



FSA

Methodology

FSA's Three Phase Method

- Performance Measurement
- Forecasting
- Valuation

Three Phase Method

1) Performance Measurement



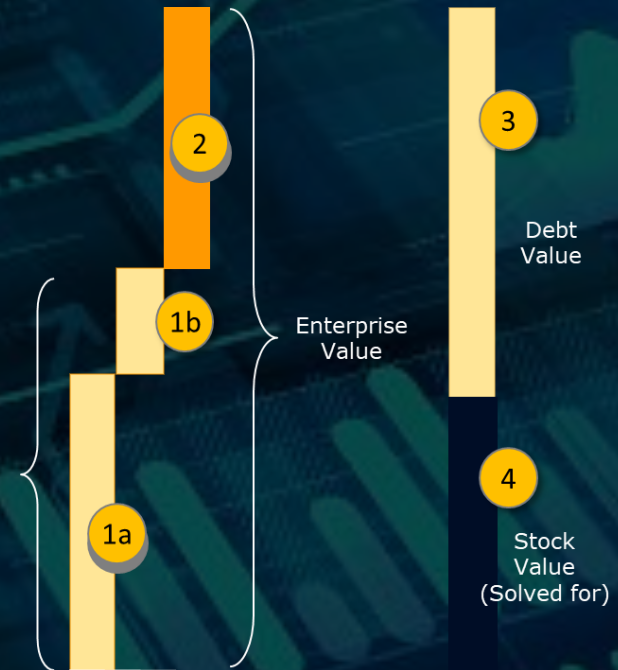
Cash Flow Internal Rate of Return (CFIRR)

2) Forecasting



Company Lifecycle

3) Valuation



Value Added =
+ Value of Existing Assets
+ Future CF

Performance Measurement:

Cash Flow Internal Rate of Return – CFIRR

The crux of our methodology is a unique performance measurement called Cash Flow Internal Rate of Return (CFIRR). CFIRR addresses many of the shortcomings of traditional performance measurements such as Return on Equity (ROE), Return on Assets (ROA) and Return on Invested Capital (ROIC). In principle, CFIRR measures the return on capital but has distinct advantages over traditional return on capital measures. Interestingly, the acronym RoC in our monthly "The RoC Report" stands for Return on Capital and was developed as a marketing term that was simpler and more effective than "The CFIRR Report." In our own reports, the term "return on capital," or simply the term "return," is used interchangeably with CFIRR. However, in studying the details of the methodology it is important to make the distinction between CFIRR and traditional return on capital measures. CFIRR should be viewed in context of capital growth and the cost of capital. We will discuss this further after we discuss how we calculate CFIRR.

Cash Flow Internal Rate of Return (CFIRR): Four Components

2) Cash Flow From Operations =

- + Net Income
- + Depreciation
- + Amortization
- + After Tax Interest Exp

Excludes non-recurring
& special items

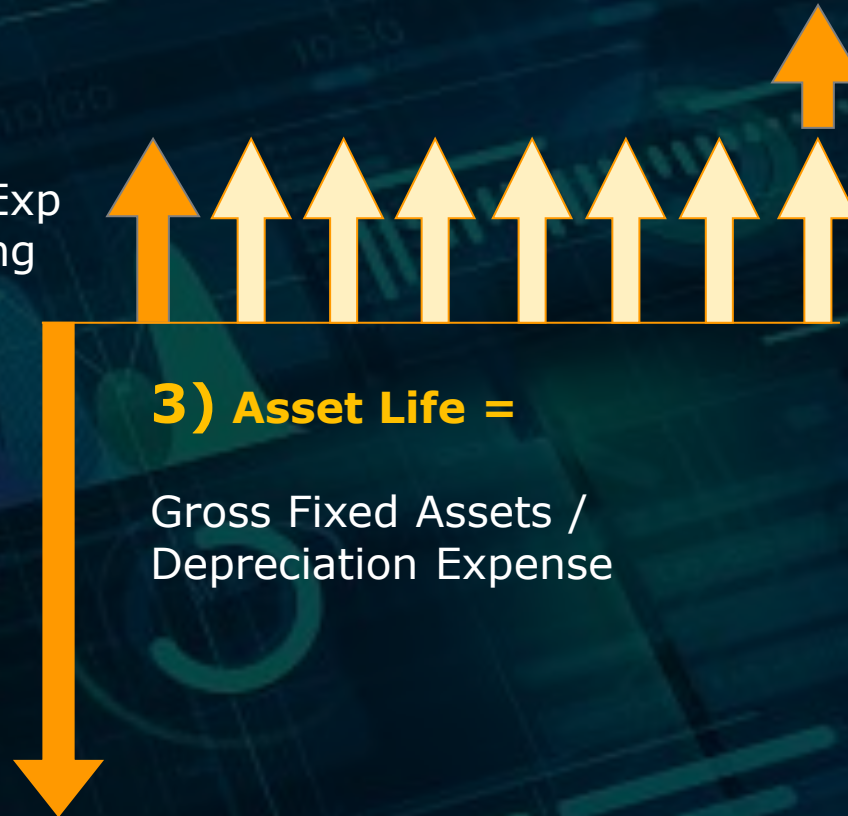
4) Salvage Value = Working Capital

1) Inflation Adjusted Gross Investment =

- + Gross Fixed Capital
- + Working Capital

3) Asset Life =

Gross Fixed Assets /
Depreciation Expense



Breaking Down Cash Flow IRR's Four Components:

1) Inflation Adjusted Gross Capital

Conceptually, invested capital is long-term debt + equity = assets – working capital. This definition is sufficient when conceptualizing a company's invested capital, however, there are other details to note.

