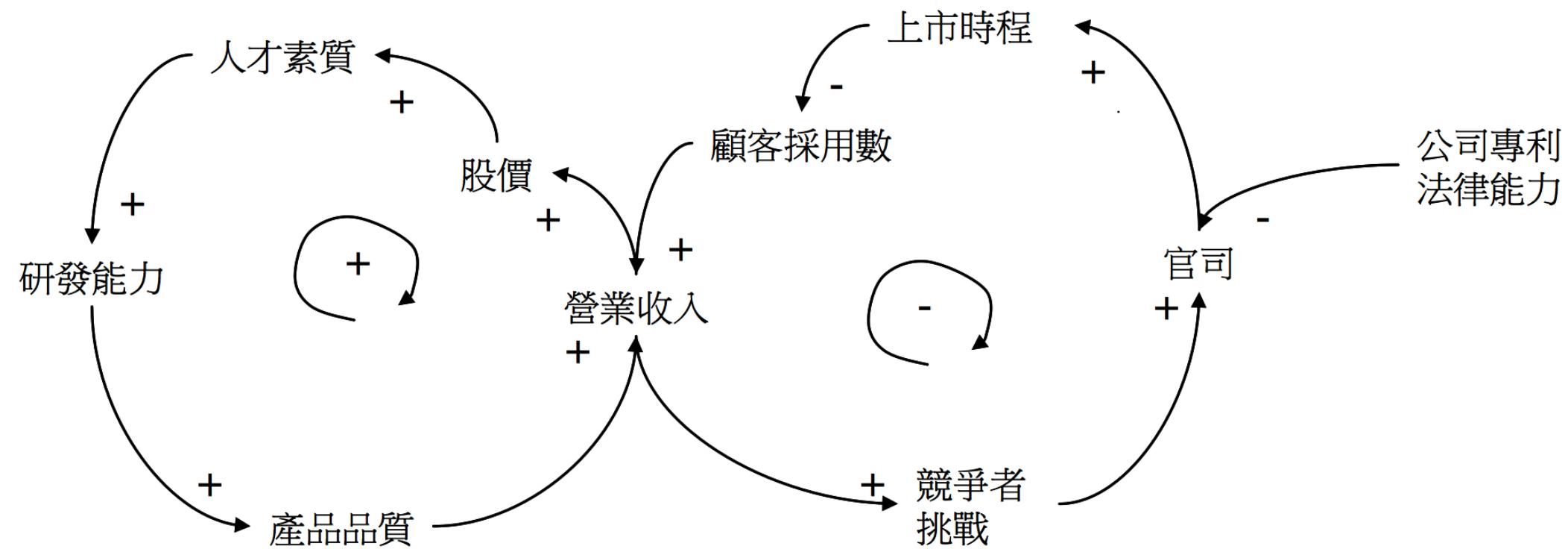
# 成長上限 (Limits to Growth)



