Under What Conditions Does Employee Ownership Work?

A Model of Ownership Structure and High Performance Work System

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Scenario

- You are a founder of a startup company with limited working capital.
- How should you compensate your employees to motivate them?
- Should you give them company stocks besides salary?
- If so, in what form (stock options, stock grants)? How much? When? And Why?

- How does giving employees ownership stake influence employee well-being, company profit and your net worth?

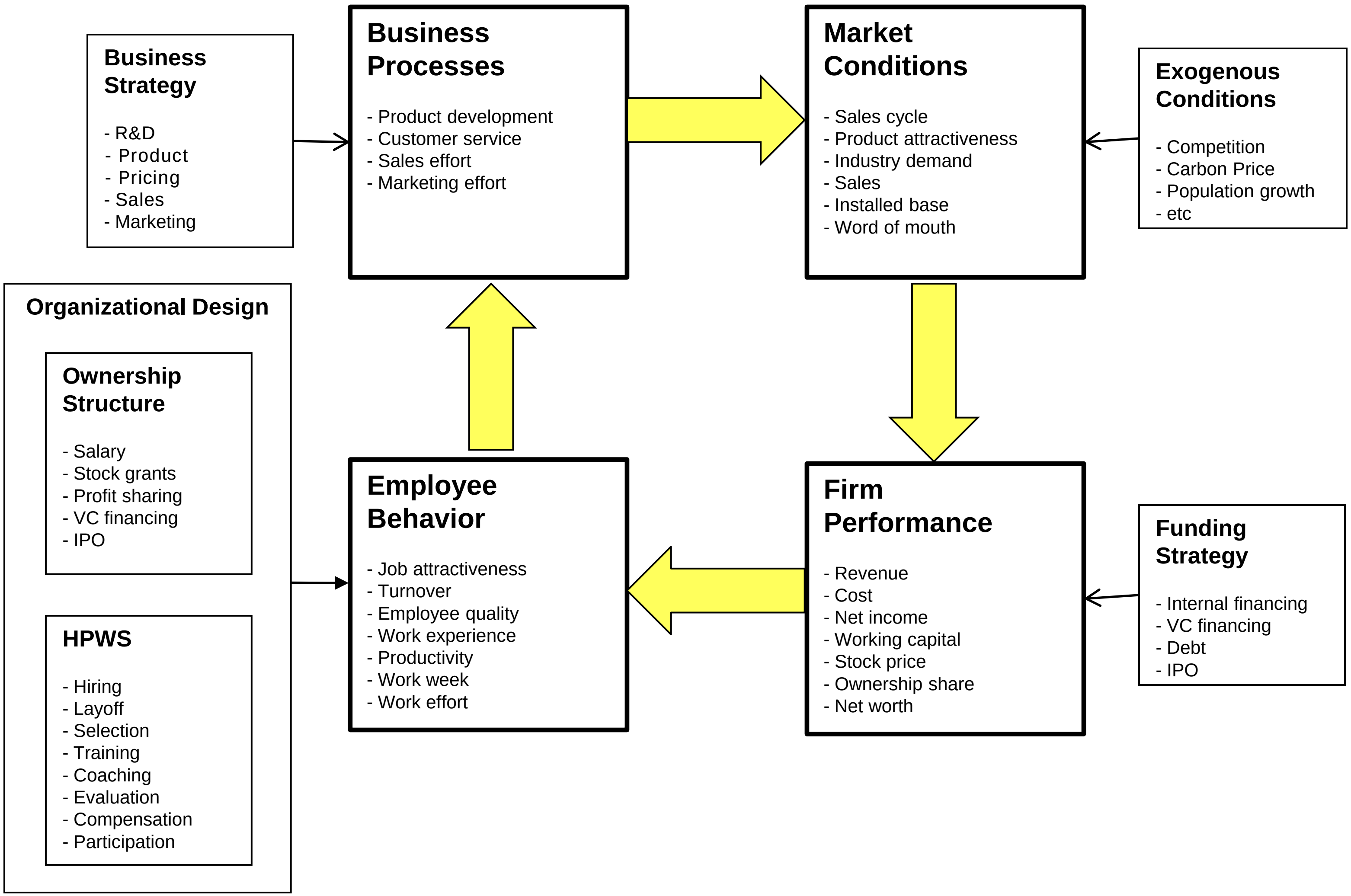
Research Questions

- Under what conditions does employee ownership increase firm performance?

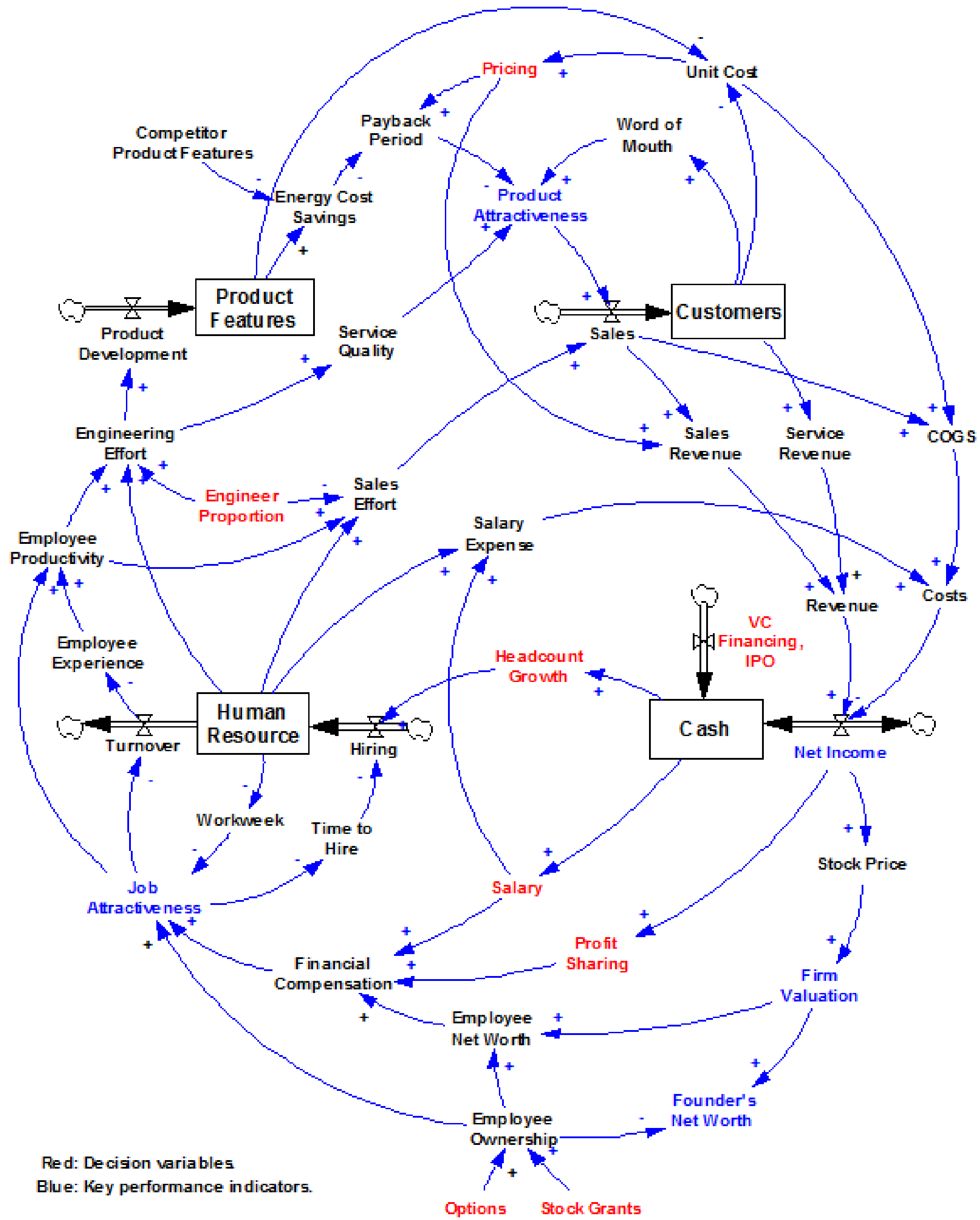
- 1. **Theory Building**: How to model the causal mechanism between employee ownership and firm performance?

