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Operating-State Valuation Theory ROIC, Economic Profit, and the Structural Origin of Corporate Value

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Optional Author Note

The author develops an operating-state framework for corporate valuation integrating capital dynamics, return structures, economic profit generation, cash-flow derivation, and intrinsic value determination within a unified recursive architecture.

Abstract

This paper develops an operating-state theory of corporate valuation in which intrinsic value is generated by operating returns on invested capital rather than by discounted cash-flow reconstruction. The framework challenges the conventional cash-flow-centric paradigm by arguing that free cash flows are derivative expressions of underlying operating economics, while economic profit constitutes the fundamental mechanism of value creation.

The analysis begins from a structural identity linking invested capital and return on invested capital (ROIC) to operating profit, from which economic profit (EVA), free cash flow to the firm (FCFF), free cash flow to equity (FCFE), enterprise value, and equity value are recursively derived. The paper demonstrates that discounted cash flow valuation is not economically foundational but instead represents an algebraic transformation of deeper operating relationships.

A closed-loop valuation architecture is introduced in which ROIC functions as the generating variable of the financial system. Within this architecture, EVA-based valuation, FCFF-based valuation, and FCFE-based valuation converge under internally consistent operating assumptions. The framework further establishes several theoretical propositions concerning the primacy of economic profit, the derivative nature of cash flows, the operating origin of equity value, discount-timing distortions, and the invariance of intrinsic value under fixed and floating cost-of-capital regimes.

The paper also introduces the concept of Operating Equity and proposes a Weighted Average Cost of Operating Equity (WACE) as a structural operating-equity pricing

mechanism distinct from conventional market-based equity pricing approaches. In addition, the framework extends naturally into credit analysis by linking debt capacity and solvency to the persistence of economic profit rather than to short-term accounting cash-flow measures.

The proposed theory provides an integrated operating-state architecture that unifies operating performance, capital deployment, economic profit, cash flows, enterprise value, equity valuation, and credit capacity within a single coherent system. The analysis therefore advances a shift from cash-flow-centric valuation toward an economics-first valuation paradigm grounded in operating return dynamics and capital structure consistency.

Keywords:
Operating-State Valuation, ROIC, Economic Profit, EVA, Intrinsic Value, Enterprise Valuation, FCFF, FCFE, Discounted Cash Flow, Operating Capital, Operating Equity, WACE, Capital Structure, Residual Income, Corporate Finance Theory, Valuation Architecture, Closed-Loop Valuation, Economic Surplus, Credit Capacity, Structural Finance

JEL Classification Codes

- G12 — Asset Pricing
- G31 — Capital Budgeting; Investment Policy
- G32 — Financing Policy; Capital and Ownership Structure
- G33 — Bankruptcy; Liquidation
- G39 — Other
- M41 — Accounting
- D46 — Value Theory

Literature Positioning and Theoretical Contribution

Contemporary corporate valuation theory is dominated by discounted cash-flow frameworks, residual income approaches, and market-based asset pricing models. Despite important differences among these traditions, most valuation methodologies ultimately rely on the present-value principle as the foundational mechanism through which corporate value is determined.

Classical discounted cash-flow (DCF) models define enterprise value as the present value of expected future free cash flows discounted at a weighted average cost of capital. Residual income and economic profit models, including Economic Value Added (EVA) frameworks, attempt to refine this construction by separating operating surplus from required capital charges. Likewise, clean-surplus and residual-income valuation models establish formal links between accounting earnings, book value, and equity valuation.

The present paper builds upon these traditions while advancing a fundamentally different theoretical interpretation of the economic origin of value.

Rather than treating discounted cash flows as the primitive source of valuation, the proposed framework argues that operating return on invested capital (ROIC) constitutes

the generating variable of the corporate financial system. Within this architecture, operating profit, economic profit, free cash flows, enterprise value, equity value, and debt capacity emerge as recursive transformations of operating capital and return dynamics.

The paper therefore departs from conventional valuation theory in several important respects.