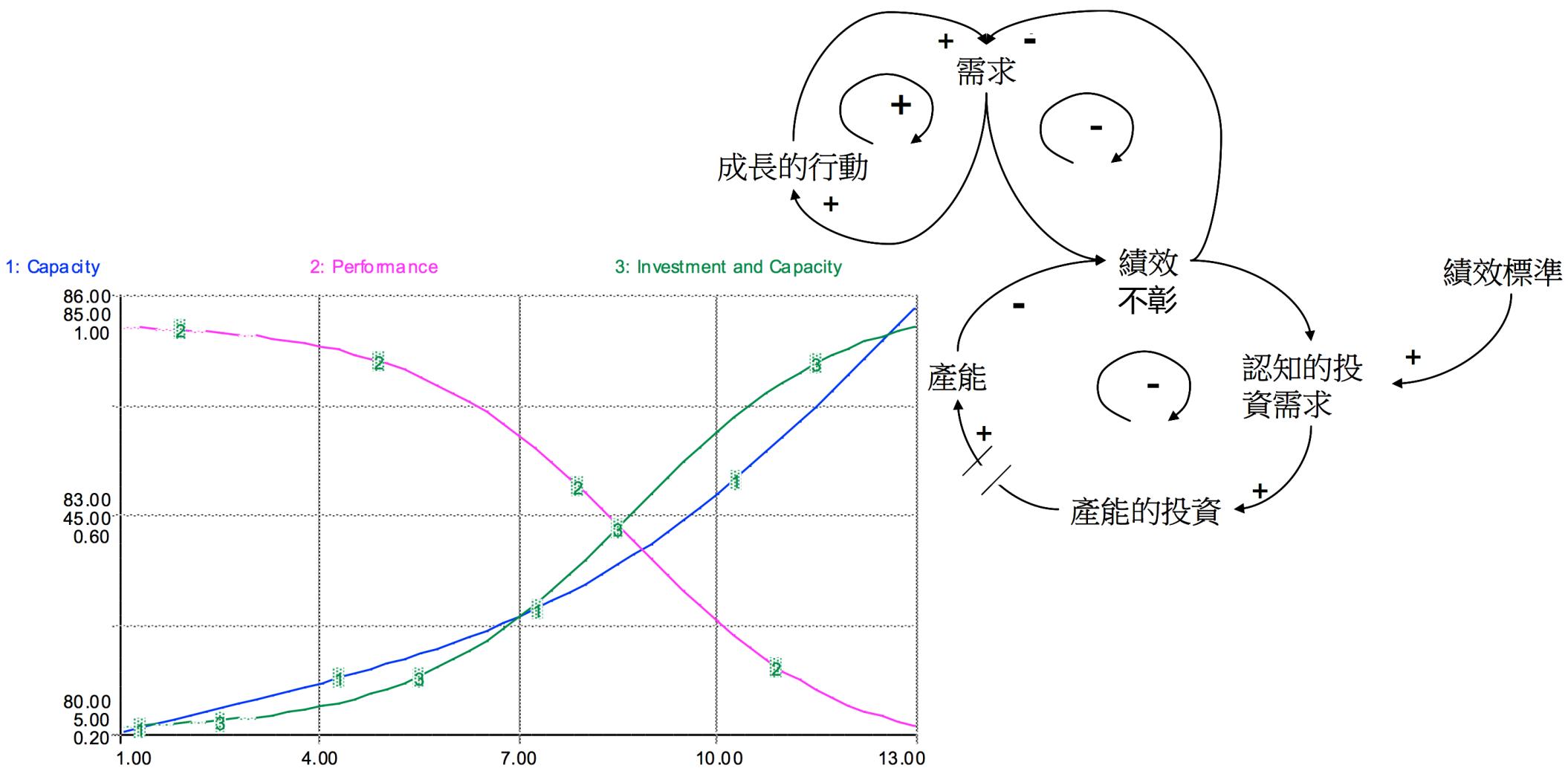
1: Condition



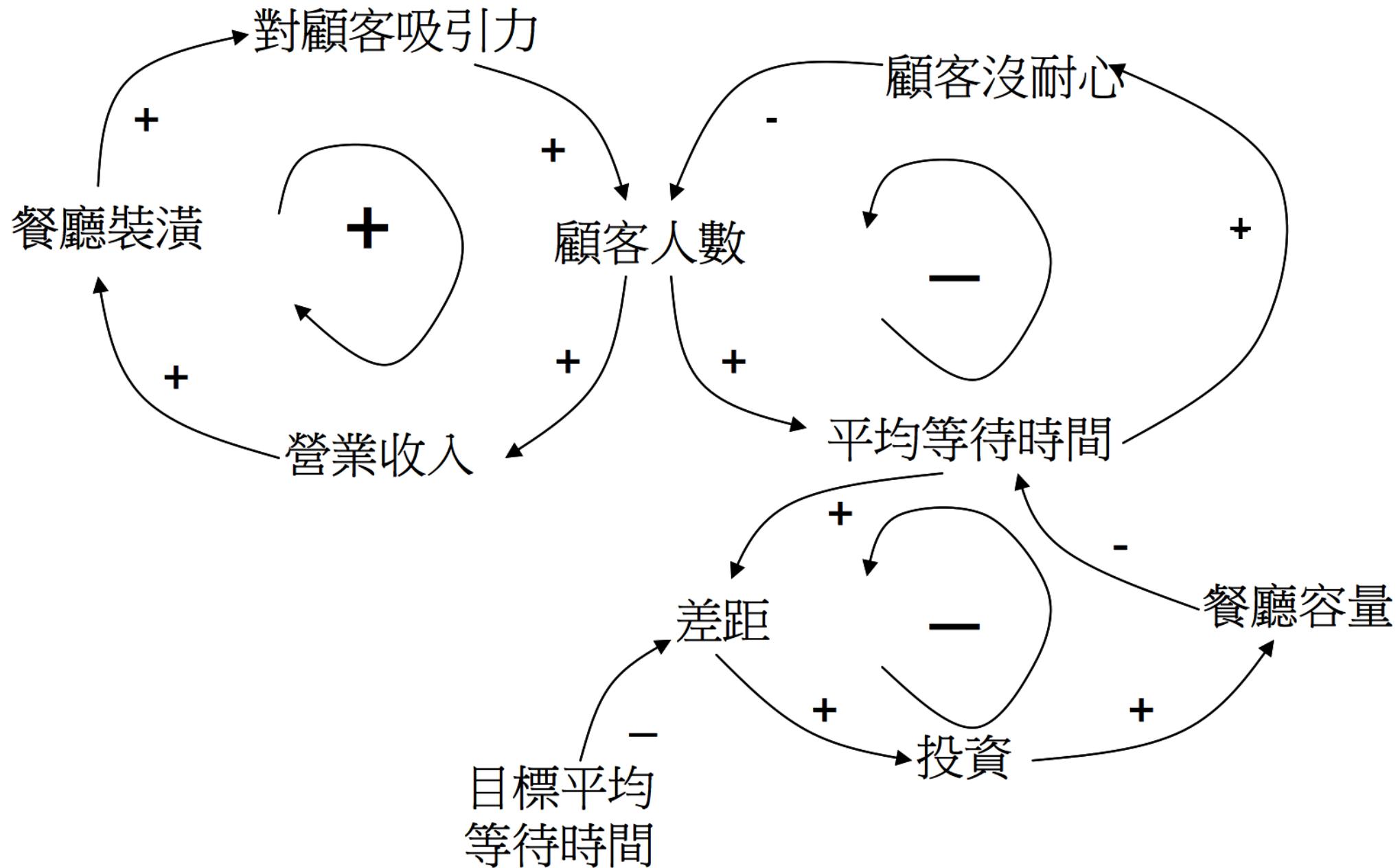
# 成長上限：範例

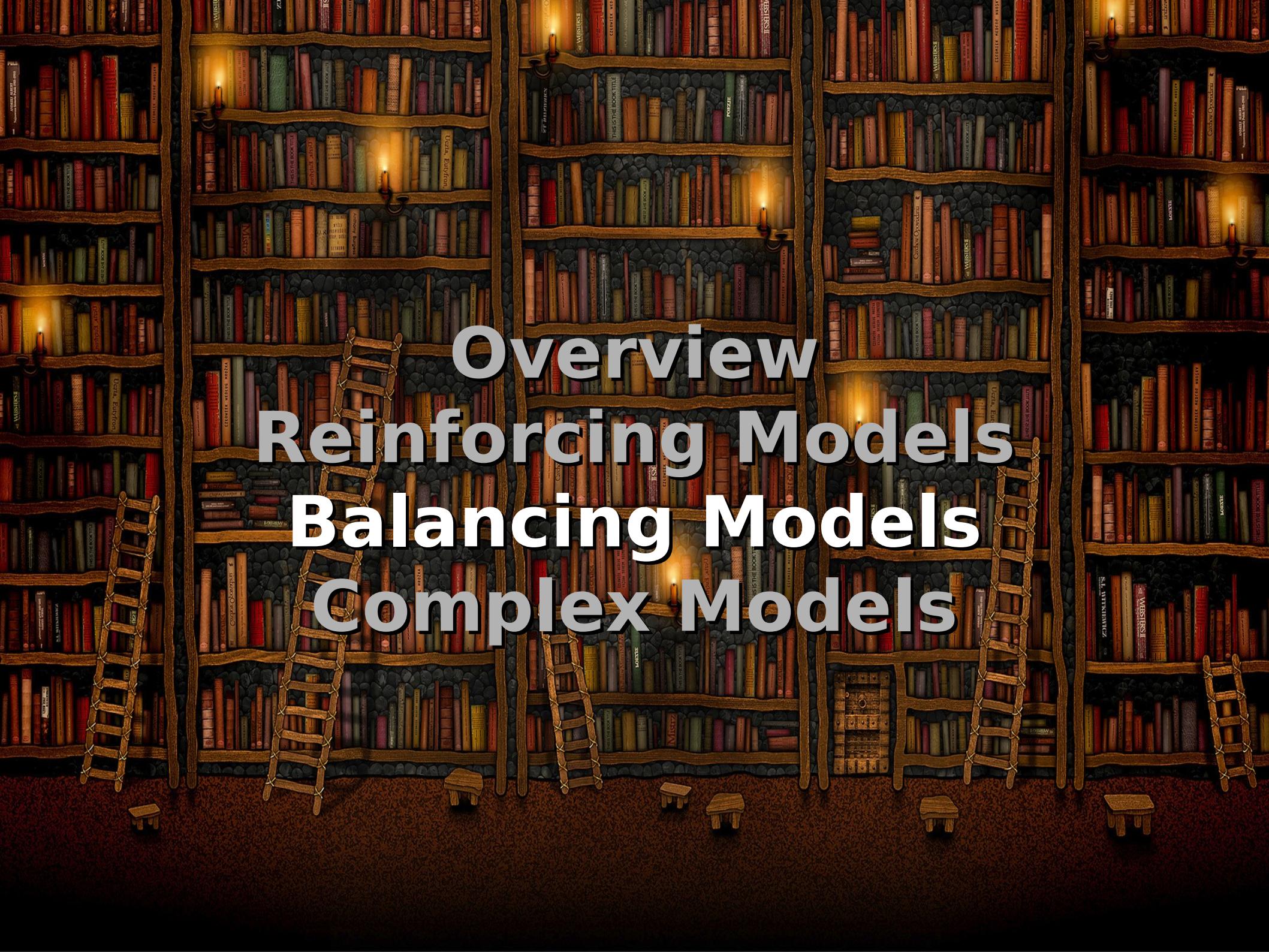


# 成長與投資不足：耐心等結果 (Growth and Underinvestment)