- 2. **Scenario Analysis**: How do different combinations of salary, stock options, stock grants and profit sharing affect employee behavior and firm performance overtime under various conditions?

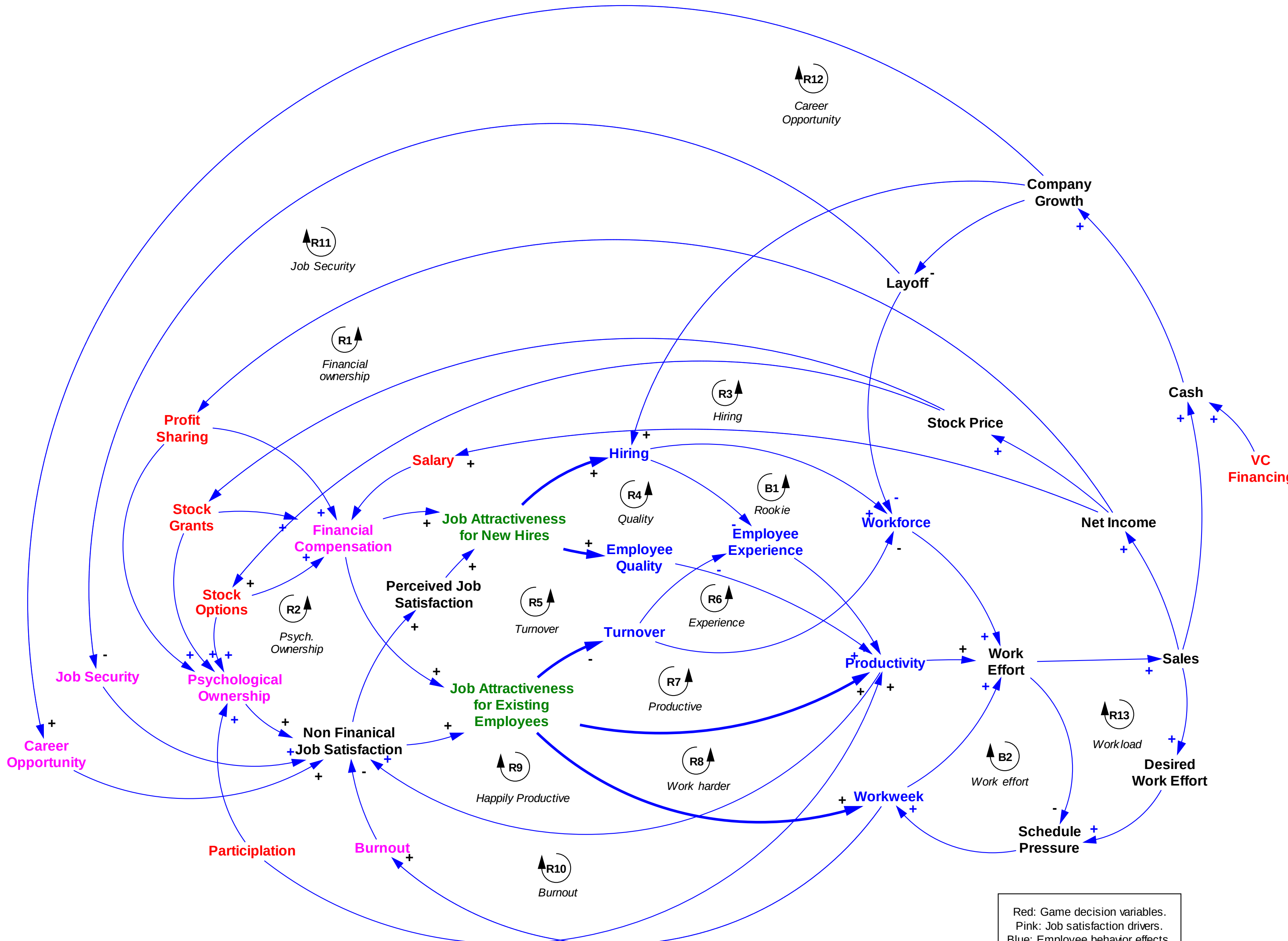
Overall Model Framework



Overall Model Causal Loop Diagram



Causal Loop Diagram of Human Resource Management



Red: Game decision variables.
Pink: Job satisfaction drivers.
Blue: Employee behavior effects.

Model Sectors

- **Sales Cycle**
  - Five stages from potential customers to adopters
- **Product Development**
  - Features development
  - Energy cost savings and payback period
- **Human Resource**
  - Hiring, promotion, turnover, layoff, coaching and training
  - Employee experience and learning
  - Employee quality
  - Compensation and ownership structure
  - Job attractiveness
  - Employee productivity and work effort
- **Financial Sector**
  - Shares outstanding
  - Stock options
  - Stock grants
  - Financial market
  - Balance sheet and income statement
- **Competitor**
  - Incumbent, Startup

Model Calibration

- **Clean tech structure and parameters**
  - Based on Miller (2008) study on clean tech ventures
  - Calibrated to a clean tech start-up that produces a turn-key system that minimizes the building's energy costs.
  - Interview, company archival data, case study
- **EO and HPWS structure**
  - Strategic HRM literature – theory and empirical
  - NBER Shared Capitalism dataset (Kruse, Freeman and Blasi 2010) to estimate nonlinear functions
- **Financial structure**
  - Built on Oliva and Sterman (2003)'s model
  - Expanded on balancing sheet, income statement, cash flow and financial market structures
  - Added venture capital and grants structures

Analysis 1: Dilution Effect?

- Hypothesis 1: Dilution: Founder should give as little stock grants to employees as possible since stock grants dilute founder's shares, thus lower founder's net worth.

