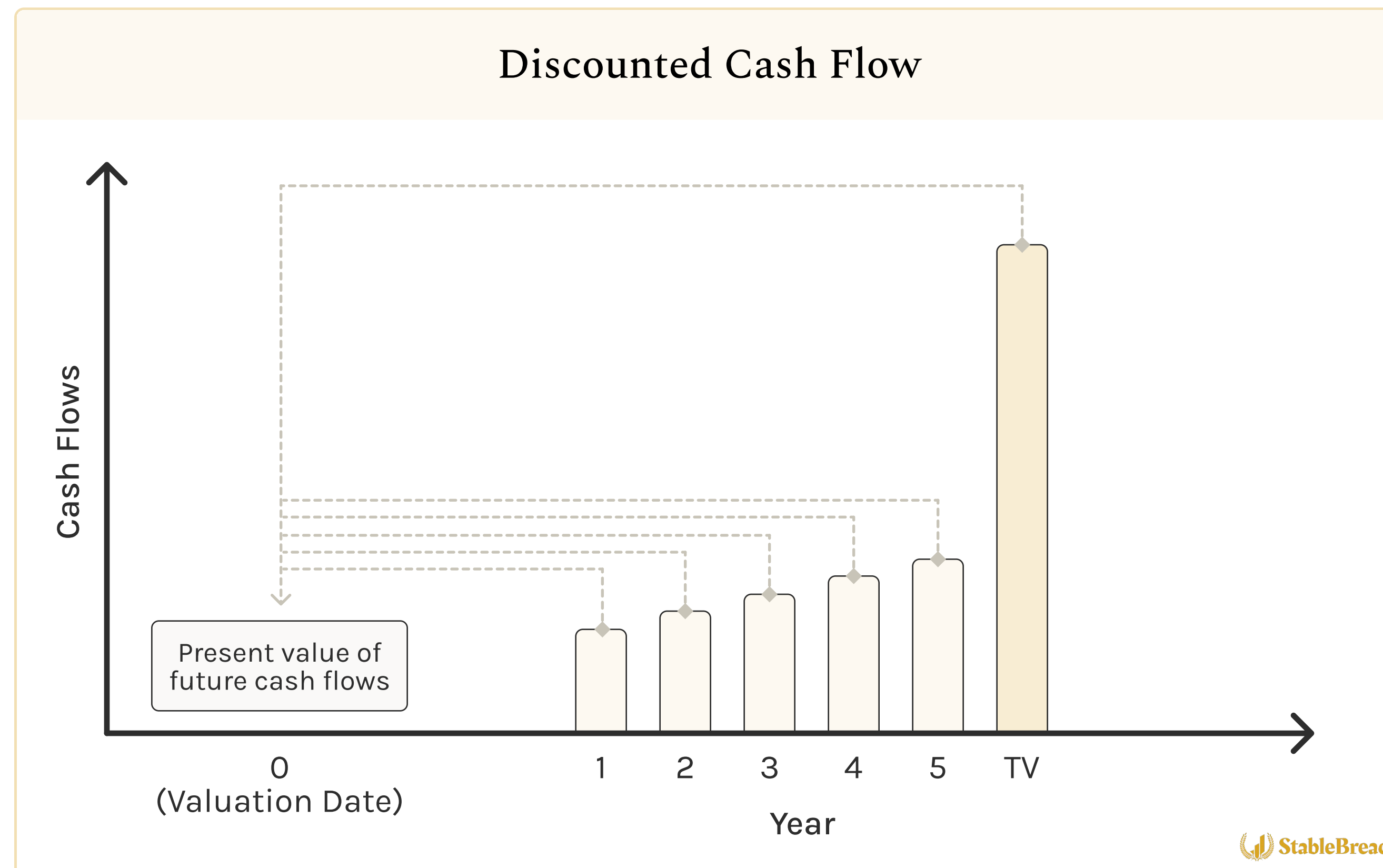


Discounted Cash Flow

DCF > OVERVIEW > DCF PREMISE

DCF Premise

Discounted cash flow (DCF) model estimates the intrinsic value of a company based on its expected future cash flows, discounted to present value (PV) using a rate that reflects the time value of money (TVM) and associated risks.



Discounted Cash Flow

DCF > OVERVIEW > TIME VALUE OF MONEY

Time Value of Money

Time value of money (TVM) is a financial concept that states a sum of money is worth more now than the same sum in the future due its potential earning capacity.