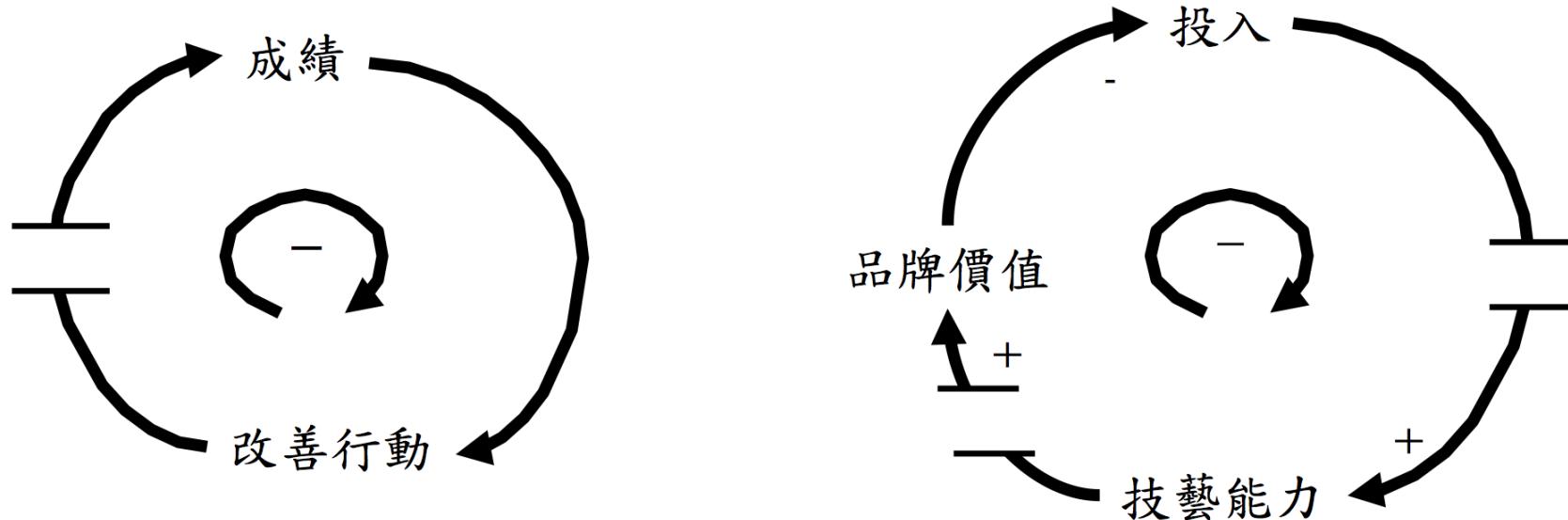
# 成長與投資不足：範例



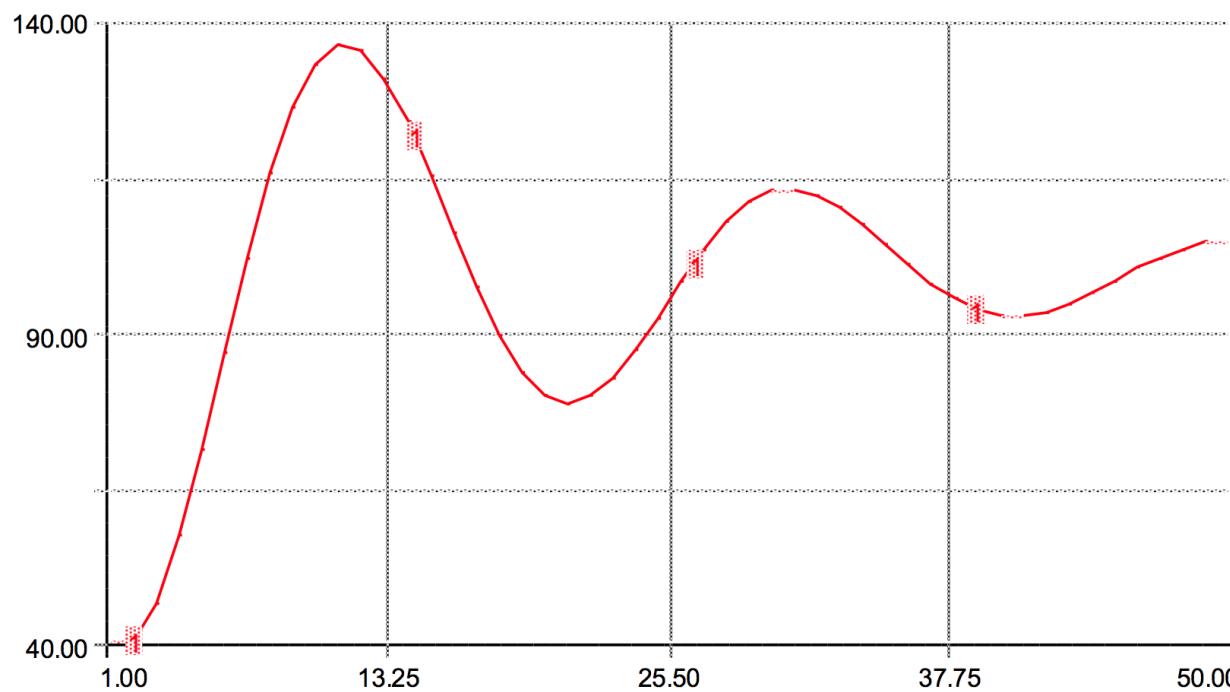


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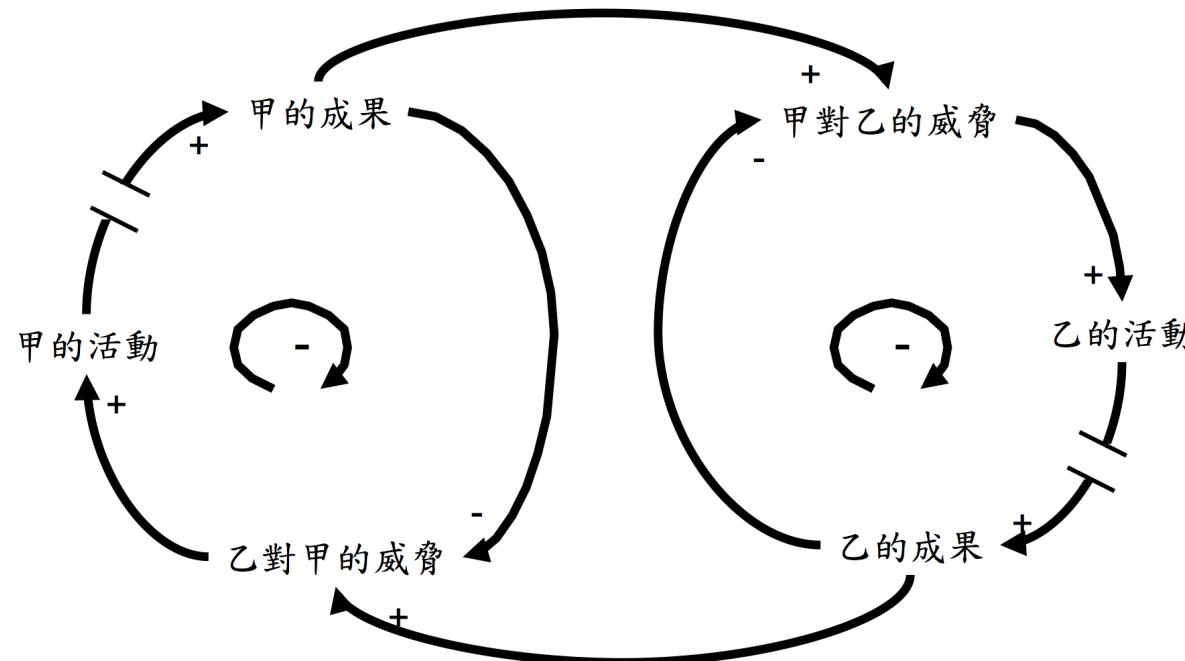
# 反應遲緩的調節環路