- → It depends, since

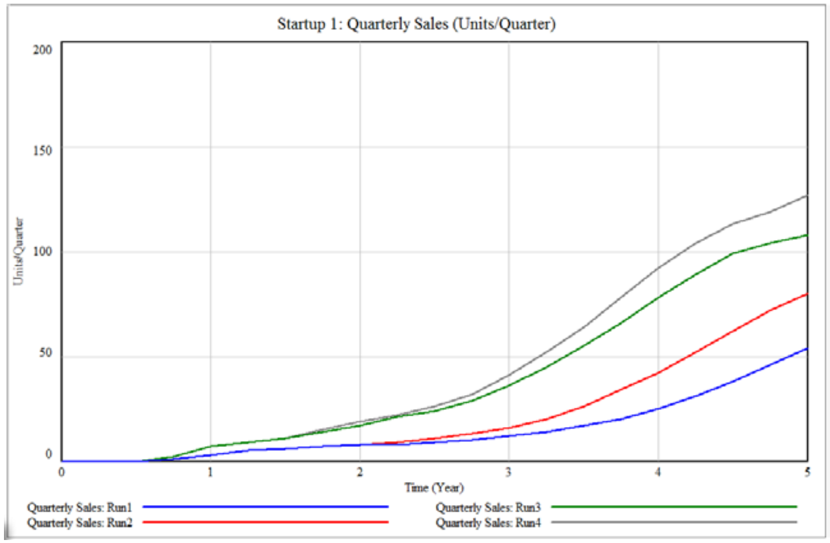
  Net Worth = Market Cap x Ownership Fraction

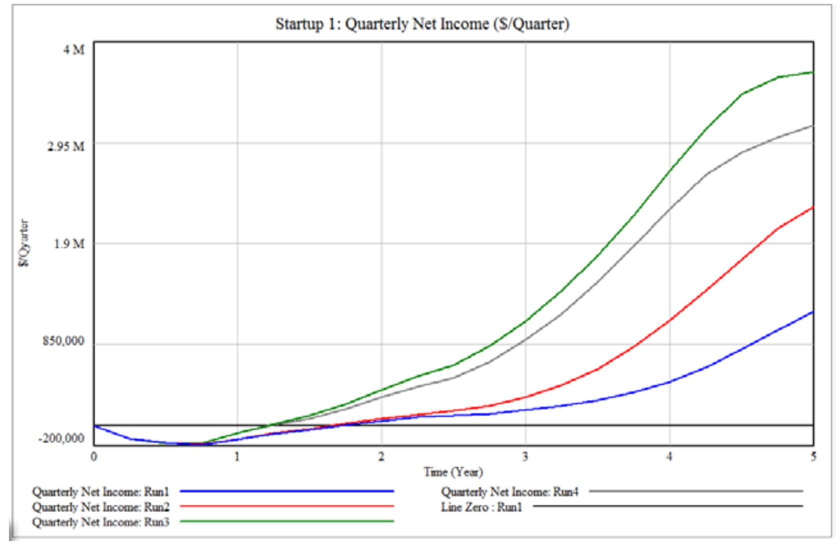
- When the increase in market cap caused by productivity increase from employee ownership > Decrease in founder's ownership fraction, net worth increases.

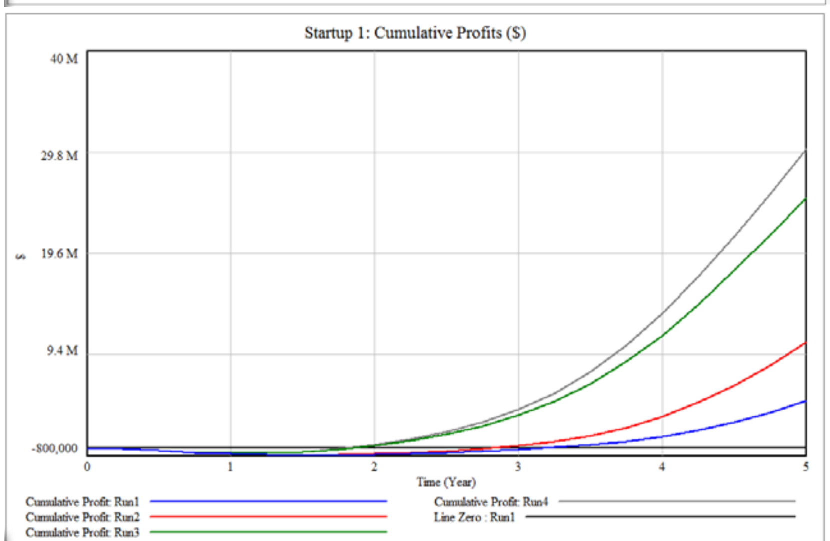
  ... haven't you heard "Giving is Receiving"?

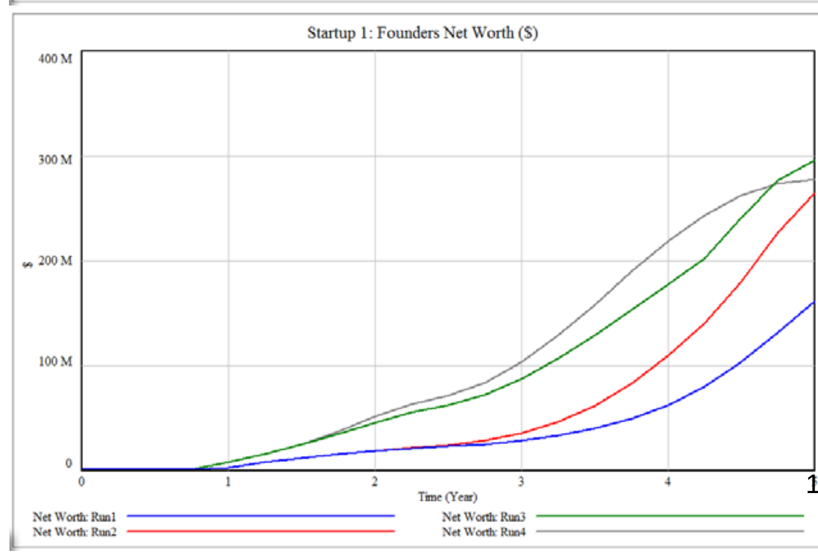
More Wealth is Shared, More Wealth is Created

- Run1 (blue) : industry salary
- Run2 (red) : industry salary + stock options
- Run3 (green) : industry salary + stock options + stock grants
- Run4 (grey) : industry salary + stock options + stock grants + profit sharing