Finance textbooks show two methods of calculating invested capital:

Asset Approach = Financing Approach

A) Asset Approach =

- + Short-Term Assets
- Short-Term Liabilities (excluding short-term debt)
- + Net Property, Plant and Equipment
- + Other Long-Term Assets
- + Intangibles

B) Financing Approach =

- + Common Equity
- + Preferred Stock
- + Minority Interest
- + Deferred Income Taxes
- + Long-Term Debt
- + Other Long-Term Liabilities
- + Short-Term Debt

Cash Flow Internal Rate of Return (CFIRR):

Four Components 1) Inflation Adjusted Gross Investment

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1) Inflation Adjusted Gross Investment

=

+ Gross Fixed Capital
+ Working Capital



Asset Approach = Financing Approach

Breaking Down Cash Flow IRR's Four Components:

1) Inflation Adjusted Gross Capital

CFIRR Uses GROSS INVESTMENT

The first adjustment to invested capital is to use **GROSS** investment - not the NET investment.

In other words, accumulated depreciation is added back to the net investment to get gross investment. This is done to calculate the return on total original capital contributed to the business.

Cash Flow Internal Rate of Return (CFIRR):

Four Components 1) Inflation Adjusted Gross Investment

Used Gross not Net Investment

1) Inflation Adjusted Gross Investment

=

+ Gross Fixed Capital
+ Working Capital



Breaking Down Cash Flow IRR's Four Components:

1) Inflation Adjusted Gross Capital

CFIRR Uses GROSS INVESTMENT

Example: Investing in Automation

Suppose it is 2017 and you are an analyst for a manufacturing company. You have been tasked with performing a post-mortem analysis on automation equipment that was purchased in 2008. Your task is to determine whether or not the investment made in 2008 was a good investment or not. What would you need to know to perform the proper analysis? You would probably want to know how much the company paid for the equipment in 2008, correct? In other words you want to know the original amount of the investment or the GROSS investment. You would not concern yourself with the depreciated value of the investment unless it were to be sold. You would be more interested in the price paid and the savings the equipment contributed.

It follows that the same should be done for publicly traded companies. Therefore you need the GROSS investment not the NET investment to judge management's ability to generate a return on its capital.

It is worth noting at this point that gross investment is used to determine the return on capital, but net investment will be used to determine the value of the company. **(See Valuation section)**

Cash Flow Internal Rate of Return (CFIRR):

Four Components 1) Inflation Adjusted Gross Investment
Used Gross not Net Investment

1) Inflation Adjusted Gross Investment =

- + Gross Fixed Capital
- + Working Capital



CFIRR Uses GROSS INVESTMENT, the original investment, not net investment

Investment in Automation



2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021

Breaking Down Cash Flow IRR's Four Components:

1) Inflation Adjusted Gross Capital

Adjusts for Inflation

Investors are interested in a “real” return not a nominal return. Since cash flow and earnings are in today's dollars, it is necessary to adjust the gross investment into today's dollars that is carried on the balance sheet at historical costs.

To clarify why this is important, consider a period of high inflation vs. low inflation. A company's cash flow from operations will be much higher during high inflationary periods compared to in low inflationary periods, but it is not attributable to real improvements in the business but rather inflation.

Cash Flow Internal Rate of Return (CFIRR):

Four Components 1) Inflation Adjusted Gross Investment Adjusts for Inflation

Gross Investment in Historical Dollars But Cash Flow is
in Today's Dollars

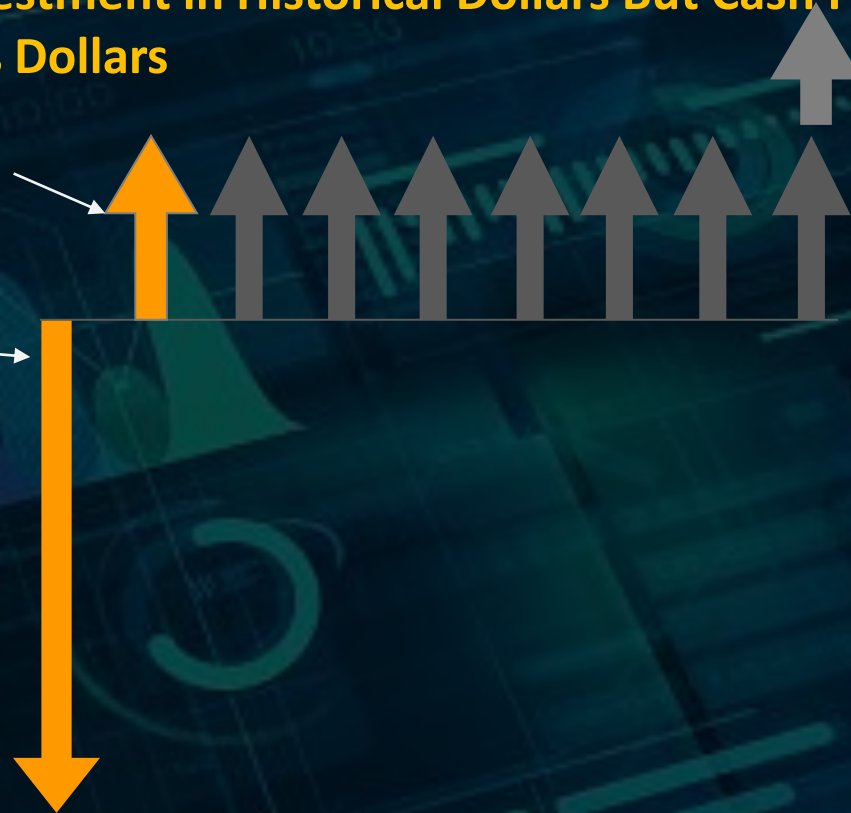
Today's Dollars
(from Income Statement)

Historical Dollars
(from Balance Sheet)

1) Inflation Adjusted Gross Investment

=

+ Gross Fixed Capital
+ Working Capital



Breaking Down Cash Flow IRR's Four Components:

2) Cash Flow from Operations (CFOPS)

Cash flow from operations is the after-tax cash flow accruing to capital providers each year. It's the amount of money management can spend on new projects, pay dividends, etc. By contrast, you can't spend earnings, and therefore, cash flow is a better measure of value. Moreover, earnings are more easily manipulated by accounting policy whereas cash flow is not.