1: Grade

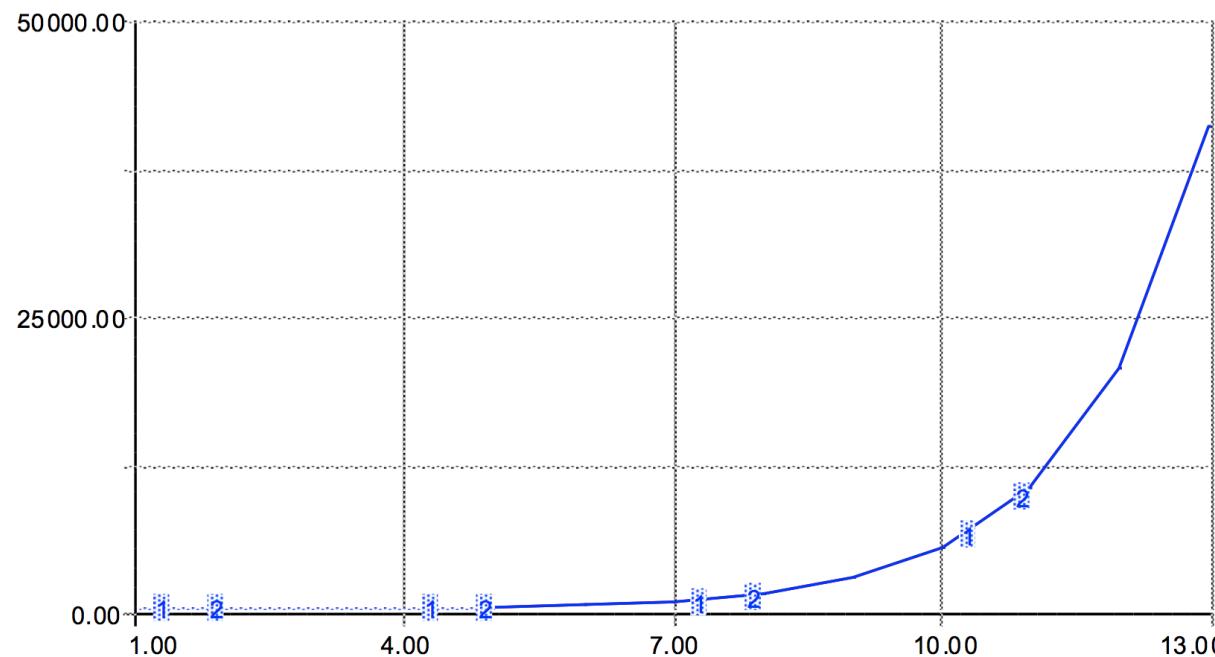


# 惡性競爭 (Escalation): 軍備競賽

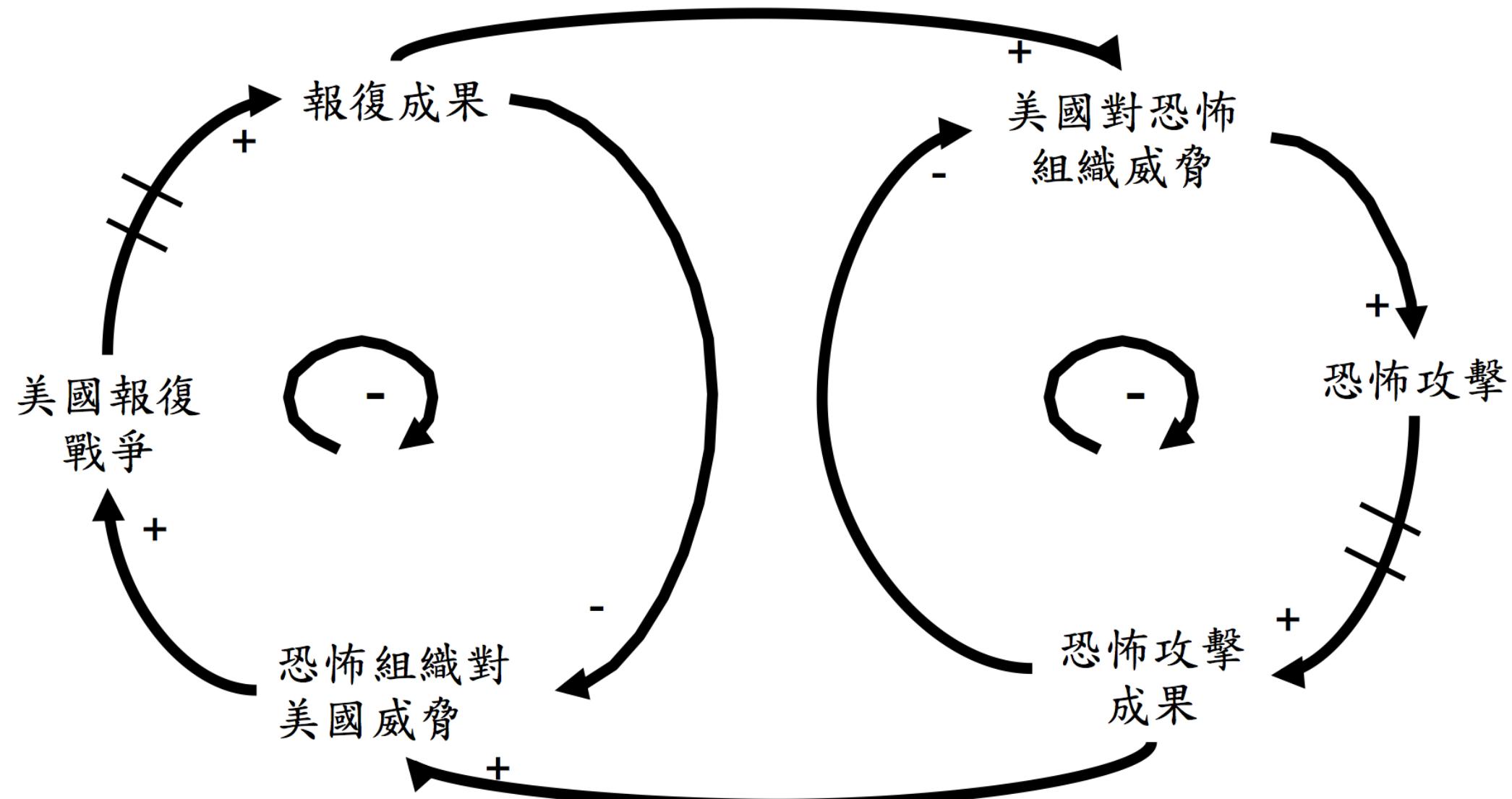


1: Score A

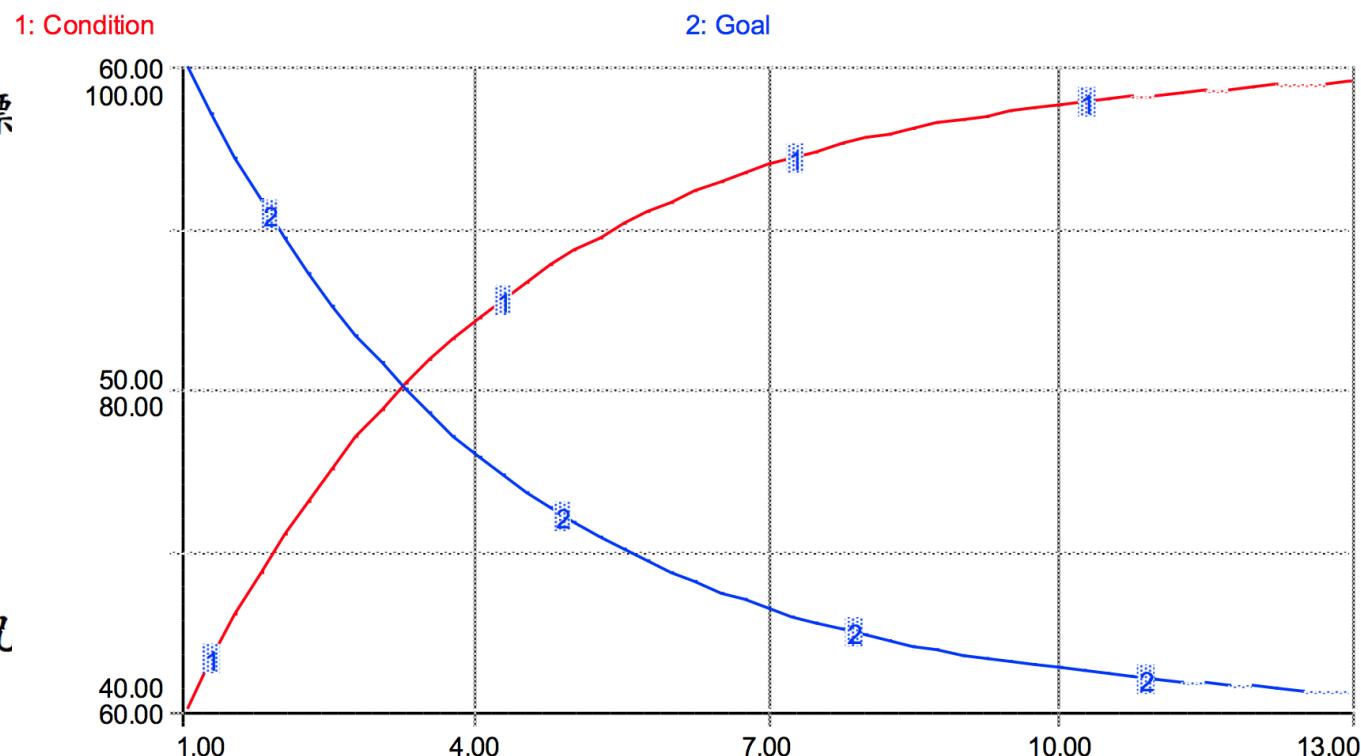
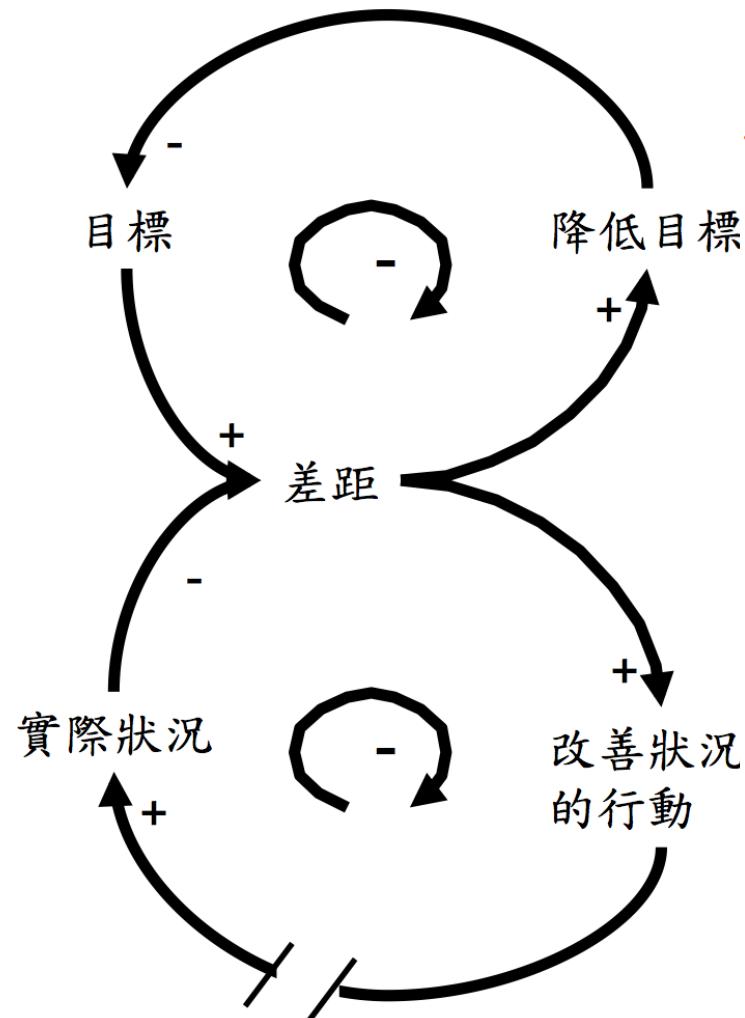
2: Score B