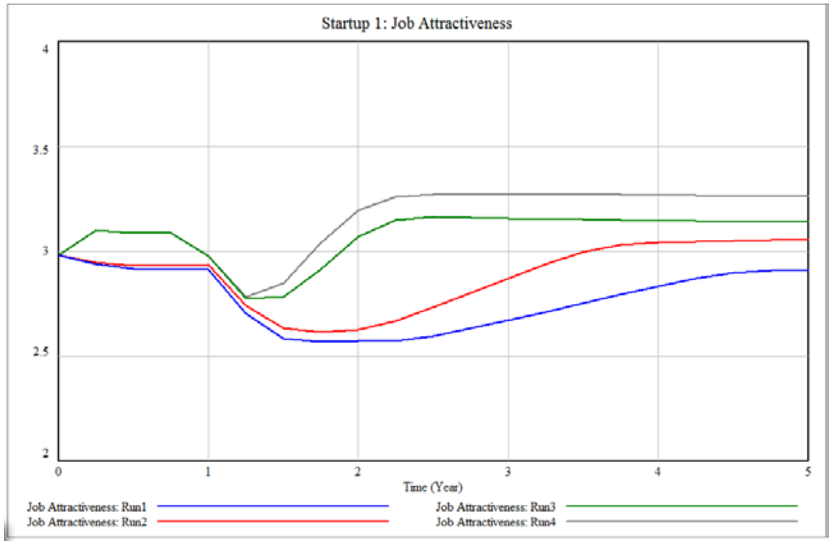


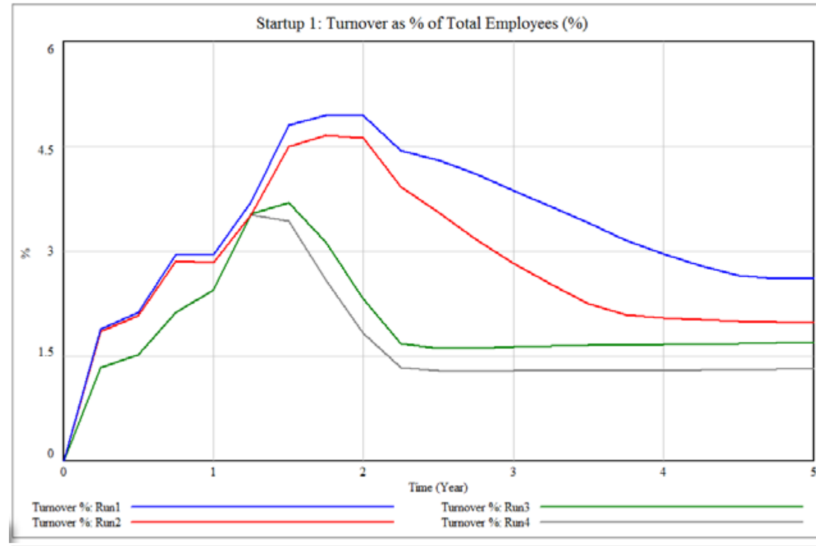


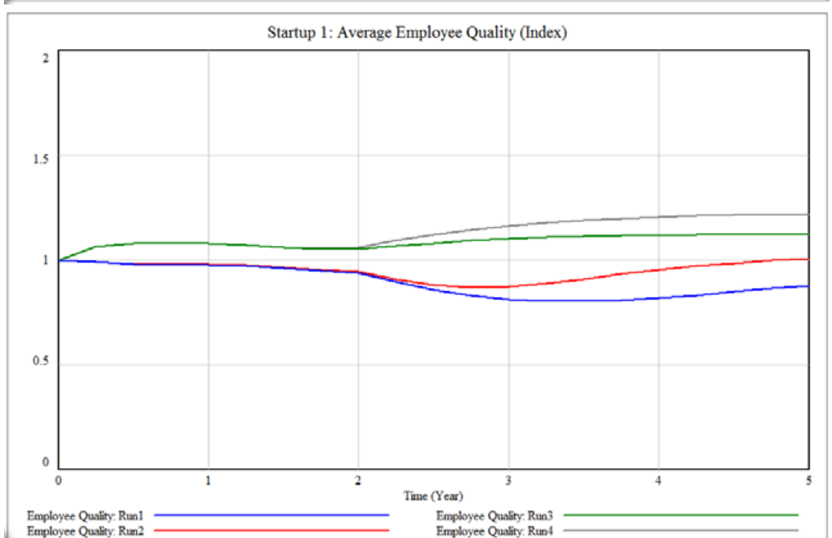


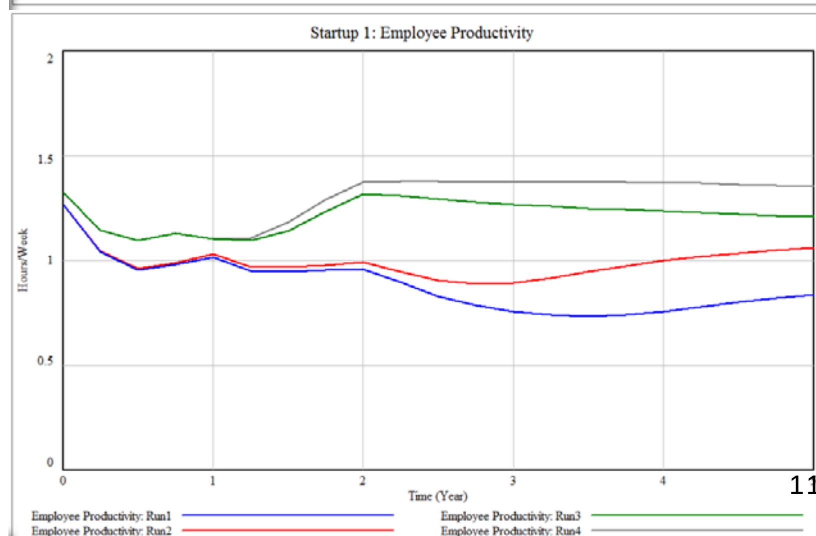


More wealth is shared, more job satisfaction, less turnover, higher employee quality and productivity



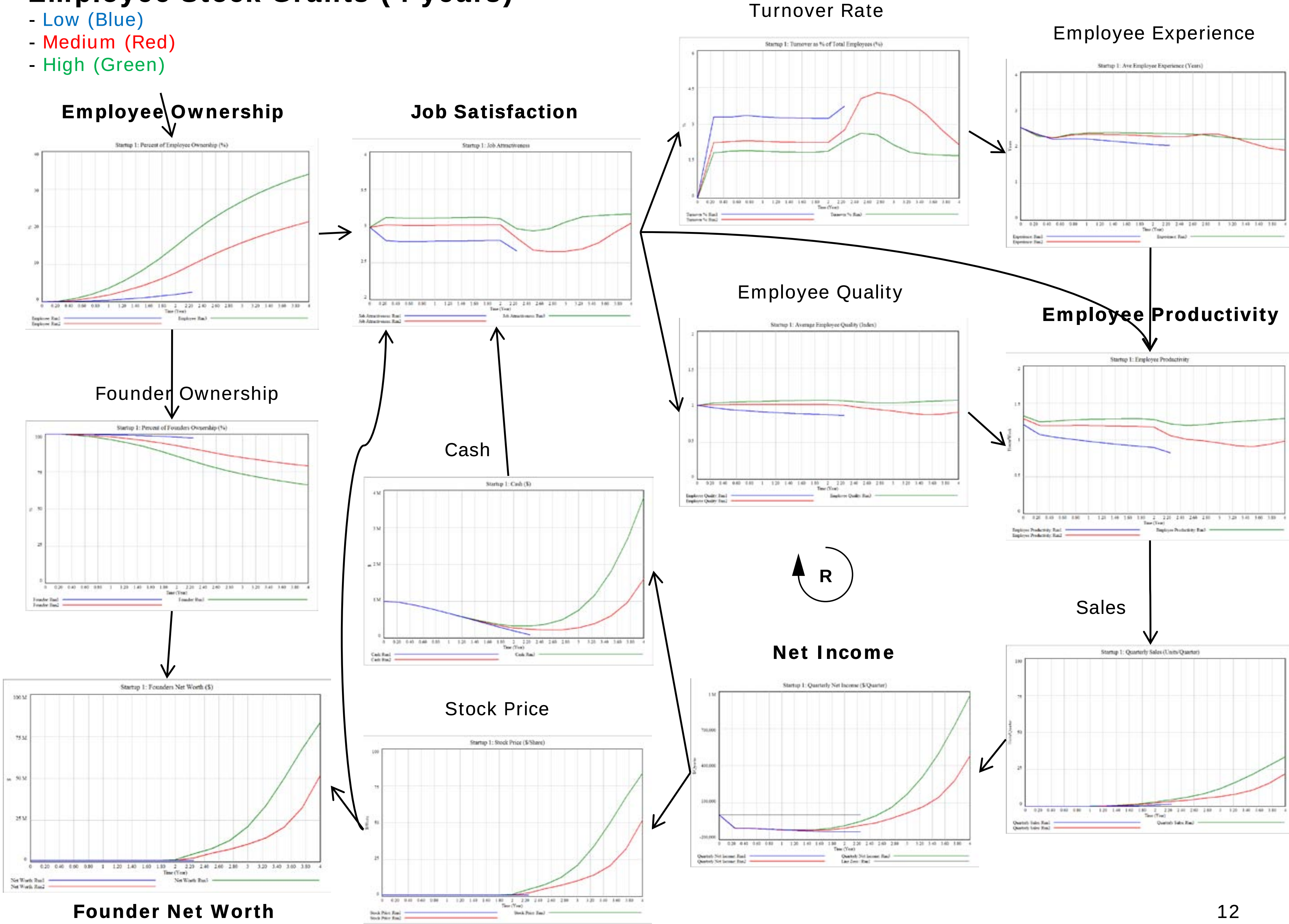






Employee Stock Grants (4 years)

- Low (Blue)
- Medium (Red)
- High (Green)



Analysis 2: Bigger Pie?