First, the framework reverses the traditional causal ordering of valuation. Conventional finance typically proceeds from projected cash flows toward intrinsic value. The operating-state architecture instead begins from invested capital and operating return, from which cash flows and valuation are subsequently derived.

Second, the paper advances the proposition that economic profit is economically primary, while discounted cash flow represents a secondary algebraic representation of underlying operating economics. In this interpretation, discounting does not create value; it measures and scales value generated through operating surplus.

Third, the framework introduces a closed-loop valuation structure in which operating variables, profitability, cash flows, enterprise value, and equity value are internally linked through recursive identities. This contrasts with conventional valuation systems, which may produce numerical outputs without enforcing internal operating coherence.

Fourth, the paper introduces the distinction between investor equity and operating equity and proposes a Weighted Average Cost of Operating Equity (WACE) as an operating-equity pricing mechanism distinct from conventional market-based equity pricing approaches.

Finally, the framework extends valuation theory into credit analysis by linking solvency and debt capacity to the persistence of economic profit rather than to short-term accounting cash-flow measures.

The contribution of the paper is therefore not the introduction of a new valuation formula, but the development of a unified operating-state architecture intended to reorganize the theoretical foundations of corporate valuation around capital deployment, operating return dynamics, and economic profit generation.

Introduction and Problem Statement

Corporate valuation occupies a central position in financial economics, investment analysis, corporate finance, and credit assessment. For decades, the dominant paradigm has been based on discounted cash flow (DCF) techniques, in which the value of a firm is obtained by forecasting future cash flows and discounting them at an assumed cost of capital. This paradigm implicitly treats value as a numerical outcome of discounting procedures.

Despite its widespread adoption, this approach suffers from fundamental conceptual limitations. It places mathematical machinery at the center of valuation while leaving the economic origin of value insufficiently defined. In practice, valuation becomes highly sensitive to terminal assumptions, discount-rate choices, growth projections, and cash-flow

timing, often producing materially different values for the same underlying business.

This paper advances a fundamentally different perspective.

We argue that corporate value is not created by discounting cash flows. Rather, value is generated by operating performance relative to the cost of capital. Discounting merely provides a numerical representation of an underlying economic process. The economic process itself originates in the firm's ability to deploy capital at returns exceeding the required return on that capital.

Accordingly, this paper develops an operating-state theory of corporate valuation in which:

- Return on Invested Capital (ROIC) constitutes the primary state variable of the firm.
- Economic profit (EVA) represents the direct mechanism of value creation.
- Free cash flows are derivative expressions of operating economics.
- Intrinsic value is determined by capital employed and expected economic profit, not by reconstructed cash-flow sequences.

The proposed framework is organized as a closed-loop system in which operating performance, capital deployment, economic profit, cash flows, and equity value are mathematically and economically linked in a self-validating structure. Within this system, multiple valuation representations—EVA-based valuation, FCFF-based DCF valuation, and FCFE-based equity valuation—are shown to converge when internally consistent.

Importantly, the theory does not rely on any specific numerical implementation, spreadsheet structure, or proprietary computational design. The focus is purely theoretical. All results are derived from economic identities and accounting-consistent relationships.

The central research question addressed in this paper is therefore:

What is the true economic origin of corporate value, and how should valuation be constructed once that origin is correctly identified?

This question leads to several subsidiary questions:

- Is cash flow the primitive source of value, or is it a consequence of operating performance?
- Does the cost of capital determine value, or does it merely scale value?
- How should equity value be derived from operating economics?
- Why do different valuation techniques sometimes produce different results for the same firm?

The answers developed in this paper challenge several deeply entrenched assumptions in conventional valuation practice. In particular, we demonstrate that:

- Economic profit is primary; discounted cash flow is secondary.
- ROIC governs NOPLAT, EVA, FCFF, FCFE, and ultimately equity value.
- Intrinsic value is invariant to the path of discount rates, provided operating economics are preserved.

These results collectively motivate a shift from cash-flow-centric valuation toward an operating-state valuation paradigm.