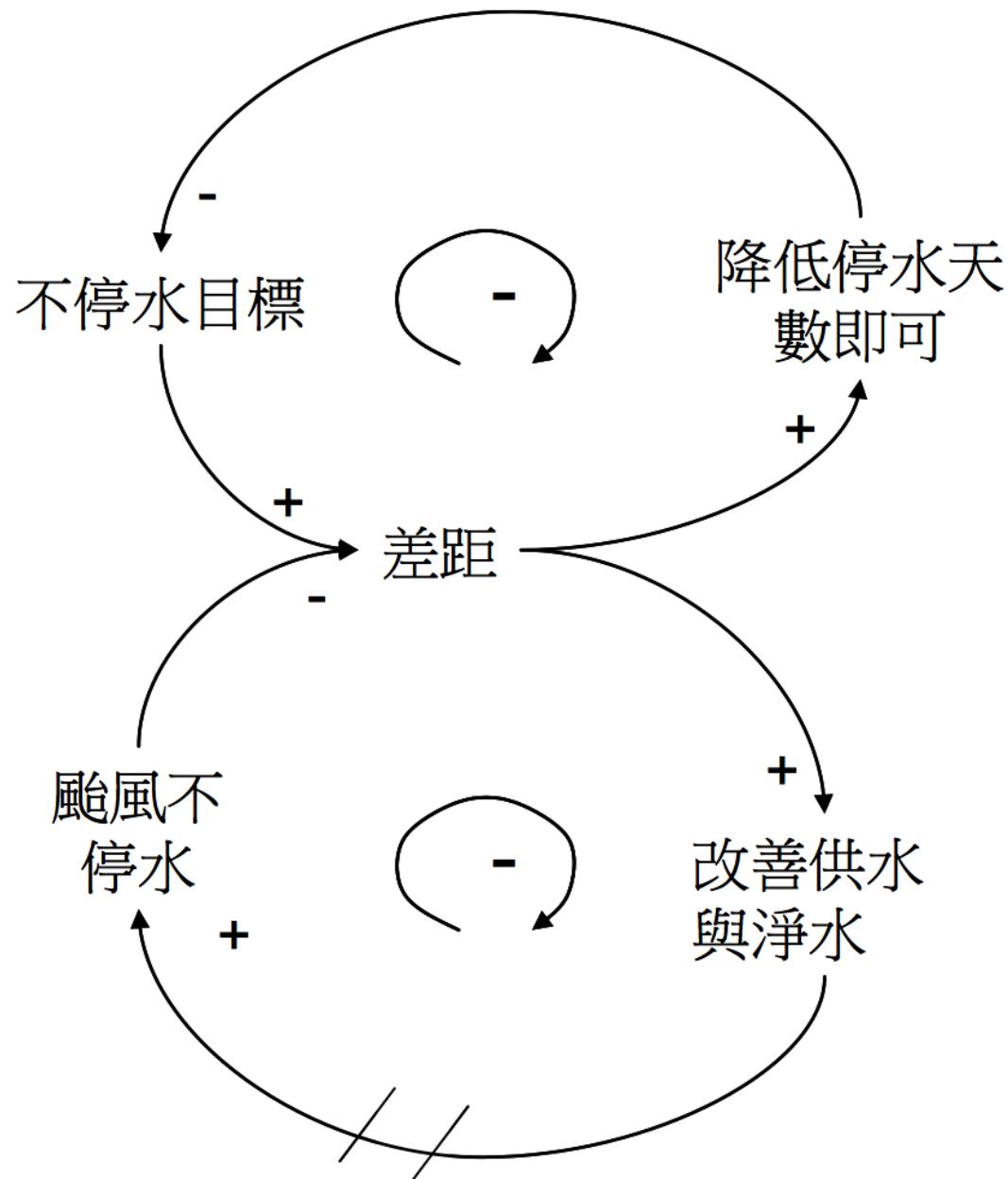
# 惡性競爭：範例



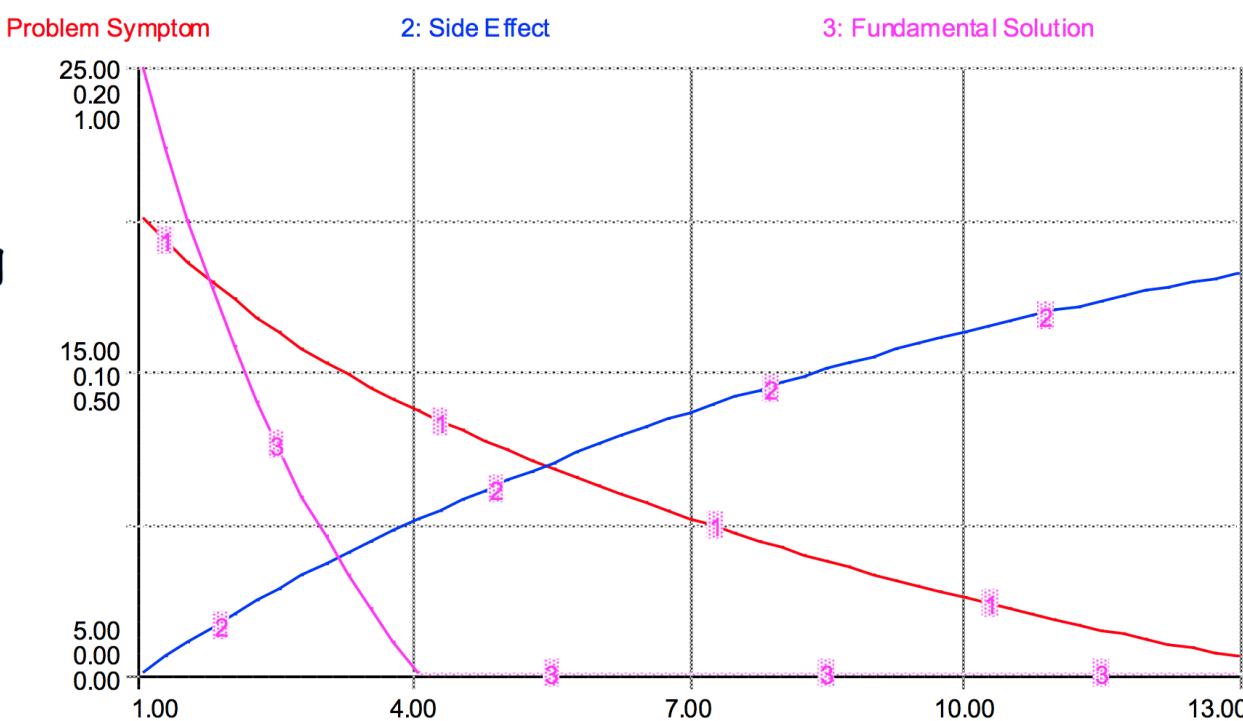
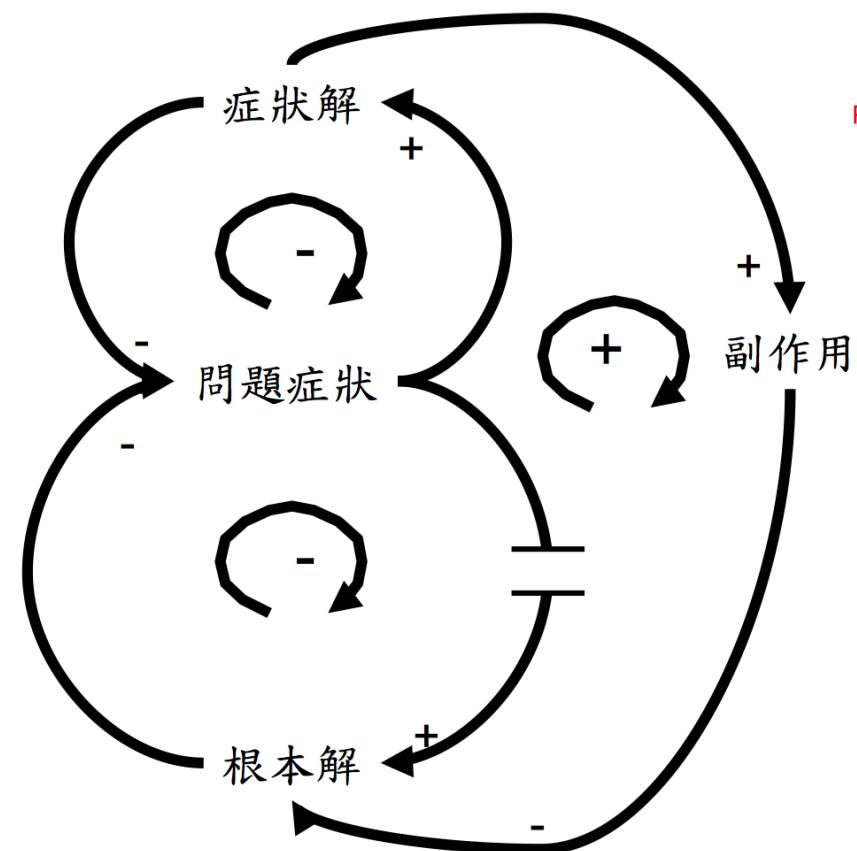
# 目標侵蝕 (Eroding Goals): 初衷呢？