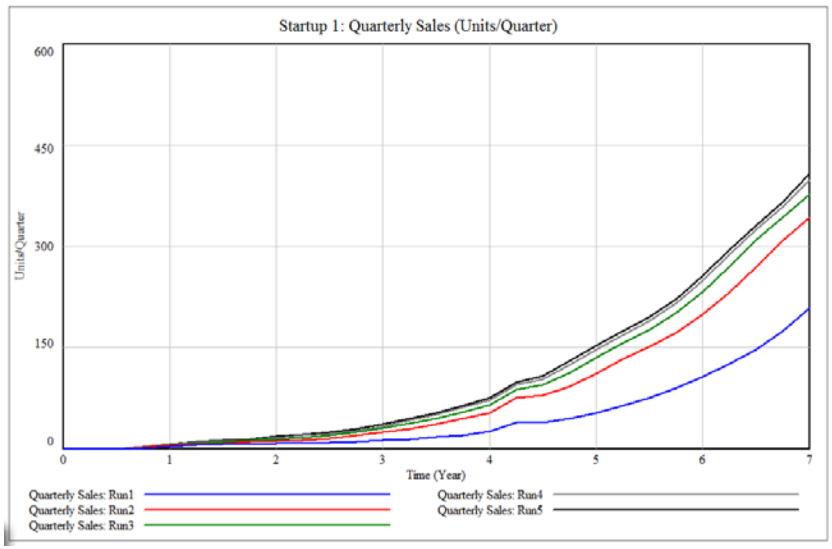
- Hypothesis 2: Bigger Pie: Founder should give as many stocks to employees as possible since the more stocks are granted, the higher employee productivity, which results in higher market cap and founder's net worth.

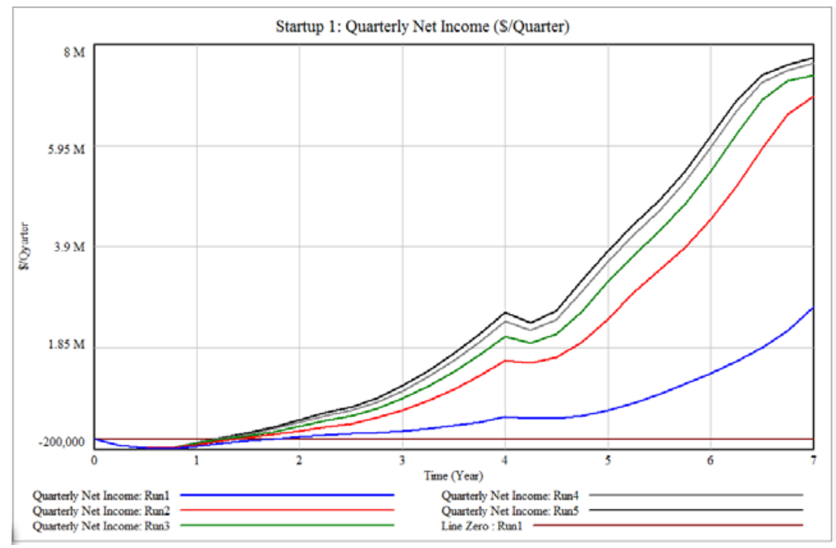
- → Not necessary, there is a diminishing return of productivity effect from employee ownership. Once employees approach their maximum productivity, additional stock grants do not increase market cap enough to offset dilution.

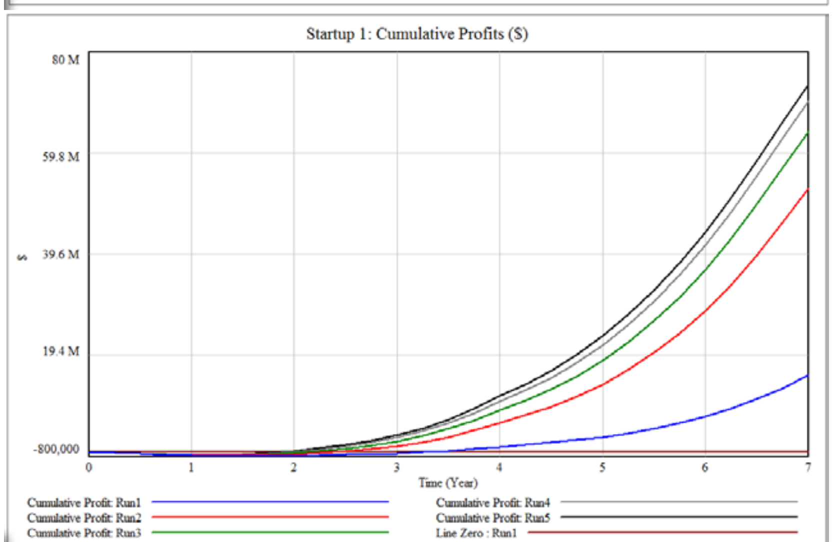
… I know giving is receiving, but this is not charity!

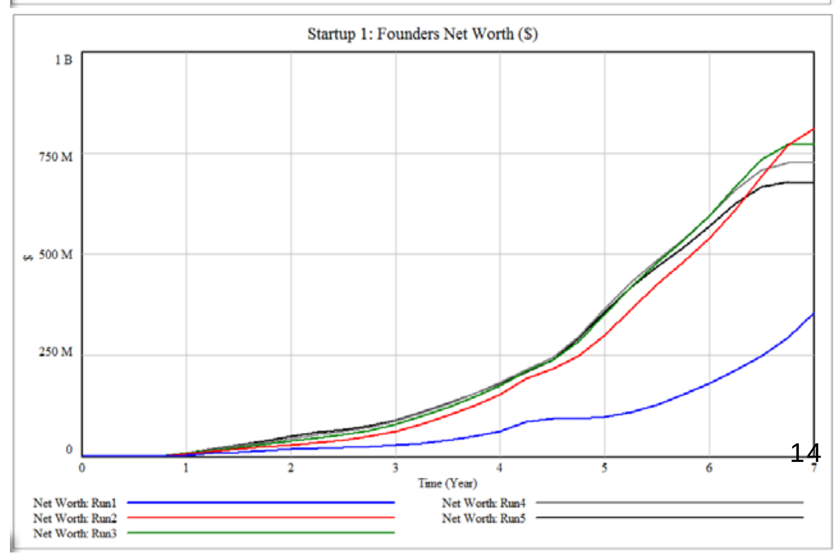
Higher the stock grants, higher sales, net income, cumulative profit and founder's net income. However it increases at a diminishing rate.