The remainder of the paper is structured as follows. Chapter 2 examines the structural limitations of conventional valuation frameworks. Chapter 3 introduces the operating-state valuation architecture. Subsequent chapters derive the central identities, establish EVA primacy, develop the concept of operating equity and its pricing (WACE), analyze discount-timing distortions, demonstrate invariance under fixed and floating cost of capital regimes, and explore implications for equity valuation and credit analysis. Mathematical proofs are collected in the appendix.

Structural Failure of the Classical Valuation Paradigm

The dominance of discounted cash flow valuation has shaped both academic research and professional practice for several decades. Under this paradigm, the value of a firm is defined as the present value of expected future free cash flows discounted at an appropriate cost of capital. While mathematically coherent, this construction embeds several structural assumptions that remain largely unexamined.

The first structural assumption is the primacy of cash flows. Conventional theory treats free cash flow as the fundamental economic quantity from which value is derived. Operating performance, capital structure, and profitability ratios are viewed as supporting diagnostics rather than as generators of value. This ordering implicitly assumes that cash flows exist independently of the economic mechanisms that produce them.

The second structural assumption is the centrality of the discount rate. The cost of capital is treated not merely as a scaling parameter, but as a principal driver of value. Small changes in the discount rate frequently lead to large changes in valuation outputs, reinforcing the perception that valuation is primarily a function of discounting.

The third structural assumption is the separation between operating performance and valuation. Operating analysis (margins, returns, growth) is conducted in one conceptual space, while valuation is performed in another, linked only through forecasted cash flows.

These assumptions generate a number of well-known practical difficulties:

- Extreme sensitivity of value to terminal assumptions.
- Large dispersion of valuation results across analysts for the same firm.
- Frequent reliance on subjective adjustments to force convergence.

These difficulties are often attributed to estimation error. This paper advances a different interpretation: the difficulties arise from a misidentification of the true economic primitive.

Cash flow is not an economic primitive. It is an outcome.

To see this, consider that a firm cannot generate free cash flow unless it first generates operating profit. Operating profit cannot exist unless capital is deployed. Capital cannot

produce profit unless it earns a return. Thus, at the most fundamental level, the economic sequence is:

Capital → Return → Operating Profit → Cash Flow The classical paradigm reverses this sequence: Cash Flow → Discounting → Value

This reversal obscures the economic origin of value.

A similar problem arises with respect to growth. In conventional valuation, growth is often treated as an independent source of value. Terminal value formulas embed growth assumptions that dominate total firm value. Yet growth by itself does not create value. Growth only creates value when new capital is invested at returns exceeding its cost.

Finally, the classical paradigm lacks an internal self-validation mechanism. A DCF model can produce a numerical value even if operating returns are inconsistent with capital costs, or if internal relationships between profit, reinvestment, and cash flow are violated. The model does not enforce economic coherence; it merely computes a discounted sum.

These observations suggest that the failure of conventional valuation is not computational but architectural. The architecture begins from the wrong starting point.

This paper therefore rejects the cash-flow-centric architecture and replaces it with an operating-centric architecture in which operating returns constitute the foundation of valuation.

Operating-State Valuation Architecture

The operating-state valuation architecture begins with a simple but powerful premise:

The economic state of a firm at any point in time is fully characterized by the amount of capital employed and the return earned on that capital.

Let:
IC_t denote invested capital at time t.
$ROIC_t$ denote return on invested capital at time t. Then operating profit after tax is defined as:

$$NOPLAT_t = ROIC_t \times IC_t$$

This identity is not a definition of a ratio. It is a generative relation. Given capital and return, operating profit is mechanically determined.

The cost of capital enters the system not as a valuation driver, but as a **benchmark for economic performance**. Let $WACC_t$ denote the weighted average cost of capital.

Define economic profit (EVA) as:

$$EP_t = IC_t \times (ROIC_t - WACC_t)$$

This expression captures the surplus generated after compensating all providers of capital at their required rate.

