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# Investor Mental Models

Long Equity Fund

2023

# Introduction to mental models

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- Model models allow complex data to be quickly and accurately turned into actionable insights.

- They provide a thought process for filtering the signal from the noise and for separating out what's important from what's not important.

- Presented here are a range of 1-page mental models for deciphering a range of concepts encountered in the world of investing.

# What drives growth?

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Operating leverage, cash conversion, share buy-backs and multiple expansion can all work together to boost revenue growth into even higher share price growth.

This example is from the credit score company Fair Isaac. Notice how their growth rates increase as you move from revenue to share price.

| Fair Isaac (FICO) | Revenue | Gross Profit | Op. Profit | Net Income | FCF | FCF/Share | Share Price |
|---|---|---|---|---|---|---|---|
| **2013** | 743 | 514 | 165 | 90 | 112 | 3.09 | 52 |
| **2014** | 789 | 540 | 166 | 95 | 162 | 4.66 | 58 |
| **2015** | 839 | 568 | 156 | 87 | 122 | 3.73 | 82 |
| **2016** | 881 | 616 | 170 | 109 | 188 | 5.83 | 129 |
| **2017** | 935 | 647 | 187 | 133 | 206 | 6.38 | 135 |
| **2018** | 1,000 | 687 | 175 | 126 | 192 | 6.15 | 234 |
| **2019** | 1,160 | 823 | 254 | 192 | 236 | 7.8 | 315 |
| **2020** | 1,295 | 933 | 341 | 236 | 343 | 11.46 | 443 |
| **2021** | 1,317 | 984 | 413 | 392 | 416 | 14.23 | 434 |
| **2022** | 1,377 | 1,075 | 542 | 374 | 503 | 19.11 | 440 |
| **CAGR:** | 7% | 9% | 14% | 17% | 18% | 22% | 27% |

Faster net income growth than revenue growth requires **operating leverage**, signalling that the company is becoming increasingly efficient.

Faster FCF growth than net income growth requires good **cash conversion**, suggesting it can efficiently manage working capital.

Faster FCF per share growth than FCF growth requires **share buybacks**.

Faster share price growth than FCF per share growth requires **multiple expansion**, as it was fairly valued by the market.

# What influences share price?

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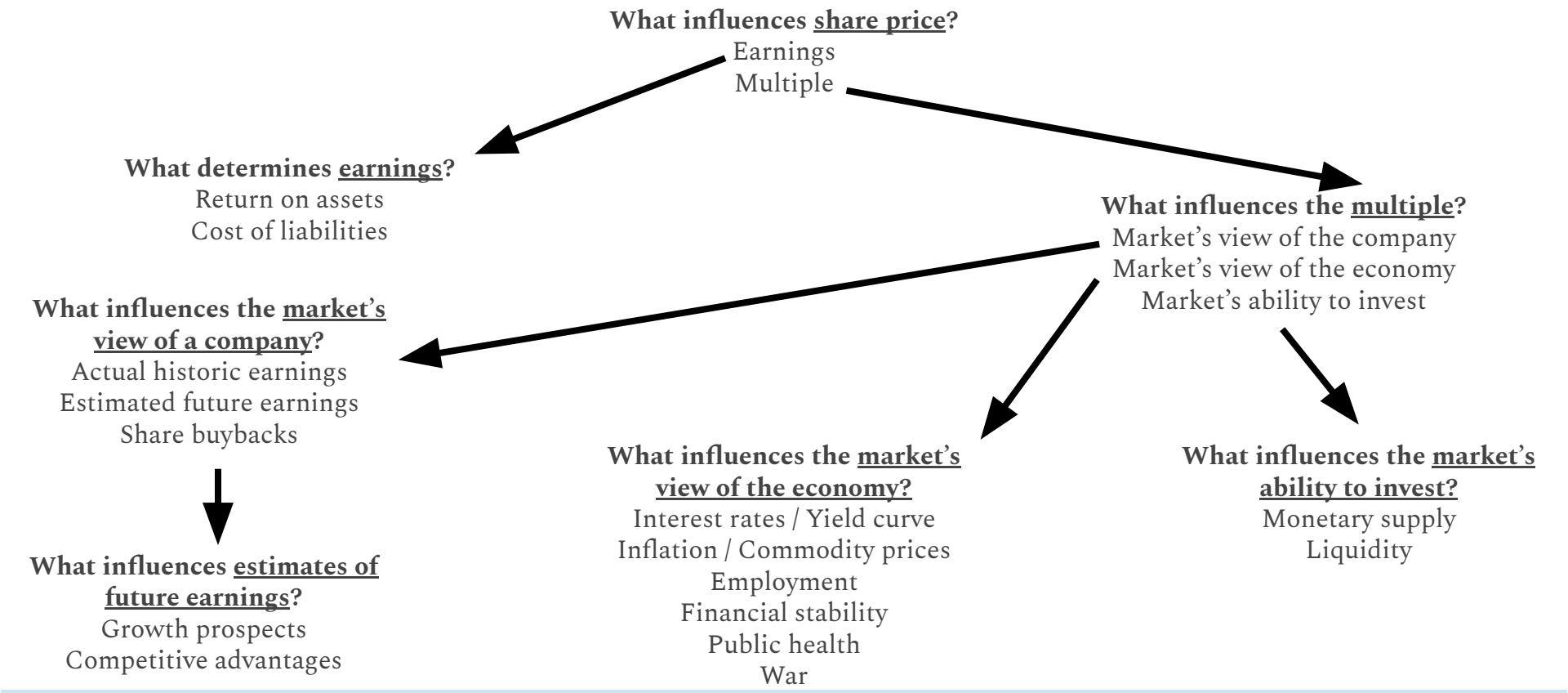