Future Value Formula

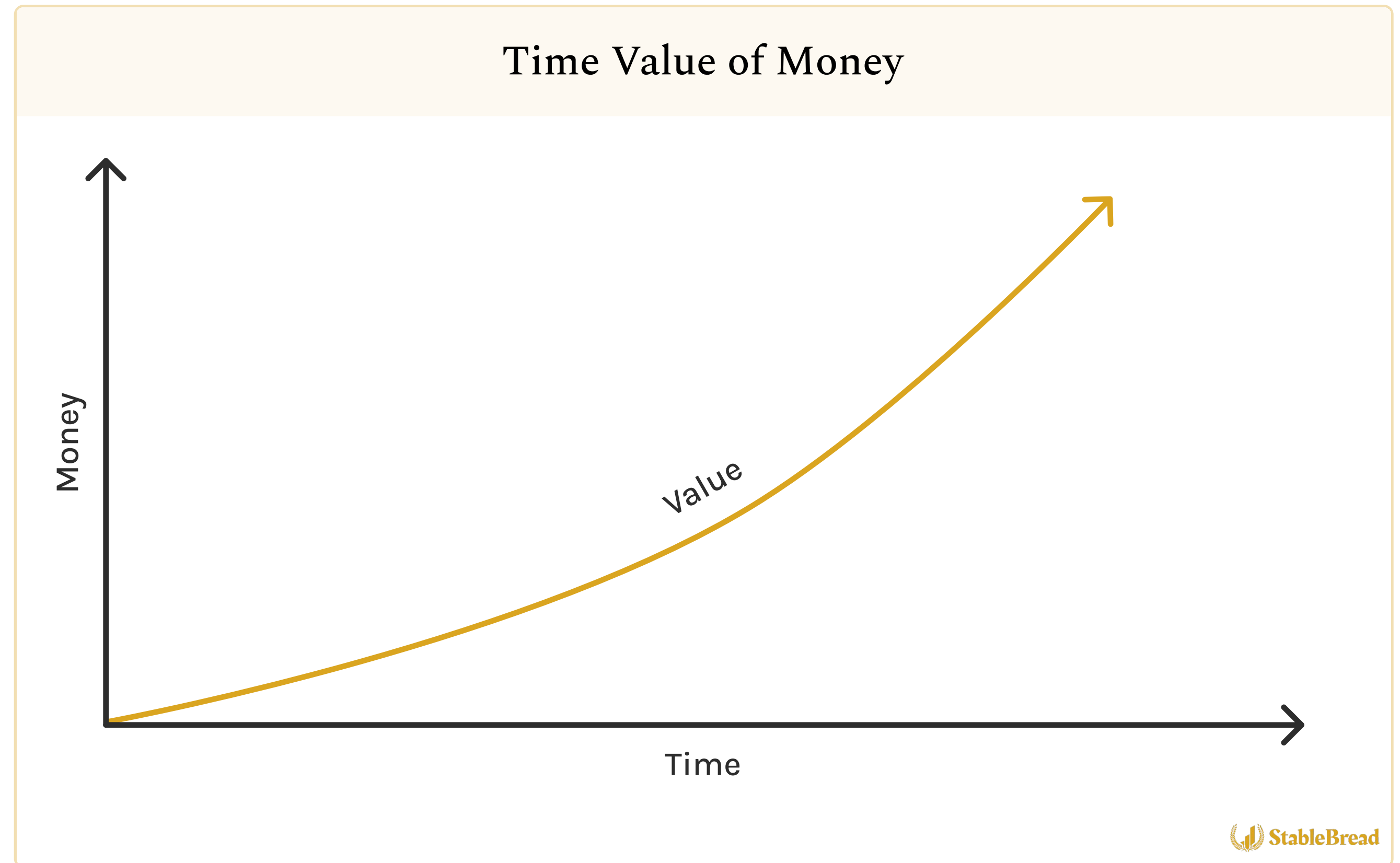
$$FV = PV \times (1 + r)^n$$

where:

- FV = future value
- PV = present value
- r = interest rate (per period)
- n = number of periods

Present Value Formula

$$PV = \frac{FV}{(1 + r)^n}$$



Discounted Cash Flow

DCF Background

Year(s)	Author(s)	Paper/Book Title(s)	DCF Significance
1930	Irving Fisher	The Theory of Interest	Formalized the concept of present value. Established the foundation for DCF by linking asset value to discounted future cash flows.
1938	John Burr Williams	The Theory of Investment Value	Applied DCF principles to stock valuation. Defined a stock’s intrinsic value as the present value of all future cash flows to shareholders.
1951	Joel Dean	Capital Budgeting	Introduced DCF for capital investment decisions. Pioneered the use of present value techniques in corporate financial planning.
1956	Ezra Solomon	The Arithmetic of Capital-Budgeting Decisions	Refined DCF techniques for capital budgeting. Provided practical methods for applying DCF in corporate investment decisions.
1961	Miller, Modigliani	Dividend Policy, Growth, and the Valuation of Shares	Reinforced DCF principles in firm valuation. Demonstrated that firm value depends on future cash flows, not dividend policy.
1992	Koller, Copeland, Murrin	Valuation: Measuring and Managing the Value of Companies	Popularized DCF in corporate finance practice. Provided comprehensive frameworks for applying DCF in business valuation.
2000’s	Aswath Damodaran	- Investment Valuation - The Little Book of Valuation - Damodaran on Valuation - The Dark Side of Valuation	Refined DCF techniques for various scenarios. Addressed practical challenges in applying DCF across different market contexts.
2009	Joshua Rosenbaum, Joshua Pearl	Investment Banking: Valuation, LBOs, M&A, and IPOs	Detailed DCF application in investment banking. Offered practical guide for DCF modeling in financial transactions and valuations.

Discounted Cash Flow

DCF > OVERVIEW > DCF FORMULA

DCF Formula

$$PV_0 = \sum_{t=1}^n \left[\frac{CF_t}{(1+r)^t} \right] + \left[\frac{TV}{(1+r)^n} \right]$$

sum of discounted cash flows (over the explicit forecast period)

discounted terminal value

where:

- PV_0 = present value (at time 0)
- CF_t = cash flow at time t
- r = discount rate (aka required rate of return)
- t = time period, ranging from 1 to n
- TV = terminal value at the end of period n
- n = number of periods in the explicit forecast period

3-Year Formula Example

$$PV_0 = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} + \frac{TV}{(1+r)^3}$$