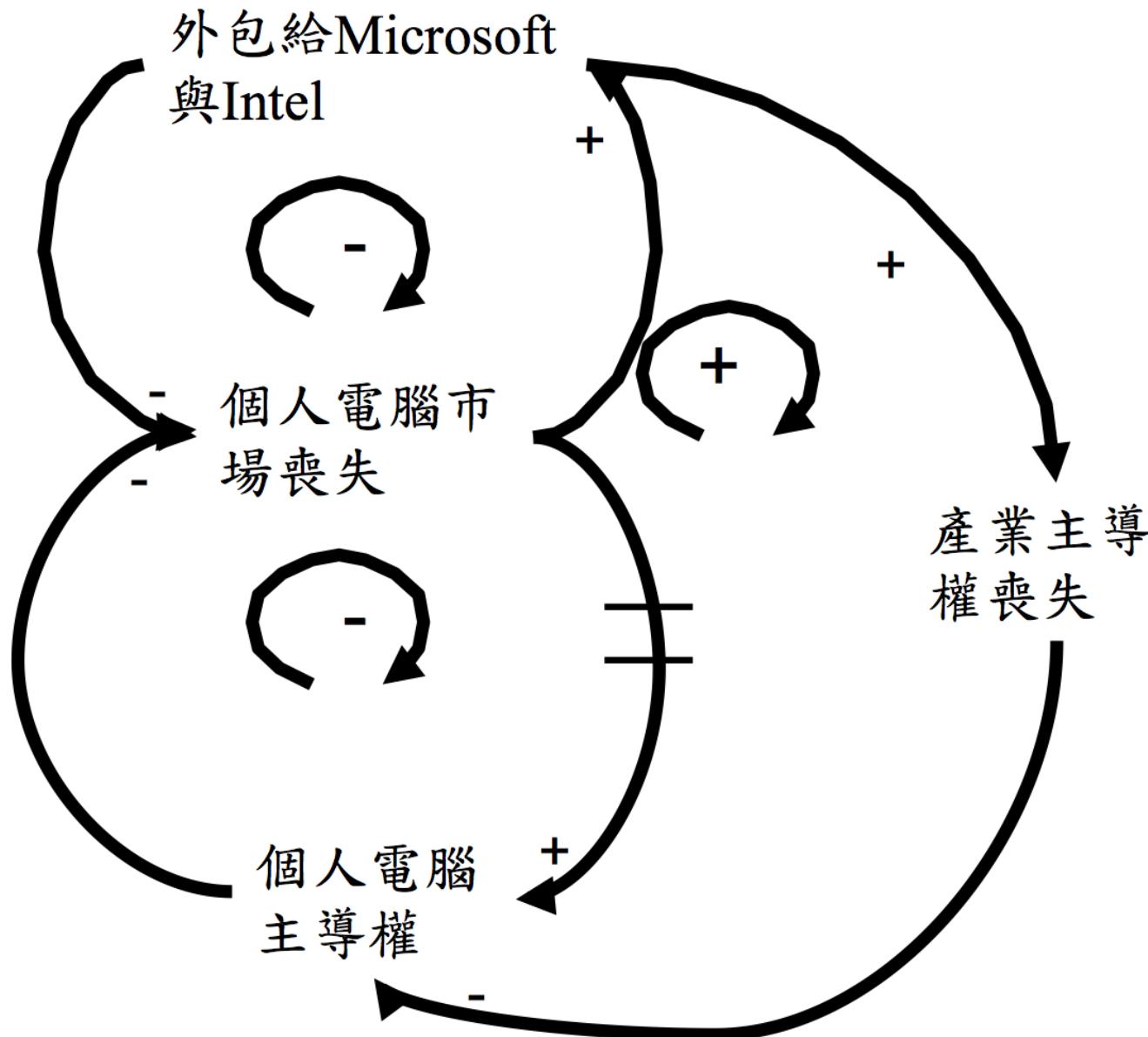
# 目標侵蝕：範例



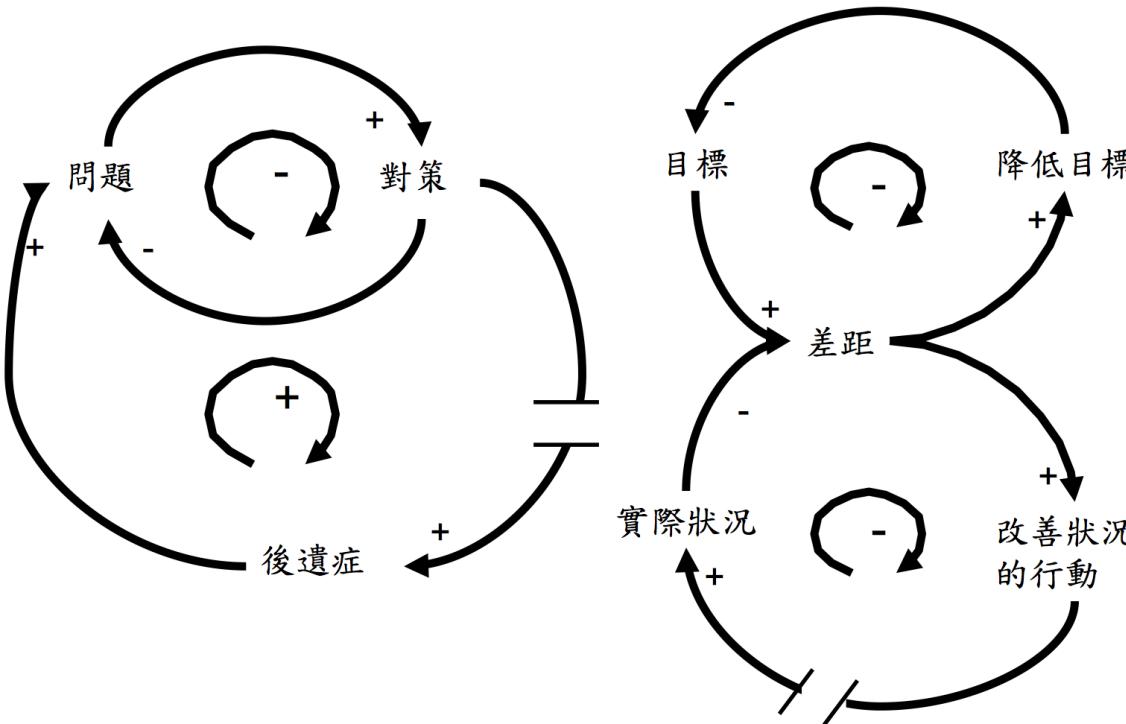
# 捨本逐末：治根不治本 (Shifting the Burden)