Unlevered Analysis

It should be noted that CFO is a pre-interest measure of profitability to facilitate the comparison of firms with different degrees of leverage. Using post-interest measures of profit negates this and makes leveraged firms appear less profitable. Also, since interest is tax deductible, interest payments must be tax-effected when a post-tax measure of profits is used. CFIRR adds back after-tax interest expense. In other words, unleveraged firms do not get a tax shield from interest payments. Therefore, to compare operating profitability between leveraged firms and unleveraged firms, after tax-interest should be added back to net income. It follows that adding back after-tax non-operating income is also correct. In contrast, it is correct to add back pre-tax depreciation and amortization as both leveraged and unleveraged firms would get a tax shield.

Cash Flow Internal Rate of Return (CFIRR):

Four Components 2) Cash Flow From Operations

2) Cash Flow From Operations =

- + Net Income
 - + Depreciation
 - + Amortization
 - + After Tax Interest Exp
- Excludes non-recurring
& special items

4) Salvage Value =
Working Capital

3) Asset Life =

Gross Fixed Assets /
Depreciation Expense

Cash Flow from Operations (CFO) is a superior
measure of shareholder value vs. Earnings

FSA uses CFO before financing expenses (similar to
EBITDA) to measure performance of levered and un-
levered firms on a level playing field



Breaking Down Cash Flow IRR's Four Components:

3) Asset Life

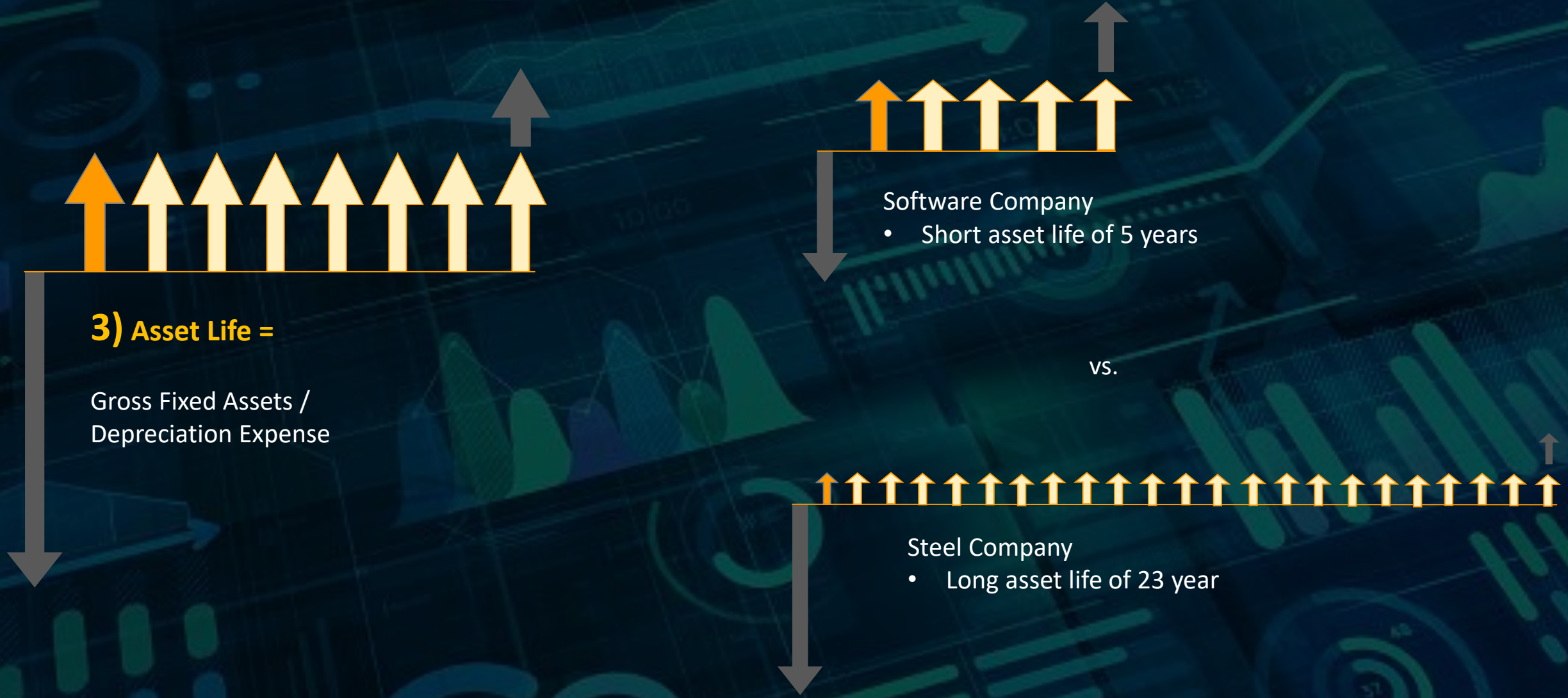
The nature of some investments are long lasting while others are short-term The asset life can greatly affect the rate of return on capital.

For example, steel companies have much longer asset lives than software companies. CFIRR addresses the issue of asset life variance. This differs from traditional return on capital metrics that are ratios. Mathematically ratios are perpetuities which implies cash flows go on forever which is a very poor assumption and overstates the true economic return on capital.

Asset Life = (Gross Plant + Other Non-Current Assets + Inventories) / Depreciation Expense

Cash Flow Internal Rate of Return (CFIRR):

Four Components 3) Asset Life



Breaking Down Cash Flow IRR's Four Components:

4) Salvage Value

Adjustment for Cash on the Balance Sheet

Salvage value is the only adjustment CFIRR makes that improves the return on capital compared to traditional return on capital measures. It is an important adjustment for rapidly growing companies who often have large working capital balances just after large financings. By considering the working capital as salvage value, the CFIRR gives a more accurate calculation for return on deployed capital.