Operating profit can therefore be decomposed as: $NOPLAT_t = WACC_t \times IC_t + EP_t$
This decomposition reveals two components:

- Capital charge (required return).
- Economic surplus (value creation).

Free cash flow to the firm is obtained by subtracting reinvestment: $FCFF_t = NOPLAT_t - \Delta IC_t$
Substituting the decomposition:
$FCFF_t = WACC_t \times IC_t + EP_t - \Delta IC_t$

Thus free cash flow is not an independent primitive. It is a transformation of economic profit and capital dynamics.

Enterprise value is defined as:

$$EV_0 = IC_0 + \Sigma [EP_t / (1 + WACC)^t]$$

This identity states that enterprise value equals current invested capital plus the present value of future economic profit.

This expression is the core of the operating-state valuation architecture. Discounted cash flow valuation emerges as an alternative representation: $EV_0 = \Sigma [FCFF_t / (1 + WACC)^t]$
But this representation is obtained only after algebraic substitution. It does not define value; it represents value.

Equity value is then derived residually:

$$Equity_0 = EV_0 - NetDebt_0$$

The architecture therefore establishes the following causal chain:

ROIC → NOPLAT → EVA → FCFF → EV → Equity Not the reverse.
This architecture possesses an essential property: closure.

Starting from ROIC and IC, one can derive NOPLAT, EVA, FCFF, enterprise value, equity value, and equity cash flows. From these, one can reconstruct ROIC. The system validates itself internally.

This closed-loop structure distinguishes the operating-state valuation architecture from conventional valuation models, which lack an internal economic consistency requirement.

The remainder of the paper develops the theoretical consequences of this architecture, including:

- EVA primacy over DCF.
- Equity-origin of firm cash flows.
- Operating equity and WACE.
- Discount-timing distortions.
- Invariance under fixed and floating cost of capital.

ROIC as the Generating Variable

In conventional financial analysis, Return on Invested Capital (ROIC) is typically interpreted as a descriptive performance ratio. It is calculated ex post and used to assess managerial efficiency. Within the operating-state valuation architecture, ROIC occupies a fundamentally different position.

ROIC is not merely descriptive. ROIC is generative.

This distinction is central.

The operating-state framework begins from the identity:

$$NOPLAT_t = ROIC_t \times IC_t$$

This relation is often treated in textbooks as a rearrangement of definitions. In the present framework, it is elevated to a structural law: operating profit is mechanically generated by the interaction between capital employed and the return earned on that capital.

This has several important implications. First, NOPLAT is not a primitive variable.

Second, profitability is not an emergent outcome of cash flows.

Third, the entire income statement can be viewed as a transformation of ROIC and IC.

To see this, note that operating profit before depreciation, operating profit after depreciation, and net operating profit after tax are all successive accounting transformations of the same underlying economic quantity: return on invested capital.

Thus, the causal direction is:
ROIC → Operating Profit → Accounting Earnings not:
Accounting Earnings → ROIC
This reversal resolves a long-standing ambiguity in financial analysis regarding whether profitability ratios explain earnings or whether earnings generate ratios. The operating-state architecture establishes unequivocally that returns explain earnings.

The generative role of ROIC extends beyond operating profit. Because economic profit is defined as:

$EP_t = IC_t \times (ROIC_t - WACC_t)$
it follows directly that ROIC governs the magnitude, sign, and persistence of economic profit. If $ROIC_t = WACC_t$, then $EP_t = 0$.
If $ROIC_t > WACC_t$, then $EP_t > 0$. If $ROIC_t < WACC_t$, then $EP_t < 0$.

Thus, value creation is a direct consequence of the relationship between ROIC and WACC. No other variable is required.

Moreover, because free cash flow is derived from NOPLAT and reinvestment, and NOPLAT is generated by ROIC, it follows that:

ROIC governs FCFF.

Likewise, because equity cash flow is obtained after servicing debt, and debt service itself depends on operating profit, it follows that:

ROIC governs FCFE.

Therefore, ROIC is the unique source variable from which all major valuation-relevant quantities originate.