- Run1 (blue) : industry salary
- Run2 (red) : industry salary + stock grants worth 20% industry salary
- Run3 (green) : industry salary + stock grants worth 40% industry salary
- Run4 (grey) : industry salary + stock grants worth 60% industry salary
- Run5 (black) : industry salary + stock grants worth 80% industry salary

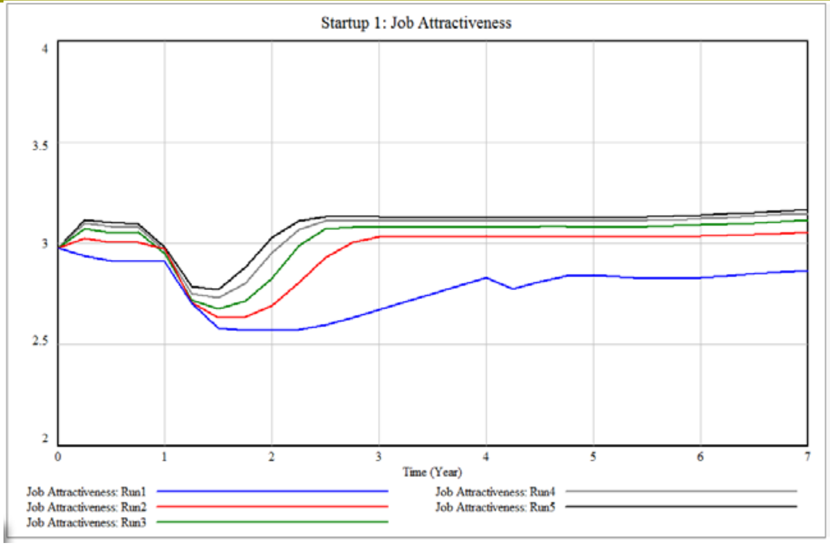


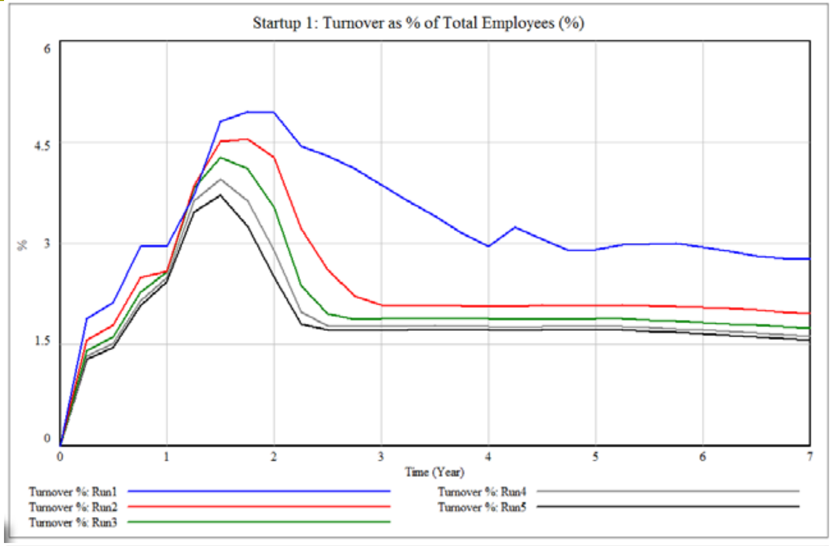


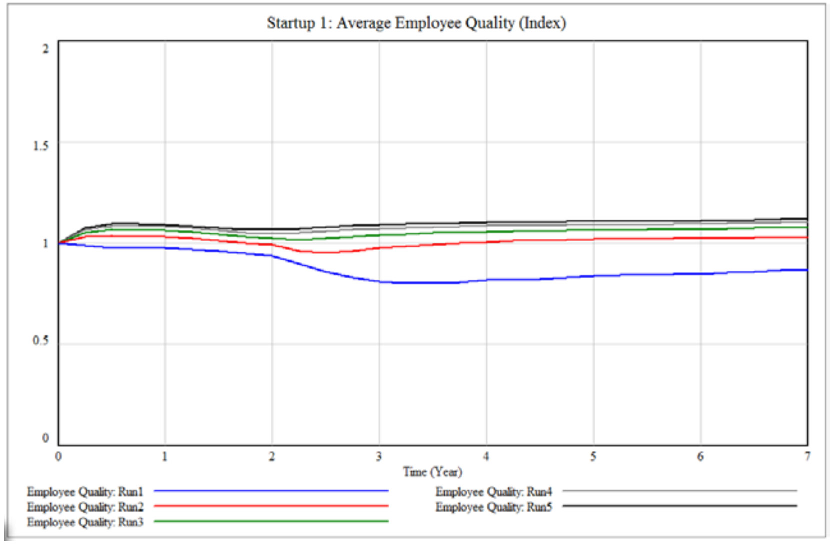


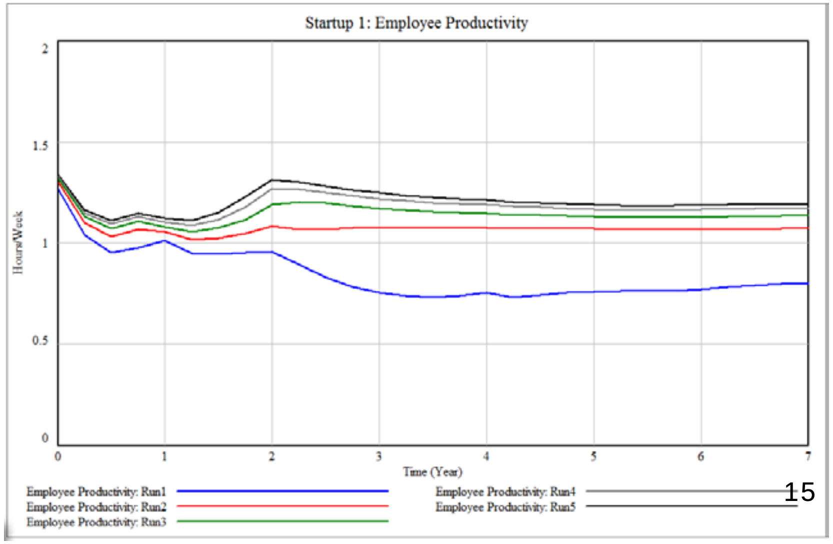


Higher the stock grants, happier the employees, less turnover, better employee quality and more productivity. However, it increases at a *diminishing rate*.