Salvage Value = Current Assets - Current Liabilities

Cash Flow Internal Rate of Return (CFIRR): Four Components 4) Salvage Value

2) Cash Flow From Operations =

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+ Depreciation
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Excludes non-recurring
& special items

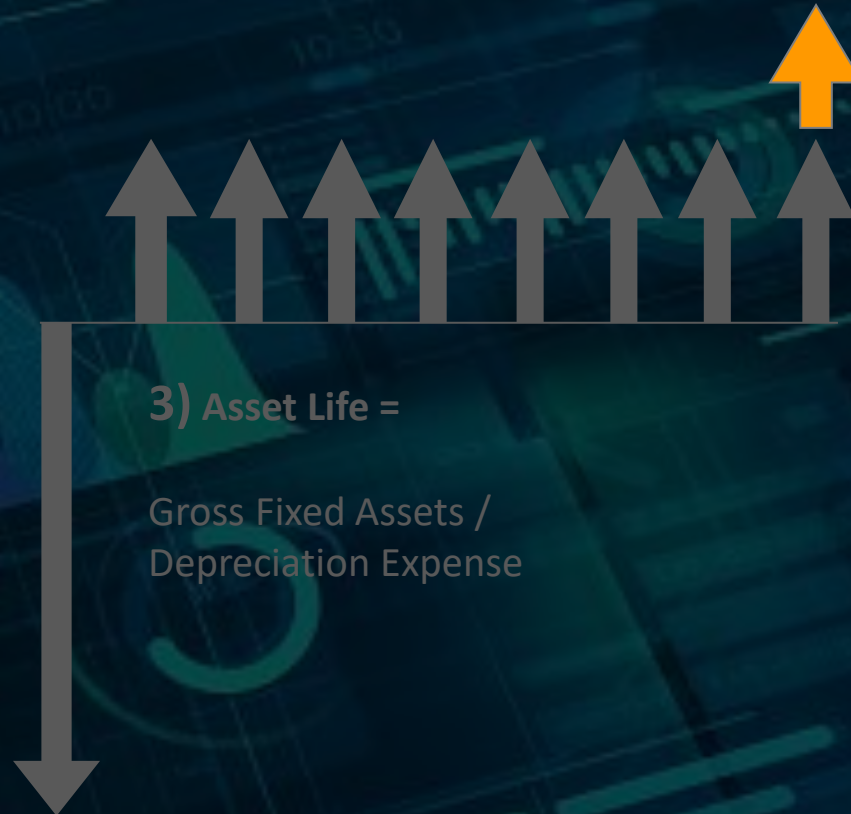
4) Salvage Value =
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1) Inflation Adjusted Gross Investment =

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3) Asset Life =

Gross Fixed Assets /
Depreciation Expense



Forecasting:

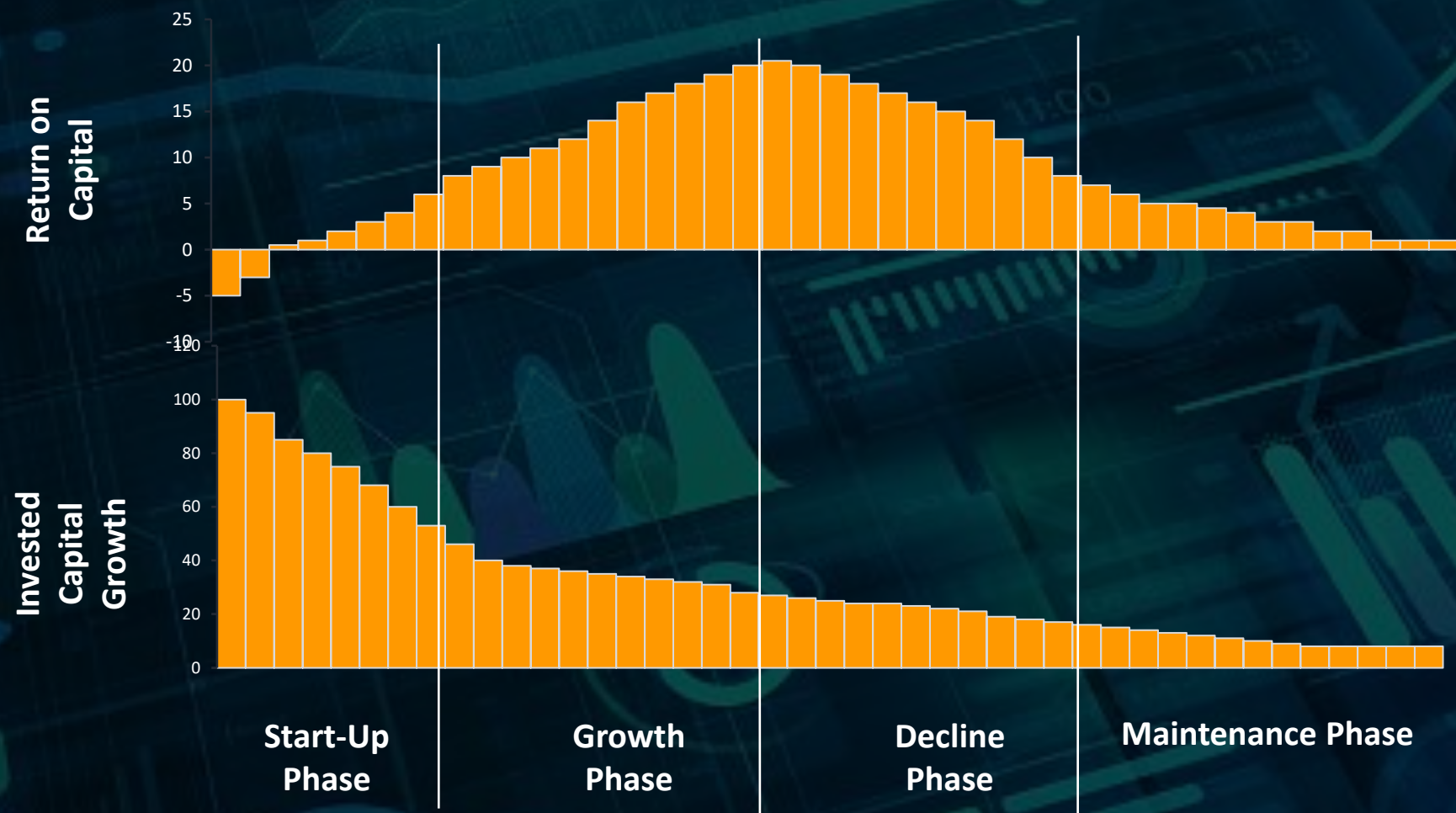
Future Cash Flows are the Biggest Part of Valuation

Our valuation methodology accounts for all invested capital including all asset, liabilities and equity but also includes a forecast of future cash flows above the cost of capital.