This leads to the following proposition.

Proposition 1 (ROIC Generating Proposition)
Given invested capital and cost of capital, the entire set of operating profit, economic profit, free cash flows, and intrinsic value is uniquely determined by the path of ROIC.

The proposition implies that valuation should be structured around modeling ROIC trajectories, not around modeling cash-flow sequences.

Traditional valuation models typically forecast revenues, margins, reinvestment rates, and growth, then compute cash flows. These procedures are indirect attempts to approximate an underlying ROIC path. The operating-state architecture makes this explicit.

Once ROIC is specified, all other quantities follow mechanically.

This perspective transforms valuation from a forecasting exercise into a state-variable analysis. The analyst's task becomes identifying:

- The current ROIC.
- The sustainable ROIC.
- The competitive forces affecting ROIC.
- The capital dynamics accompanying ROIC. Cash flows become outputs, not inputs.

EVA Primacy and the Mechanism of Value Formation

The concept of Economic Value Added (EVA), or economic profit, is often presented in practice as a performance metric. In the operating-state framework, EVA occupies a far more fundamental position.

EVA is not merely a metric.
EVA is the mechanism of value formation. Recall the identity:
$EP_t = IC_t \times (ROIC_t - WACC_t)$

This expression captures the economic surplus generated after compensating capital providers at their required return. It directly measures value created in period t.

Enterprise value is given by:

$EV_0 = IC_0 + \Sigma [EP_t / (1 + WACC)^t]$

This identity has a profound interpretation. Enterprise value consists of two components:

- The capital already invested in the firm.
- The present value of future economic surplus.

There is no reference to cash flows in this expression.

Cash-flow-based valuation emerges only after algebraic substitution.

This establishes EVA as economically primary and DCF as representational.

The primacy of EVA can be understood intuitively. Value is created when a firm earns more on its capital than the capital costs. Whether this surplus is distributed as dividends, retained, reinvested, or temporarily absorbed into working capital does not alter the existence of the surplus itself.

Cash flow is a distributional manifestation of value creation, not the source of it. This insight resolves several persistent puzzles in valuation.

First, firms can create substantial value while exhibiting low or even negative free cash flow during growth phases. Under a cash-flow-centric paradigm, such firms appear unattractive. Under an EVA-centric paradigm, the explanation is immediate: high ROIC combined with heavy reinvestment generates large economic profit even if cash flow is temporarily suppressed.

Second, firms with high free cash flow but ROIC below WACC destroy value despite appearing attractive under DCF heuristics. EVA correctly identifies such firms as value destructive.

Third, terminal value in DCF models often dominates enterprise value. In the EVA framework, no artificial terminal construct is required. Value persists as long as economic

profit persists.

This leads to a second proposition.

Proposition 2 (EVA Primacy Proposition)
Intrinsic enterprise value is generated by the present value of economic profit. Discounted cash flow is a secondary numerical representation obtained by algebraic transformation.

The proposition implies that disagreements between EVA-based valuation and DCF-based valuation should be resolved in favor of EVA.

If a DCF model produces a value inconsistent with the EVA identity, the inconsistency originates from cash-flow reconstruction, timing distortions, or terminal approximations—not from the underlying economics.

Furthermore, EVA provides a natural bridge between operating performance and valuation. Changes in ROIC directly alter EVA.

Changes in EVA directly alter value.

No intermediate step is required.

This establishes a continuous mapping from operating economics to intrinsic value.

Finally, EVA-based valuation possesses a crucial property absent from conventional DCF models: economic coherence.

Because EVA is derived from ROIC and IC, and because EV is derived from EVA, any valuation result must be consistent with operating returns. It is impossible within this framework to obtain a high valuation for a firm that persistently earns returns below its cost of capital.

This coherence property is a defining characteristic of the operating-state valuation architecture.

Equity-Origin of Firm Cash Flow
(FCFE–FCFF–EVA Tri-Derivation)
In classical valuation practice, Free Cash Flow to the Firm (FCFF) is typically treated as the primary cash-flow construct, while Free Cash Flow to Equity (FCFE) is viewed as a derivative obtained after deducting debt flows. This ordering is largely conventional rather than theoretical.