# 捨本逐末：範例

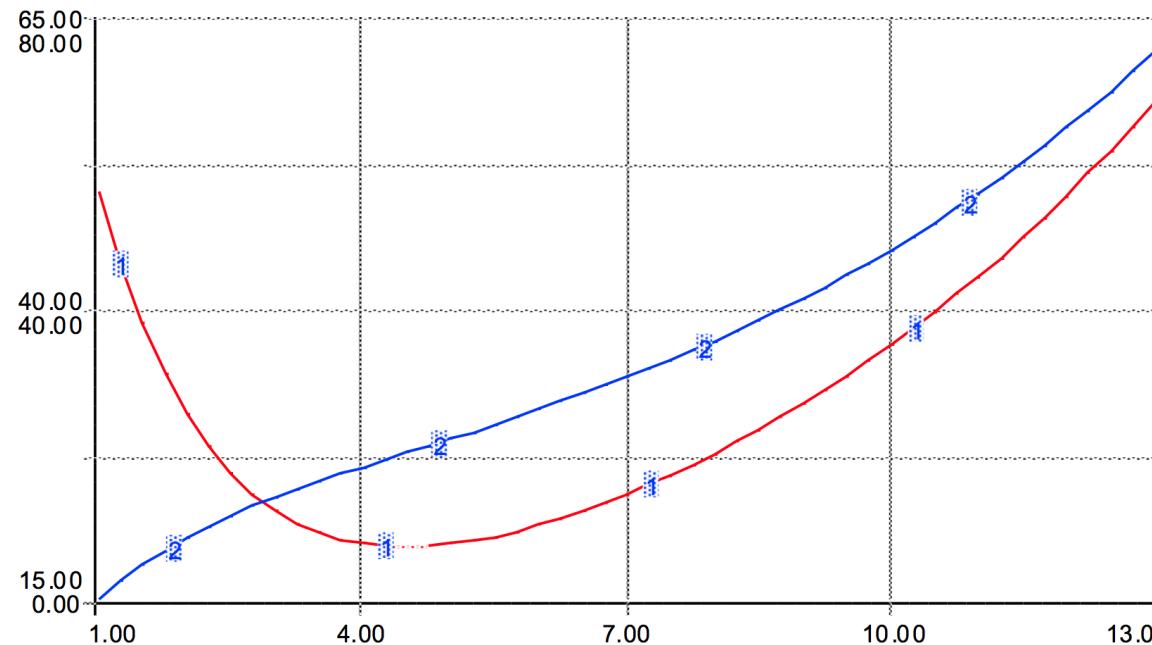


# 飲鳩止渴 (Fixes and Fail)

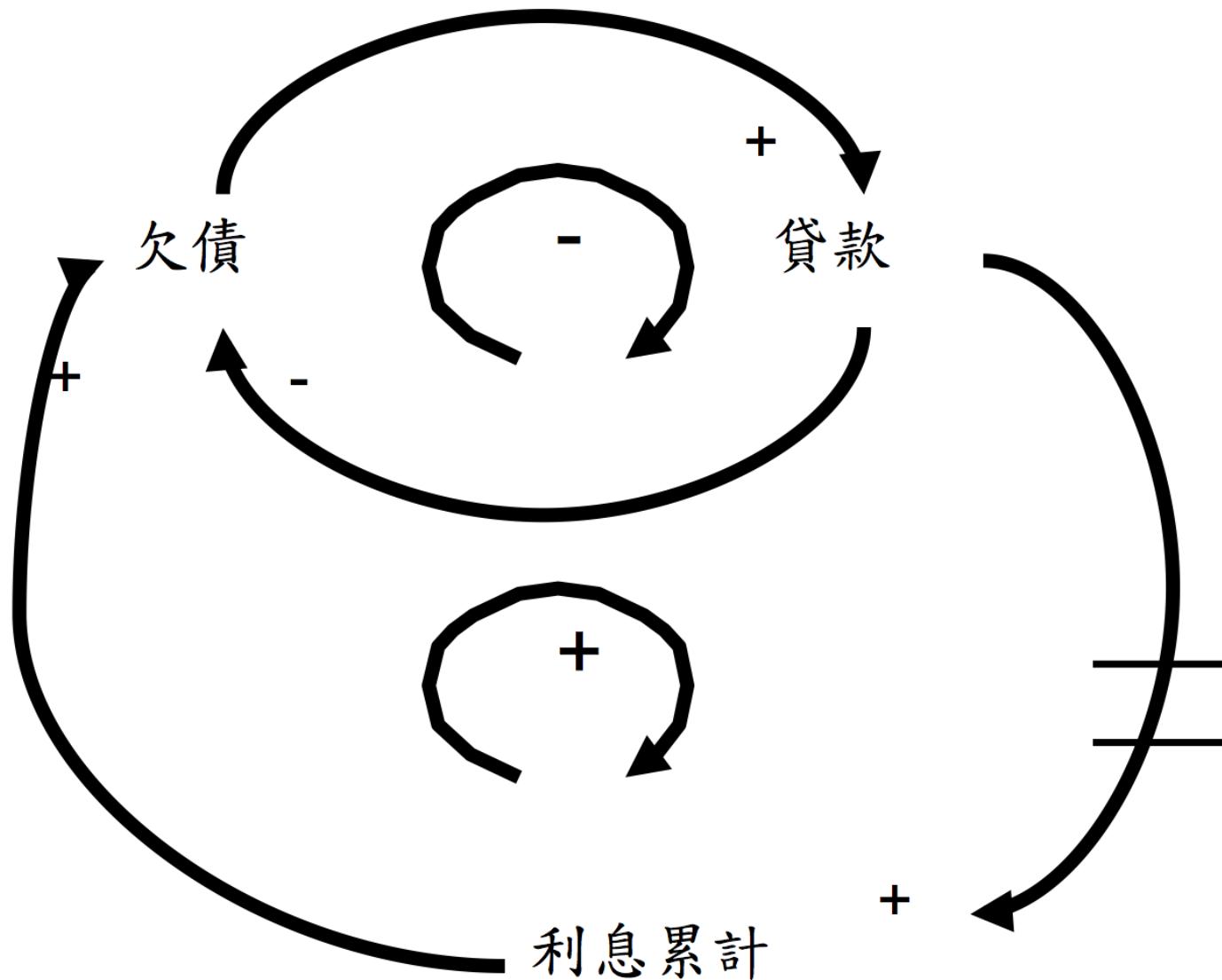


1: Problem

2: Unintended Consequences



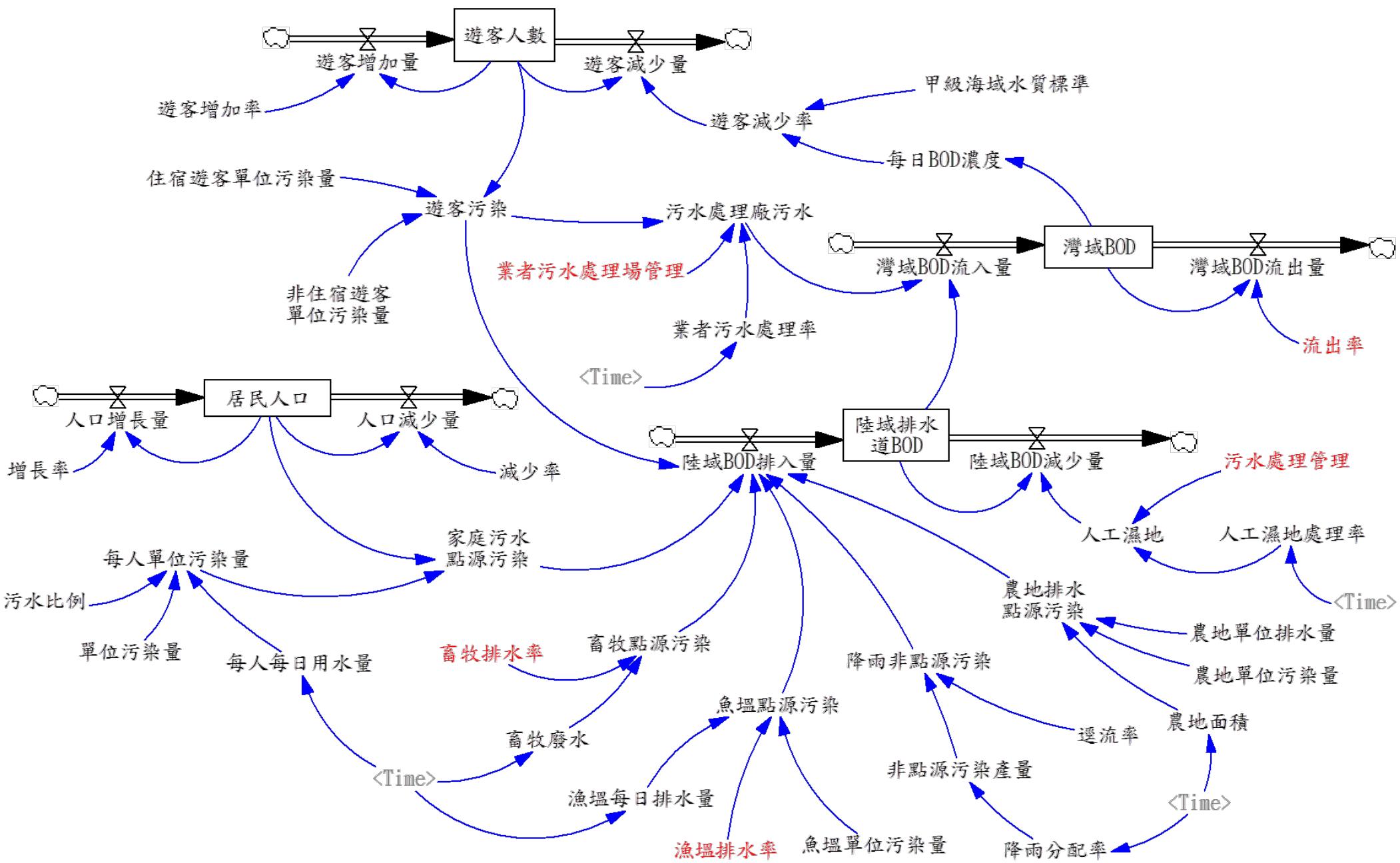
# 飲鴆止渴：範例



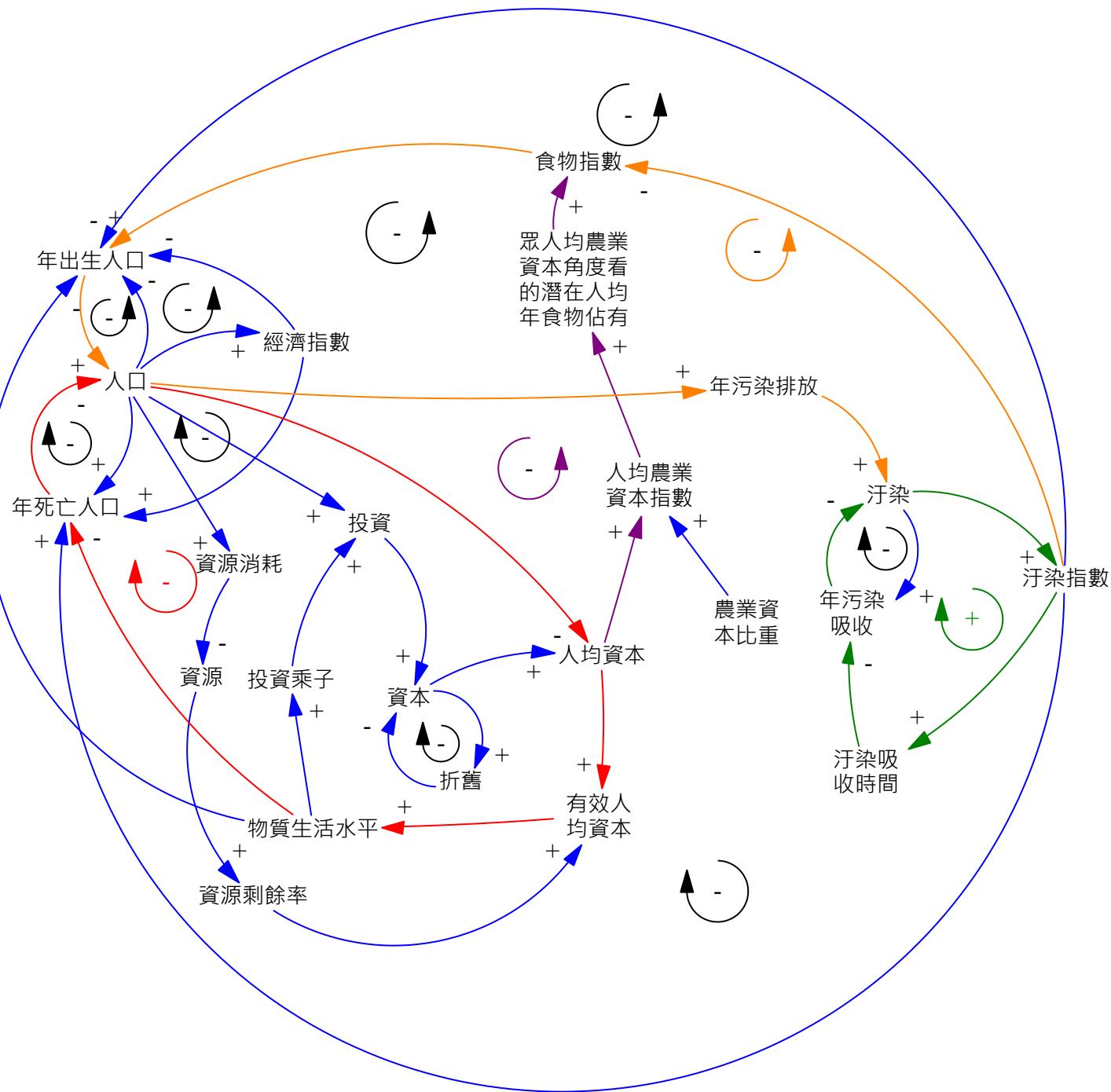