In fact, in most cases, the forecast is the largest component of the valuation. Unlike the balance sheet portion of our valuation whereby assets and liabilities are known with relative certainty (given high quality accounting and no impending write-offs), the forecasting portion of value involves the future and is therefore uncertain.

However, we can model the future using the concept of a *life cycle*.

Forecasting – Lifecycle



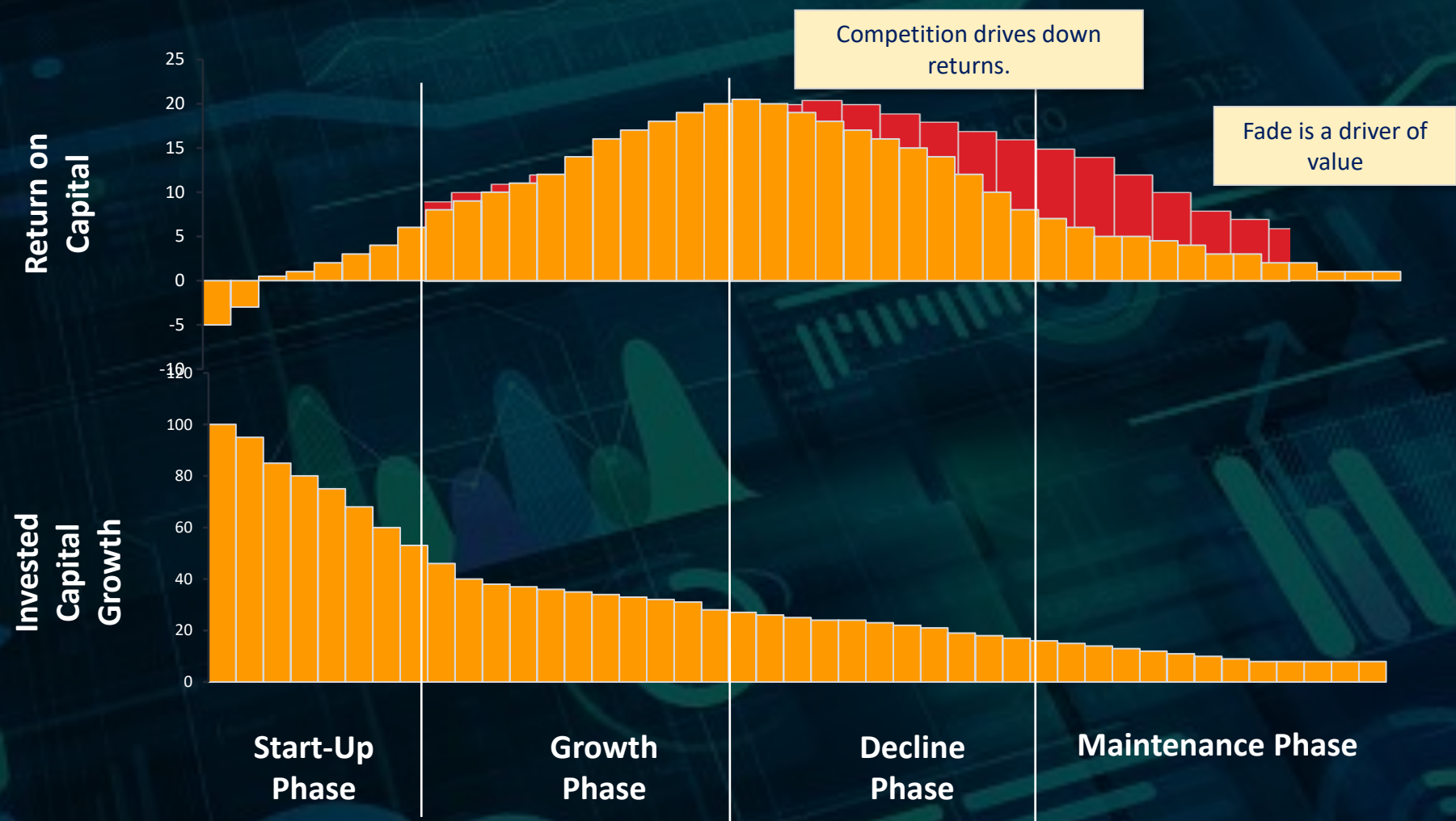
Forecasting:

Understanding the “Fade” is Critical to Understanding Value

The degree to which a company can beat the fade adds tremendous value to the shareholders. Beating the fade is a similar concept to monopoly rents which can occur via high barriers to entry, superior technology, strong branding, first mover advantage, etc.