The operating-state valuation architecture leads to the opposite conclusion.

Within this framework, equity is the ultimate economic claimant, and equity cash flow represents the most fundamental distribution of economic surplus. Firm-level cash flow is

obtained only after abstracting from capital-structure effects.

This section establishes that FCFF is uniquely derivable from FCFE through capital-structure neutralization and that both are derivable from EVA. Together, these derivations form a tri-consistency system.

FCFE from Operating Economics
Equity holders ultimately receive residual operating surplus after:

- Compensating debt holders, and
- Reinvesting required capital.

Let:
$FCFE_t$ = Cash flow available to equity at time t. Starting from operating profit:
$NOPLAT_t = ROIC_t \times IC_t$ Subtract reinvestment:
Operating Cash $Surplus_t = NOPLAT_t - \Delta IC_t$
Subtract net interest after tax and add net borrowing:

$FCFE_t = \text{Operating Cash Surplus}_t - \text{Interest}_t(1 - \tau) + \text{NetBorrowing}_t$

This expression shows that FCFE is directly linked to operating economics and financing policy.

FCFF from FCFE
Firm cash flow abstracts from financing flows:

$FCFF_t = FCFE_t + \text{Interest}_t(1 - \tau) - \text{NetBorrowing}_t$ Substituting the FCFE expression:
$FCFF_t = (NOPLAT_t - \Delta IC_t)$

Thus:

$FCFF_t = NOPLAT_t - \Delta IC_t$

But $NOPLAT_t$ itself is generated by ROIC. Therefore:
$FCFF_t$ is a transformed representation of equity cash flow after removing capital-structure effects.

This leads to:

Proposition 3 (Equity-Origin Cash Flow Proposition)
Free Cash Flow to the Firm is uniquely derivable from Free Cash Flow to Equity through capital-structure neutralization. FCFF is not a primitive variable.

FCFF from EVA
From Chapter 5:

$NOPLAT_t = WACC_t \times IC_t + EP_t$ Substitute into FCFF:

$FCFF_t = WACC_t \times IC_t + EP_t - \Delta IC_t$ Thus FCFF decomposes into:

- Capital charge component
- Economic profit component
- Reinvestment adjustment

This confirms that FCFF is algebraically generated from EVA.

Tri-Consistency Structure
We now have:

FCFE ⇄ FCFF ⇄ EVA

Each can be derived from the others without introducing new economic assumptions. This yields:

Proposition 4 (Tri-Consistency Proposition)
FCFE, FCFF, and EVA are alternative representations of the same underlying operating surplus. None is economically primitive; however, EVA is the most direct representation of value creation.

Implication
Classical valuation practice treats FCFF as the foundation. Operating-state valuation reverses this ordering:
ROIC → EVA → FCFE → FCFF → DCF

This reversal is structural, not cosmetic.

Operating Equity and the Pricing of Equity Capital (WACE)

Conventional finance theory treats equity as a homogeneous financial claim priced by investor-required return, typically estimated via CAPM.

Operating-state valuation introduces a critical distinction:

Investor Equity ≠ Operating Equity
Operating Equity
Operating Equity is the portion of equity capital actively employed in operations alongside operating debt to generate NOPLAT.

Invested Capital becomes:

IC = Operating Equity (OE) + Operating Debt (OD) Not:
IC = Total Equity + Total Debt This distinction separates:

- Financial ownership claims from
- Productive capital inputs

Cost of Operating Equity (WACE)
Let:

WACE = Weighted Average Cost of Operating Equity

WACE represents the economic price of employing equity inside operations, not the return demanded by investors in capital markets.

Revised Cost of Capital Identity
WACC becomes:

$$WACC = (WACE \times OE / IC) + (Kd \times OD / IC)$$

This expression prices capital according to function, not instrument.

