

Share Buyback Valuation

The Basics

(Part 1)

by

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What is a Share Buyback?

Instead of paying a dividend, companies can buy back shares. This decreases the number of shares outstanding and hence increases the potential for future dividends per share.

Which is more valuable to shareholders?

S&P 500

In 2012, the companies in the S&P 500 had aggregate earnings of USD 780b, dividends of USD 280b and share buybacks of USD 400b.

Share buybacks are **VERY IMPORTANT!**

Common Beliefs

- Share buybacks may substitute for dividends as a way of returning capital to shareholders, possibly with a tax advantage.
- Share buybacks signal undervaluation.

THESE ARE FALSE!!!

Example: Acme Corporation

Before Share Buyback:

- Company's Cash = \$10
- Expected Present Value of Future Earnings = \$90
- Total Value to Long-Term Shareholders = \$100
- Market Capitalization (Number of Shares x Price Per Share) = \$50

After Share Buyback for \$10:

- Company's Cash = \$0
- Expected Present Value of Future Earnings = \$90
- Total Value to Long-Term Shareholders = $\$100 - \$10 = \$90$
- Market-Cap (assuming unchanged share-price) = $\$50 - \$10 = \$40$

Example: Acme Corporation

The corporation loses its source of revenue and earnings, so value is:

- Company's Cash = \$0
- Expected Present Value of Future Earnings = \$0
- Total Value to Long-Term Shareholders = \$0
- Market-Cap (presumably) = \$0

Which choice was best for the remaining shareholders?

- Dividend payout of \$10 would have been worth \$10 to shareholders.
- Share buyback of \$10 was worth \$0 to shareholders.

Dividends and share buybacks are NOT equivalent!

Eternal Shareholders

Share buybacks should be made for the sake of the remaining shareholders rather than the selling shareholders.

This ultimately means that share buybacks should be made for the sake of eternal shareholders who never sell their shares and rely on dividends as the sole source of value.

Value WITHOUT Share Buyback

... is the potential for dividend payouts; that is, the excess cash plus present value of future earnings available for dividend payouts:

$$v = \textit{Excess Cash} + \sum_{t=1}^{\infty} \frac{\textit{Earnings}_t}{(1+d)^t}$$

$$V = \frac{v \cdot (1 - \textit{TaxDividend})}{\textit{Shares}}$$

Value WITH Share Buyback

- A share buyback reduces the cash available for dividends.
- ... and reduces the number of shares.

$$W = \frac{(v - \text{Buyback}) \cdot (1 - \text{TaxDividend})}{\text{Shares} \cdot \left(1 - \frac{\text{Buyback}}{\text{MarketCap}}\right)}$$

Reduction in Number of Shares

Total market-price of all shares:

$$\text{MarketCap} = \text{Shares} \cdot \text{SharePrice} \Leftrightarrow \text{SharePrice} = \frac{\text{MarketCap}}{\text{Shares}}$$

Number of shares bought back:

$$\frac{\text{Buyback}}{\text{SharePrice}} = \text{Shares} \cdot \frac{\text{Buyback}}{\text{MarketCap}}$$

Number of shares after buyback:

$$\text{Shares} - \text{Shares} \cdot \frac{\text{Buyback}}{\text{MarketCap}} = \text{Shares} \cdot \left(1 - \frac{\text{Buyback}}{\text{MarketCap}}\right)$$

Relative Value of Share Buyback

... is the value of a share buyback relative to a dividend payout:

$$\frac{W}{V} = \frac{1 - \frac{Buyback}{v}}{1 - \frac{Buyback}{MarketCap}}$$

Equilibrium


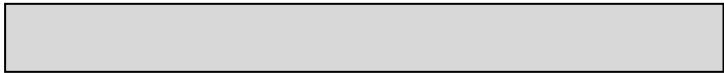




... is where the value to eternal shareholders is unaffected by a share buyback:

$$W = V \Leftrightarrow MarketCap = v$$







It is usually written as an inequality:

$$W > V \Leftrightarrow MarketCap < v$$

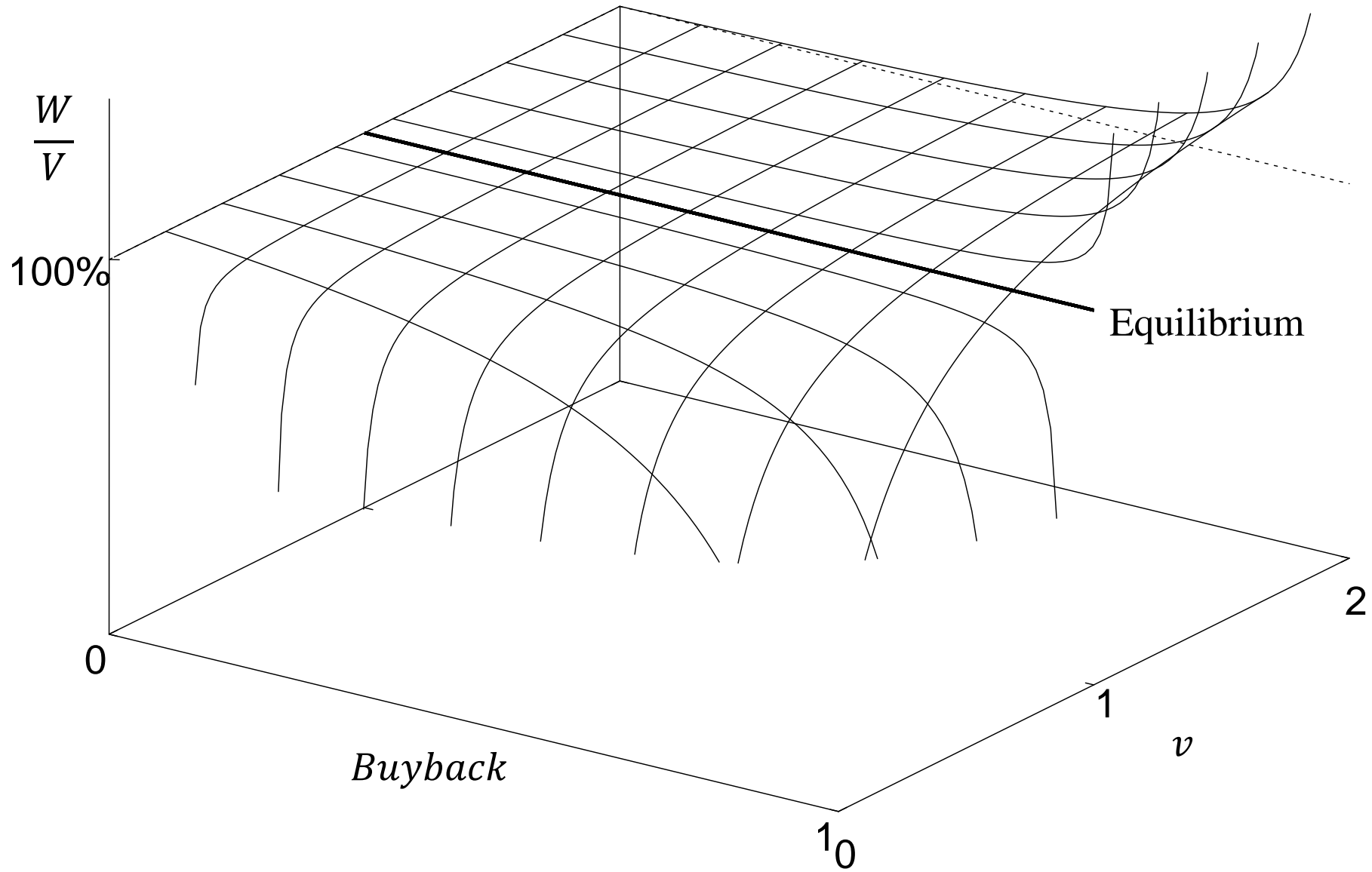
Example of Small Mispricing

Before Share Buyback	
<i>MarketCap</i>	
$v = 95\% \cdot \text{MarketCap}$	
Share Buyback is The Portion in Dark Grey	
$\text{Buyback} = 20\% \cdot \text{MarketCap}$	
$\text{Buyback} \approx 21\% \cdot v$	
After Share Buyback	
<i>MarketCap</i>	
$v = 93.75\% \cdot \text{MarketCap}$	