Companies like Nike, Procter & Gamble, Amazon, Apple and Home Depot are all companies who are widely consider to have ***“beaten the fade.”***

Forecasting – Lifecycle “Beating the Fade”



Valuation:

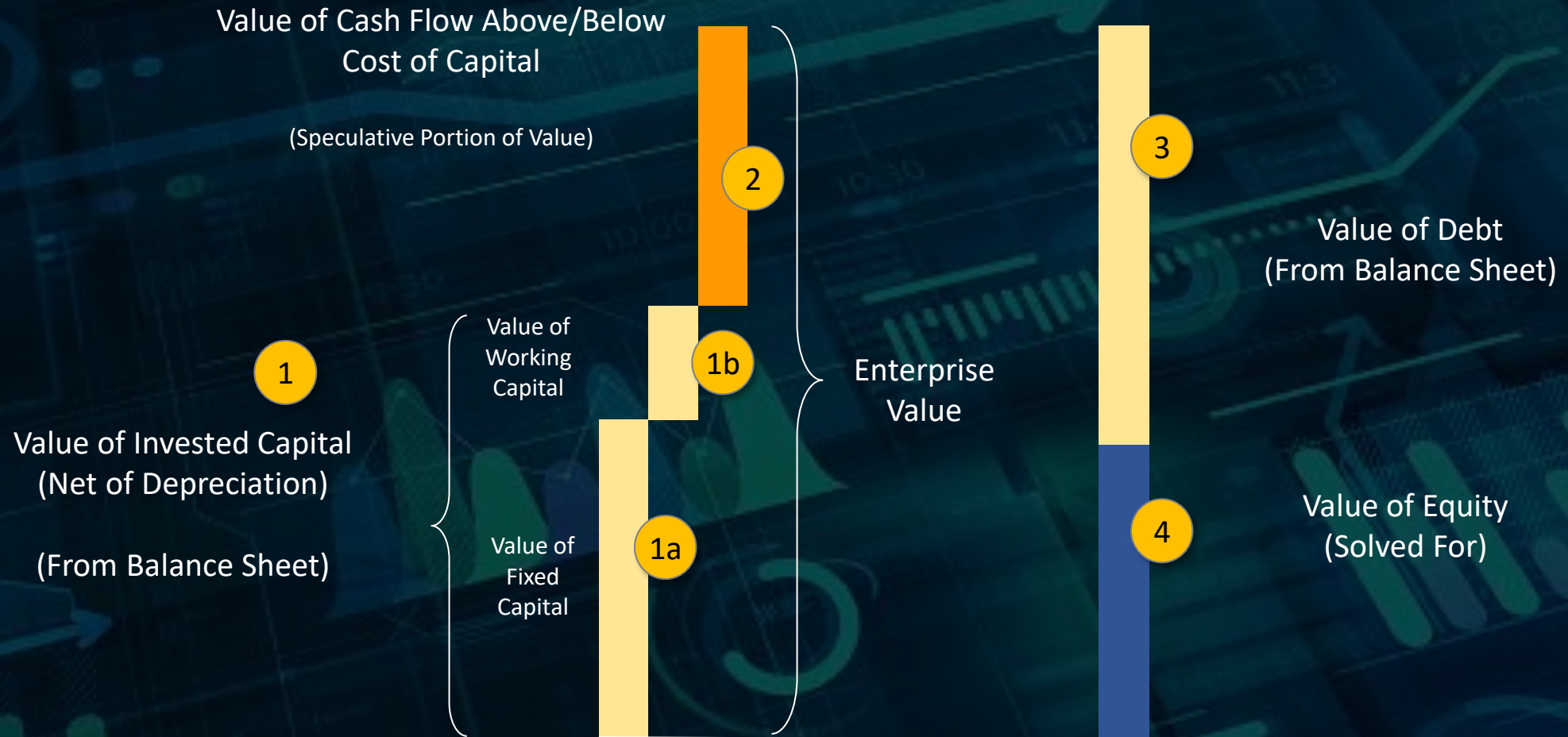
FSA Uses a Value-Added Methodology

There are four steps to calculating the value of a stock in our methodology

- 1.+ Value of Net Invested Capital – known from the balance sheet
- 2.+ Future Cash Flows – unknown
- 3.- Debt – known from the balance sheet
- 4.= Value of the Equity (solve for equity or value of shares)

The only unknown is Future Cash Flows. We estimate the value of future cash flows as discussed in the forecasting section.

Valuation – Value Added Method



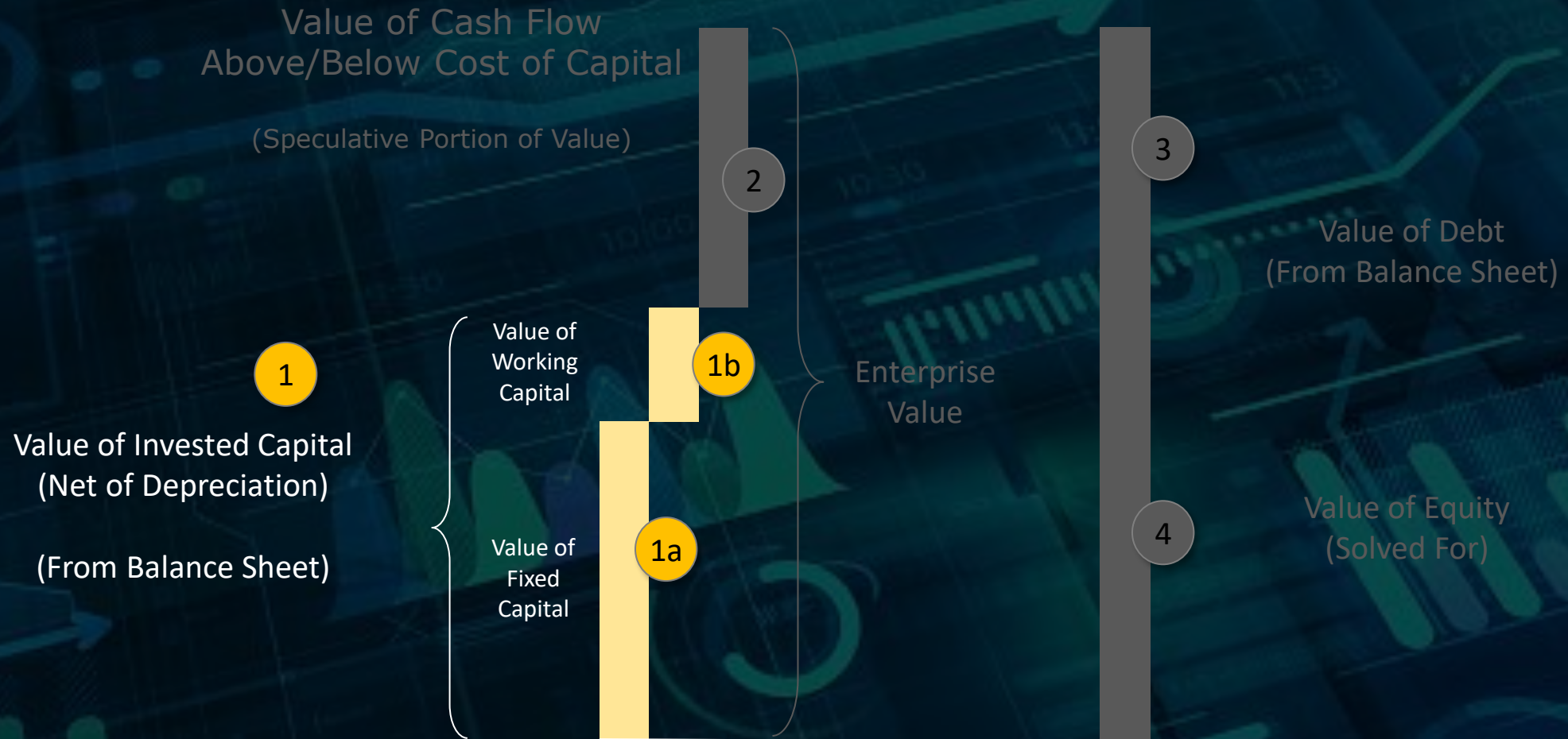
Valuation 1 of 4 Steps: Value of Net Invested Capital