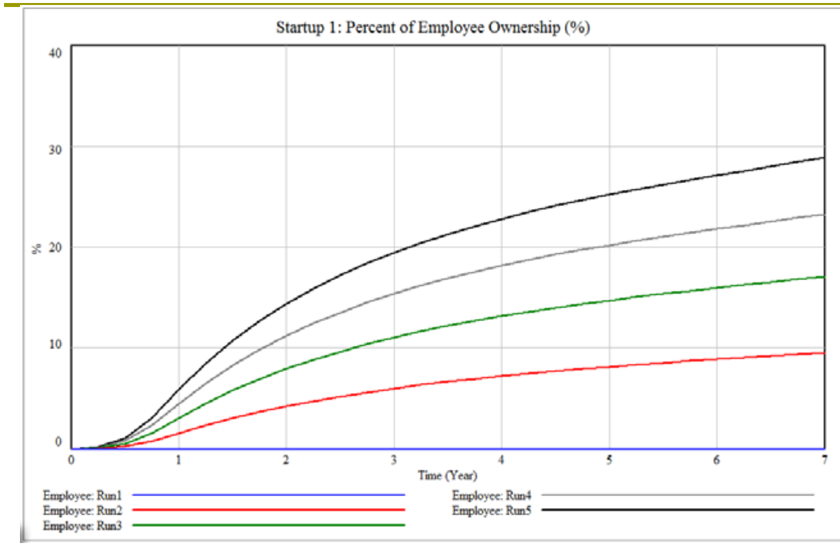


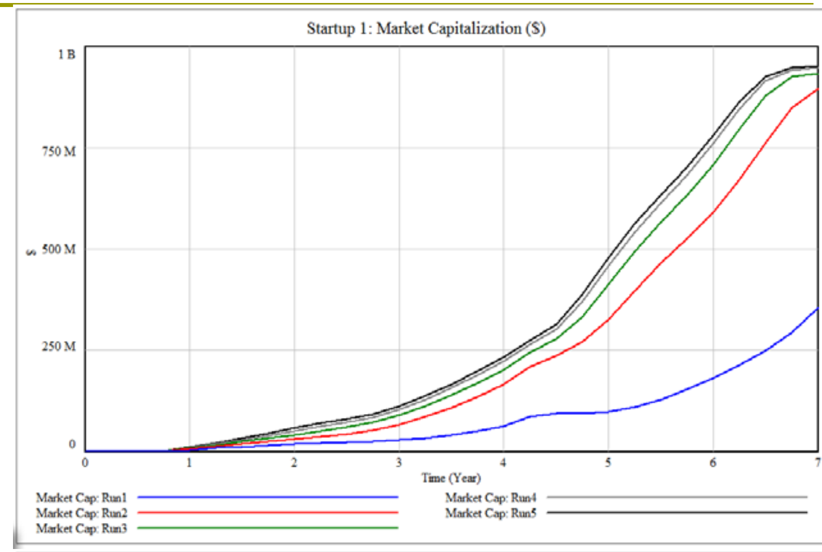


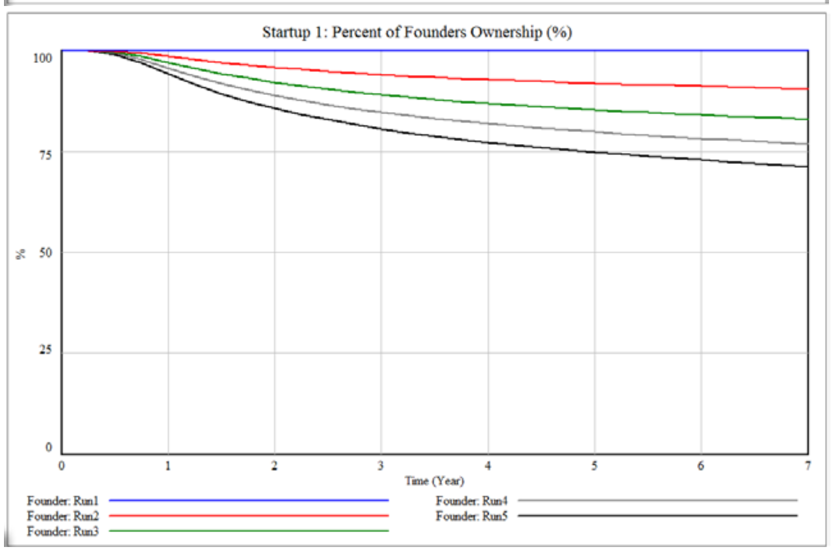


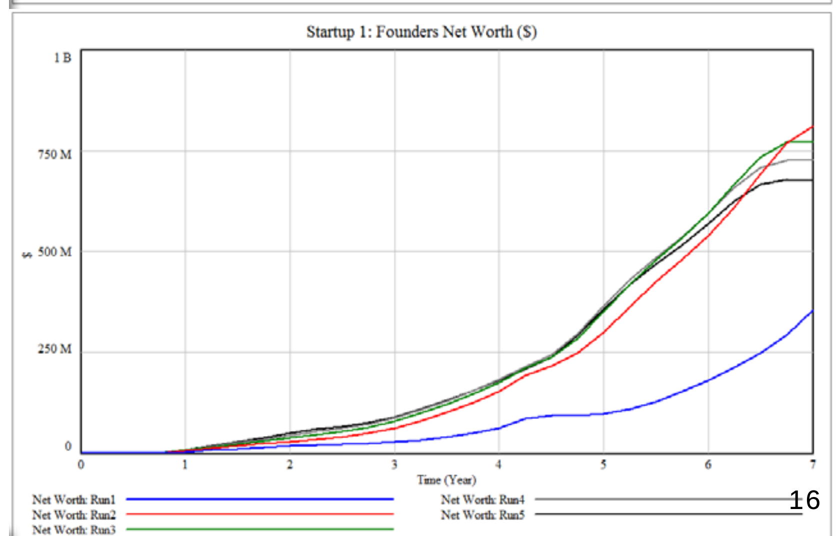


Higher the stock grants, higher the employee ownership and firm valuation, lower the founder's share. Change in founder's net worth depends on the diminishing return.









Analysis 3: EO as Panacea?

- Hypothesis 3: Employee ownership always works because giving stocks to employees always increases firm performance, even though it may increases at a diminishing rate.

- → Not necessary. EO does not necessary increase performance, it only *closes* the firm performance loop, the *direction* of the loop depends on other conditions such as participation, business strategy, and market conditions etc.
- EO can either makes performance better or worse than otherwise depending on the conditions.

- EO without employee participation does not work.
- EO with high participatory management culture works!