# Understanding share price returns

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The three hypothetical companies below demonstrates what drives share price performance. Each company has seen its share price grow 6x over the last decade from $100 to $600. However each company achieved their share price growth through different routes: Company A through growing its earnings, Company B through growing its valuation, and Company C through a mixture of both. In reality Company C reflects most multibaggers.

| **Company A** | | **Company B** | | **Company C** | |
|---|---|---|---|---|---|
| **Earnings growth:** | 6x | **Earnings growth:** | 1x | **Earnings growth:** | 2x |
| **Valuation growth:** | 1x | **Valuation growth:** | 6x | **Valuation growth:** | 3x |
| **Share price growth:** | 6x | **Share price growth:** | 6x | **Share price growth:** | 6x |

This example demonstrates the important fact that any share price change can be understood by the change in earnings and the change in valuation:

Share Price Growth = Earnings Growth x Valuation (P/E) Growth

# Four Essential Investing Ratios

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Company A and Company B both make **$1bn** in earnings. Comparing a company's earnings to its invested capital, revenue, historic earnings and market capitalisation reveals four important investing ratios.

| | **Company A** | **Company B** |
|---|---|---|
| **Return on capital (Quality)**<br><br>*How efficient the company is at investing its capital at high returns* | Earnings = $1bn<br>Invested capital = $4bn<br><br>ROC = $1bn / $4bn = **25%** | Earnings = $1bn<br>Invested capital = $20bn<br><br>ROC = $1bn / $20bn = **5%** |
| **Profit Margin (Quality)**<br><br>*How efficient the company is at adding value to the supply chain* | Earnings = $1bn<br>Revenue = $2bn<br><br>Margin = $1bn / $2bn = **50%** | Earnings = $1bn<br>Revenue = $10bn<br><br>Margin = $1bn / $10bn = **10%** |
| **Earnings Growth Rate (Growth)**<br><br>*How efficient the company is at growing its earnings over time* | Earnings = $1bn<br>Earnings 5 years ago = $0.25bn<br><br>Growth rate = $1bn / $0.25bn = **4x** | Earnings = $1bn<br>Earnings 5 years ago = $0.5bn<br><br>Growth rate = $1bn / $0.5bn = **2x** |
| **Earnings Yield (Valuation)**<br><br>*How attractively the market values the company's earnings* | Earnings = $1bn<br>Market capitalisation = $20bn<br><br>Earnings Yield = $1bn / $20bn = **5%** | Earnings = $1bn<br>Market capitalisation = $50bn<br><br>Earnings Yield = $1bn / $50bn = **2%** |

Despite earning the same, Company A is a more efficient capital allocator (ROC), has more negotiating and pricing power (margins), has faster growth (growth rate) and is more attractively valued (earnings yield) than Company B.

# Not all earnings are equal

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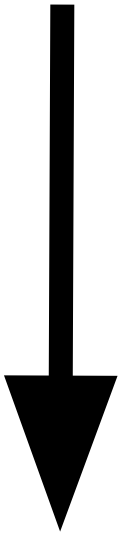
Here is a reverse rank of the different types of earnings



| | |
|---|---|
| 5. **Negative** earnings | *Expenses > Revenue* |
| 4. **Low ROI** earnings | *Use billions to make millions* |
| 3. **Cyclical** earnings | *Airlines, banks, oil, etc.* |
| 2. **Leveraged** earnings | *Capital intensive, e.g. banks* |
| 1. **High ROI, low cyclicality, unleveraged** earnings | |

**Value investments by comparing their FCF yields to the investable universe of companies with high ROCs, competitive advantages, low cyclicality and low debt.**

# Corporate finance's 3 principles

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In corporate finance there are three rules for maximising value:

1. Buy **high return** assets

2. Finance assets with **low cost** debt

3. Only return capital to investors if there are no suitable investments

These principles should guide both how managers run their businesses and how investors find and manage investments.

Maximise the highest possible return by investing in the highest returning assets.