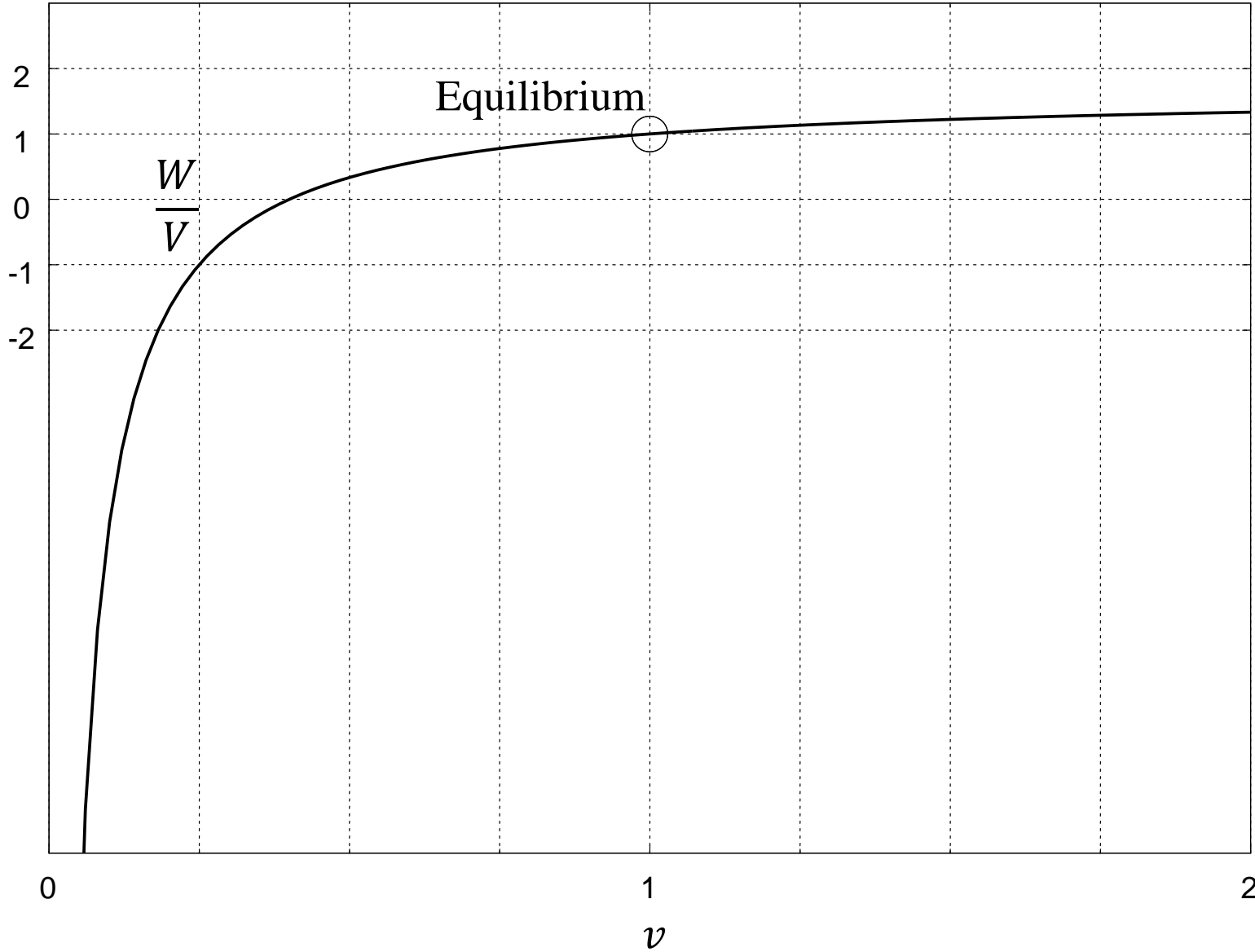
Example of Large Mispricing

Before Share Buyback	
<i>MarketCap</i>	
$v = 25\% \cdot \text{MarketCap}$	
Share Buyback is The Portion in Dark Grey	
$\text{Buyback} = 20\% \cdot \text{MarketCap}$	
$\text{Buyback} = 80\% \cdot v$	
After Share Buyback	
<i>MarketCap</i>	
$v = 6.25\% \cdot \text{MarketCap}$	

Relative Value ($MarketCap = 1$)



Relative Value ($MarketCap = 1, Buyback = 0.4$)



Example: Acme Corporation

Relative value of share buyback if $v = \$100$:

$$\frac{W}{V} = \frac{1 - \frac{\textit{Buyback}}{v}}{1 - \frac{\textit{Buyback}}{\textit{MarketCap}}} = \frac{1 - \frac{\$10}{\$100}}{1 - \frac{\$10}{\$50}} = 112.5\%$$

Relative value if $v = \$10$:

$$\frac{W}{V} = \frac{1 - \frac{\$10}{\$10}}{1 - \frac{\$10}{\$50}} = 0\%$$

Example: Acme Corporation

Relative value if $v = \$60$, $Buyback = \$5$:

$$\frac{W}{V} = \frac{1 - \frac{Buyback}{v}}{1 - \frac{Buyback}{MarketCap}} = \frac{1 - \frac{\$5}{\$60}}{1 - \frac{\$5}{\$50}} = 101.9\%$$

Relative value if $v = \$40$:

$$\frac{W}{V} = \frac{1 - \frac{\$5}{\$40}}{1 - \frac{\$5}{\$50}} \approx 97.2\%$$

Summary

- The value of a share buyback depends on the market-cap in relation to the present value of future earnings.
- Share buybacks magnify any mispricing.
- Buyback of overpriced shares is much more destructive to shareholder value than buyback of underpriced shares.
- Margin of safety is required.

Further Reading

This lecture is based on two papers:

- [Introduction to Share Buyback Valuation](#)
- [The Value of Share Buybacks](#)

Both authored by Magnus Erik Hvass Pedersen.

Available on the internet:

www.Hvass-Labs.Org