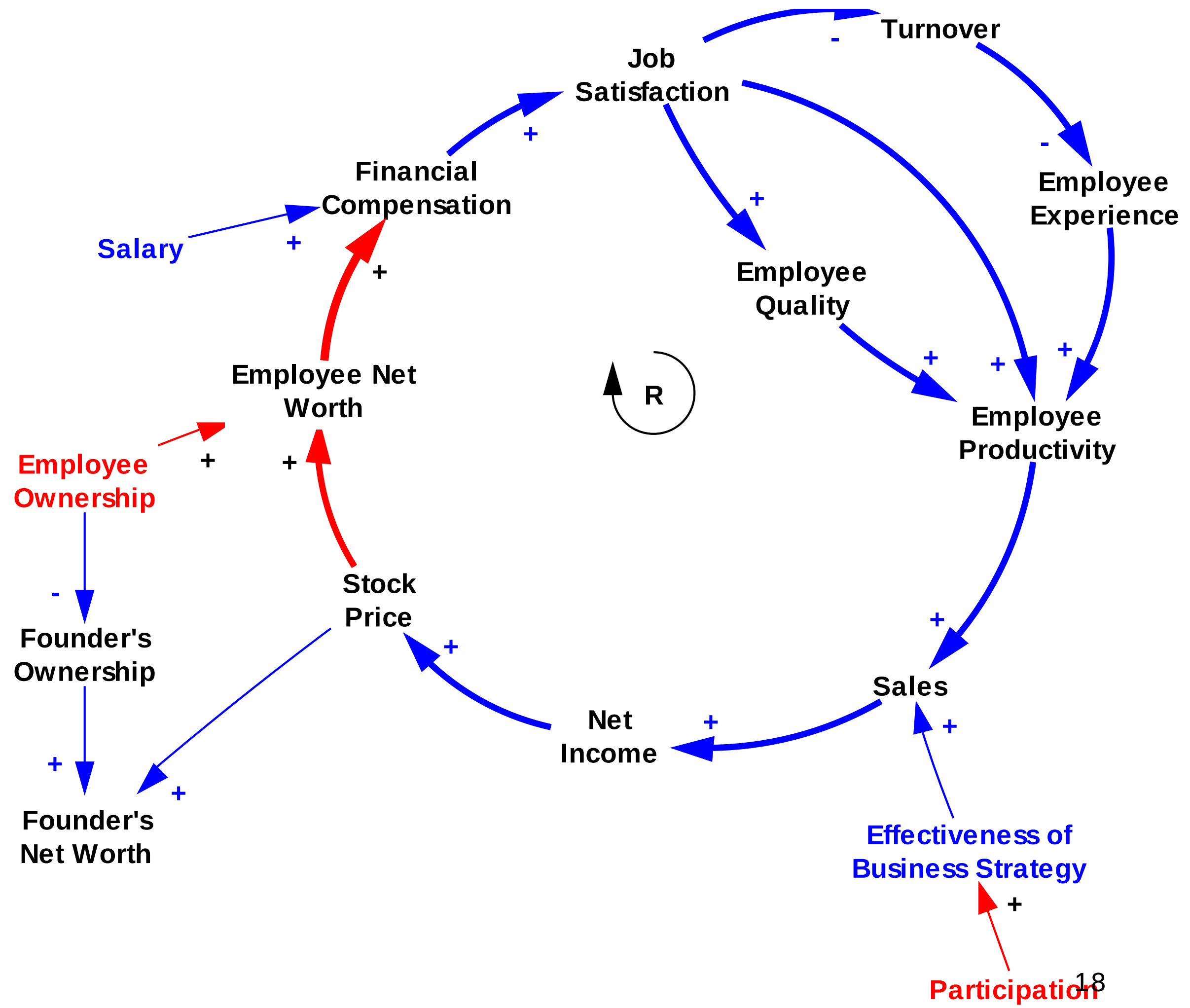
Employee Ownership Closes the Performance Loop, the Direction of the Loop Depends on Other Conditions

Eemployee Ownership (EO) closes the loop. Other business strategy determines the direction of the loop.

EO without participation and with bad business strategy tips the loop in vicious circle.

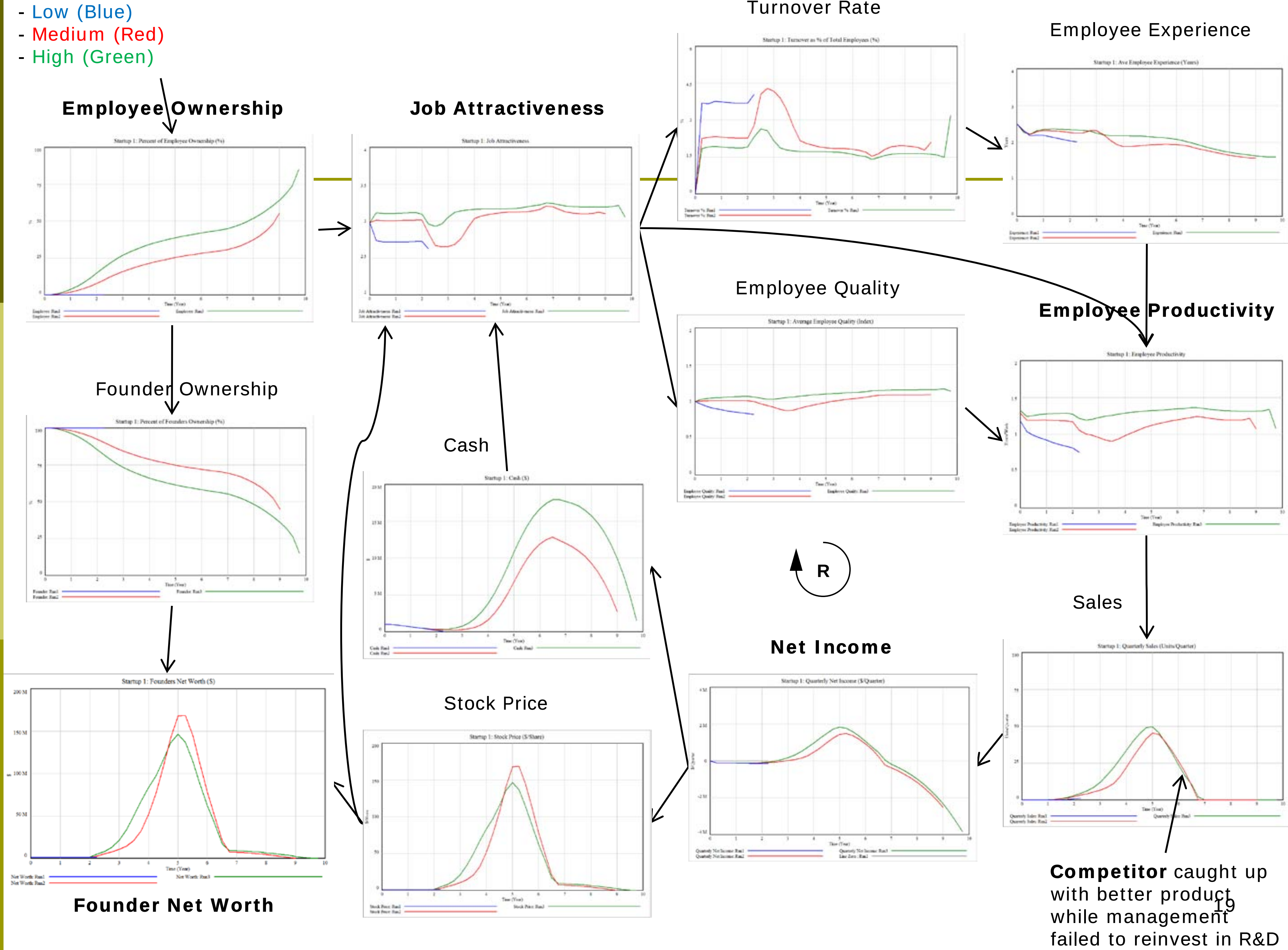
EO with participation increases effectivness of business strategy which tips the loop into a virtuous circle.

Thus, EO does not necessary increase performance. It depends on other conditions (participation, business strategy, market conditions etc) that determine the direction of the loop. EO can either makes performance better or worse than otherwise depending on the conditions.



Employee Stock Grants + Bad Business Strategy (10 years)

- Low (Blue)
- Medium (Red)
- High (Green)



Contributions

Academic

- **Causal mechanism** of employee ownership effects on employee behavior and firm performance
- **Dynamic analysis** on what **conditions** can wealth be generated through broad-based ownership

Practical

- **Ownership management strategy** for entrepreneurs to improve employee well-being and firm performance
- **Teaching tool** on ownership management and organizational design in entrepreneurship, HRM and strategic management classes