# Retain earnings to reinvest

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**Invest in companies that:**

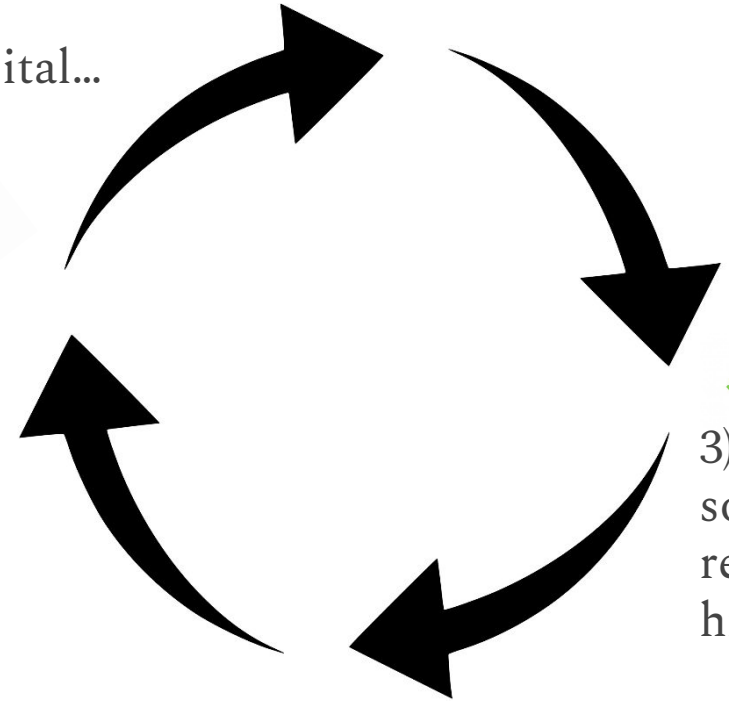
1) Invest capital...

2) ...at high returns...

3) ...and retain their earnings so they can continue re-investing their capital at high returns.

Shareholder distribution

Dividends and share buybacks should be minimised if capital can be reinvested at high returns.



**High returns on capital + Durable earnings + Competitive advantages = Long-term compounding of value**

# Supply chain and investor relations

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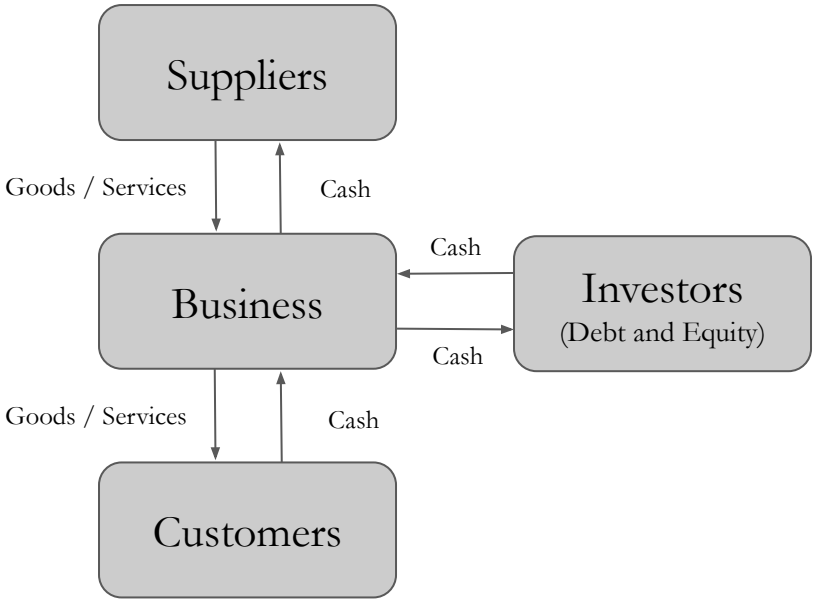


A company is best understood by its relationship with its investors and supply-chain (suppliers and customers).

Businesses borrow money from investors, exchange it with their suppliers for goods and services, provide goods and services to their customers in exchange for money and return money to their investors.

The higher the return on capital (ROC) the more efficient the business's relationship is with its investors. *A ROC of 20% means that for every $100 of invested capital the business returns $20.*

The higher the gross margin the more efficient the business's relationship with its suppliers and customers. *A gross margin of 60% means the business makes something for $40 and sells it for $100.*

# The Semiconductor Ecosystem

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**Semiconductor Design Software**
*Provide software to designers*

Cadence
Synopsys

**Semiconductor Manufacturing Equipment**
*Provide equipment to manufacturers*

ASML
Lam Research
KLA
Applied Materials

**Semiconductor Designers**

*Design only (fabless)*
AMD
NVIDIA
Broadcom
Qualcomm

**Semiconductor Manufacturers**

*Manufacture only (pure-play foundries)*
TSMC
GlobalFoundries

*Design and manufacture (IDM)*
Intel
Samsung
Micron
Texas Instruments

**Semiconductor Consumers**

*Drivers of semiconductor demand:*
- *computing/devices,*
- *the cloud, wireless infrastructure, data centres,*
- *vehicles*
- *industrial electronics.*