There are four steps to calculating the value of a stock in our methodology

1) Value of Net Invested Capital

Recall that in performance measurement GROSS invested capital was the appropriate variable to use in calculating CFIRR. However, in valuation, it is appropriate to use NET invested capital because we want to know how much the company is worth. If assets are old and depreciated we need to take this into account. The line items included here are the same as performance measurement for inflation adjusted gross capital with the exception that it is after accumulated depreciation.

Valuation – Value Added Method 1 of 4 Steps: Value of Net Invested Capital



Valuation 2 of 4 Steps: Value of Future Cash Flows

There are four steps to calculating the value of a stock in our methodology

2) Future Cash Flows

This could also be called the "**value added**" and is the speculative portion of value.

If a forecast is a positive spread (i.e., **CFIRR – Cost of Capital is positive**), then value is created. In this case, the higher the capital growth forecast, the higher the valuation creation.

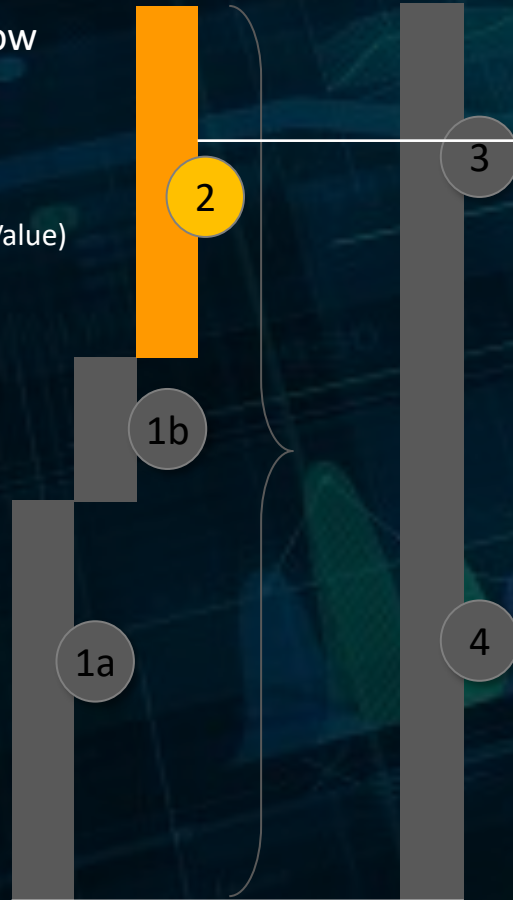
If a forecast is a negative spread (i.e., **CFIRR – Cost of Capital is negative**) then value is destroyed. In this case, the higher the capital growth forecast, the higher the value destruction.

If a forecast is a zero spread (i.e., **CFIRR – Cost of Capital is zero**), then growth does not affect value.

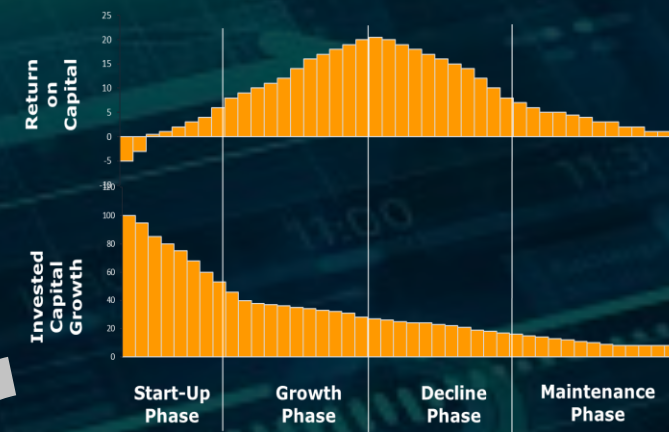
Valuation – Value Added Method 2 of 4 Steps: Value of Cash Flow – Cost of Capital