Consequences
Investor-required equity return may differ materially from operating equity charge. CAPM therefore prices financial equity, not operating equity.
This leads to:

Proposition 5 (Operating Equity Pricing Proposition)
The relevant equity cost for valuation is the operating equity charge (WACE), not the investor-required return.
Why This Matters
Using investor equity cost inside operating valuation conflates:

- Market risk pricing with
- Production economics

Operating-state valuation disentangles these domains.

Link to EVA
Economic profit becomes:

$EP_t = IC_t \times (ROIC_t - WACC_t)$ Where $WACC_t$ now embeds WACE.
Thus EVA is computed using operating equity pricing, not market equity pricing.

Structural Implication
Once WACE is introduced:

- EVA stabilizes
- ROIC–WACC spread becomes economically interpretable
- Valuation becomes coherent with operating structure

Discount-Timing Distortion and the Fallacy of Cash-Flow Timing

A central belief in conventional valuation practice is that the precise timing of cash flows is a dominant determinant of intrinsic value. Considerable modeling effort is therefore devoted to shaping annual cash-flow paths, smoothing growth profiles, and refining

terminal-year transitions.

The operating-state valuation architecture challenges this belief at its foundation. The central claim of this chapter is:
Cash-flow timing does not create value. Operating economics create value.
Cash-flow timing only redistributes the numerical representation of that value.

Source of Timing Sensitivity in DCF
Discounted cash flow valuation expresses enterprise value as:

$EV_0 = \Sigma [FCFF_t / (1 + WACC)^t]$

This expression makes valuation appear inherently sensitive to:
- When cash flows occur
- How fast they grow
- How they transition into terminal form

However, this sensitivity is a property of the representation, not of the economic process. Recall from Chapter 5:
$EV_0 = IC_0 + \Sigma [EP_t / (1 + WACC)^t]$

This identity does not involve cash-flow timing. Economic profit depends on:
- Invested capital
- ROIC
- WACC

None of these variables require specifying the timing pattern of cash flows.

How Timing Distortions Arise
From Chapter 6:

$FCFF_t = WACC_t \times IC_t + EP_t - \Delta IC_t$ Cash flow is constructed from:
- Capital charge
- Economic profit
- Reinvestment

Different assumptions about reinvestment schedules, working-capital release, or depreciation timing can materially alter $FCFF_t$ even when:
- $ROIC_t$ is unchanged
- EP_t is unchanged
- IC_t trajectory is unchanged Thus:

The same economic reality can generate many different FCFF paths. Each FCFF path, when discounted, yields a different numerical value. This creates the illusion that value itself has changed.
In reality, only the representation has changed.

EVA-Based Value Is Timing-Invariant
Enterprise value expressed in EVA form:

$EV_0 = IC_0 + \Sigma [EP_t / (1 + WACC)^t]$

depends only on economic profit. Economic profit already incorporates:
- Operating performance
- Capital employed
- Cost of capital

It does not depend on how cash is distributed through time. Therefore:
If EP_t is unchanged, intrinsic value is unchanged.

Timing as a Measurement Distortion
Discounting operates as a numerical projection tool, not a value generator. It converts a stream of future economic surplus into a present equivalent. If the surplus itself is unchanged, its present value should be unchanged.

Timing sensitivity arises only because FCFF is a noisy proxy for economic surplus.

Central Proposition
Proposition 6 (Discount-Timing Distortion Proposition)
Variations in the timing pattern of free cash flows do not change intrinsic value when operating economics are preserved. Apparent valuation changes under DCF arise from representational distortions, not from changes in value creation.

Practical Interpretation
When EVA-based value and DCF-based value differ, the economically correct value is the EVA-implied value.

The DCF deviation signals reconstruction error.

Conceptual Consequence
This proposition reverses the standard diagnostic logic:

Classical view:
DCF value is correct → check operations.

Operating-state view:
Operations determine value → check DCF.

Fixed vs. Floating Cost of Capital and Invariance of Intrinsic Value

Valuation models frequently assume a constant cost of capital over time. More sophisticated implementations allow the cost of capital to vary across periods in response to changing risk, leverage, or macroeconomic conditions.