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# 水質永續經營模型



# 世界模型



# 參考書籍

兩本皆有方程式

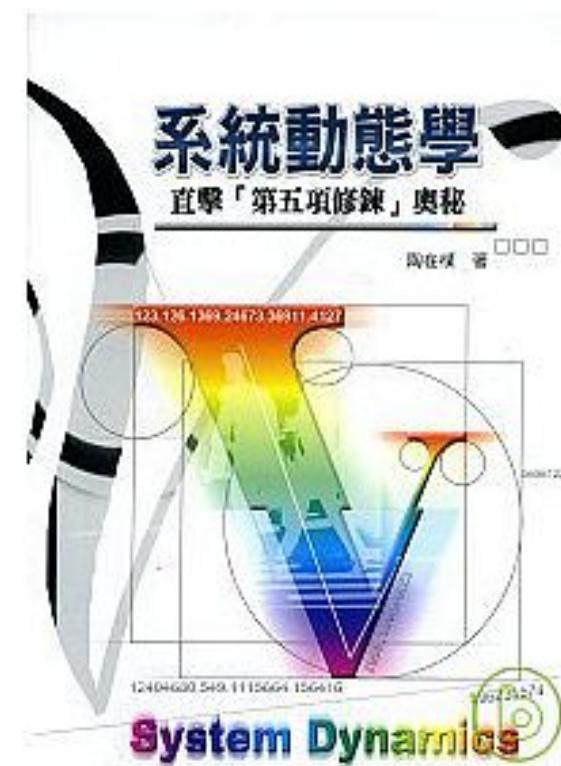
較基礎



*System Dynamics:  
Theory & Application*

智勝

較進階



**System Dynamics**

# Game Over