Value of Cash Flow
Above/Below
Cost of Capital

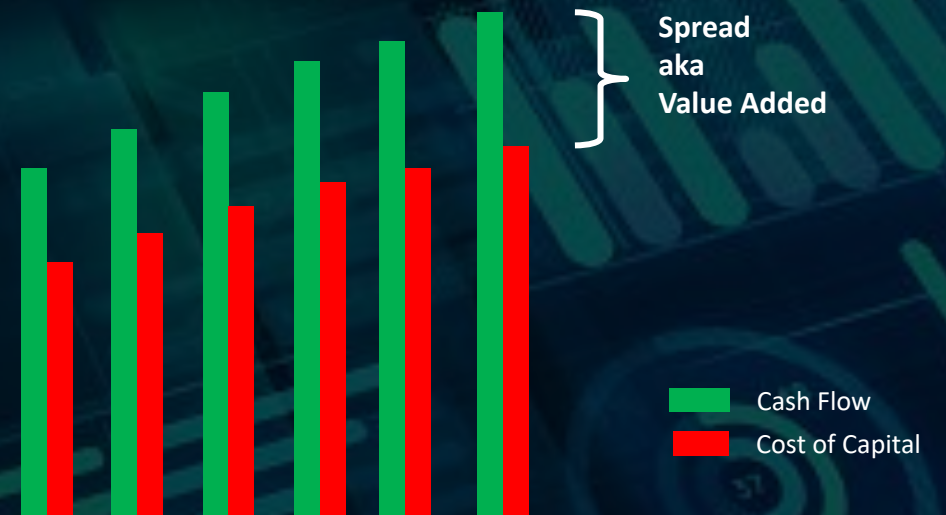
(Speculative Portion of Value)



Forecast



Implied Cash Flow and Cost of Capital



Valuation 3 of 4 Steps: Subtract the Value of Debt

There are four steps to calculating the value of a stock in our methodology

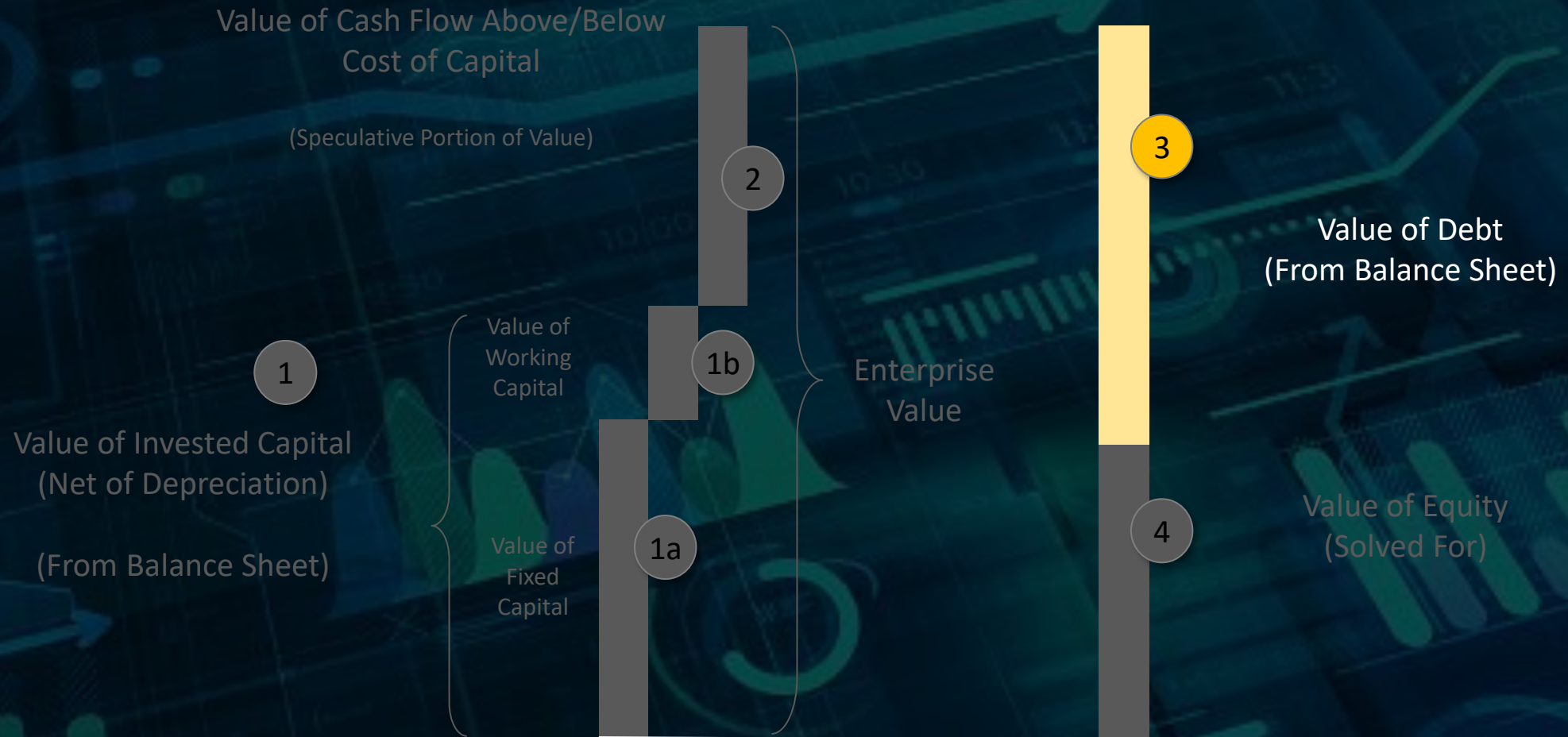
3) Subtract the Valuation Of Debt

The value of debt (more accurately value of debt and equivalents) is calculated from the balance sheet as follows:

Value of Debt =
+ Long-Term Debt
+ Minority Interest (from Balance Sheet)
+ Other Non-Current Liabilities (including Pension liabilities)
+ Preferred Stock
+ Short-Term Debt

Other items that could be added to value of debt would be off balance sheet liabilities such as pending lawsuits and under-funded pensions.

Valuation – Value Added Method 3 of 4 Steps: Subtract Value of Debt



Valuation 4 of 4 Steps: Solve for the Value of Equity

There are four steps to calculating the value of a stock in our methodology

4) Solve for the Value of Equity

All the above calculations lead to the value of the equity. The CFIRR and capital growth history lead to the CFIRR and capital growth forecasts, including the fade. The forecast produces a stream of cash flows less the cost of capital that is discounted to the present value. These discounted cash flows are added to the value of net invested capital to produce the total enterprise value. Finally, the value of equity is calculated as the total enterprise value less the value of debt.

Valuation – Value Added Method 4 of 4 Steps: Solve for the Value of Equity