Conventional theory implies that these two modeling choices should lead to materially different valuations.

The operating-state valuation architecture predicts the opposite.

Two Capital Pricing Regimes
Define:

- Fixed-WACC regime: WACC_t = constant
- Floating-WACC regime: WACC_t varies over time

Both regimes may be used to discount cash flows or economic profit.

What Classical Theory Predicts
Because discount rates appear in the denominator of valuation formulas, classical theory predicts strong valuation sensitivity to the path of WACC.

What Operating-State Theory Predicts
Intrinsic value depends on:

$EV_0 = IC_0 + \Sigma [EP_t / (1 + WACC_t)^t]$ But:
$EP_t = IC_t \times (ROIC_t - WACC_t)$

If ROIC_t, IC_t, and their dynamics are preserved, then changes in WACC_t alter EP_t and discounting simultaneously.

These effects offset.

Economic Intuition
Higher WACC:

- Raises the capital charge
- Lowers EP_t But also:
- Increases the discount rate applied to EP_t Lower WACC:
- Lowers capital charge
- Raises EP_t But also:
- Lowers the discount rate

Thus, the valuation system self-balances.

Invariance Result
When operating economics are preserved, intrinsic value converges under both constant and time-varying cost of capital regimes.

Central Proposition
Proposition 7 (Discount-Path Neutrality Proposition)
Intrinsic enterprise value is invariant to whether the cost of capital is modeled as constant

or time-varying, provided operating profit dynamics are preserved.

Implication
Cost of capital is not a value driver. It is a scaling parameter.
Value is driven by operating returns relative to capital employed.

Consequence for Practice
Obsessing over precise WACC estimation while ignoring operating return dynamics is misplaced.

Operating economics dominate valuation.

Credit, Solvency, and Debt Capacity in an Operating-State Framework

Credit analysis is traditionally conducted using coverage ratios, leverage ratios, and cash-flow-based metrics such as EBITDA-to-debt or interest coverage. These measures focus on accounting aggregates and short-term liquidity.

The operating-state valuation architecture leads to a deeper interpretation. Credit capacity is not determined by cash flow.

Credit capacity is determined by sustainable economic profit.

Economic Basis of Debt Service
Debt holders are ultimately repaid from the same economic source as equity holders: operating surplus.

From Chapter 5:
$EP_t = IC_t \times (ROIC_t - WACC_t)$

When $ROIC_t > WACC_t$, the firm generates surplus beyond required capital compensation. This surplus supports:

- Equity distributions
- Reinvestment
- Debt service

If $ROIC_t \leq WACC_t$, no sustainable surplus exists.

Any debt service must be financed through asset liquidation or additional borrowing.

Debt Capacity as a Function of EVA
Sustainable debt capacity is therefore proportional to the magnitude and stability of economic profit.

Let:

Debt Capacity $\propto$ PV(EP_t) This relationship implies:

Firms with persistent positive EVA can support high leverage even if short-term cash flows are volatile.

Firms with negative EVA cannot sustain leverage even if current cash flows appear strong.

Why Cash-Flow Ratios Mislead
Cash flows can be temporarily inflated by:

- Working-capital contraction
- Underinvestment
- Asset sales

These actions improve short-term liquidity but reduce future operating capacity.

EVA immediately detects this deterioration through declining IC and/or declining ROIC.

Central Proposition
Proposition 8 (Economic Profit Credit Proposition)
Long-term debt capacity is determined by the present value of economic profit, not by accounting cash-flow measures.

Solvency Interpretation
A solvent firm is not a firm with positive cash flow.

A solvent firm is a firm that can sustain ROIC above its cost of capital.

Link to Valuation
Because:

$EV_0 = IC_0 + PV(EP)$

and

Equity = EV − Net Debt

Debt capacity and equity value are jointly determined by the same economic engine.

Implications for Valuation Practice

The operating-state valuation architecture implies a fundamental restructuring of valuation practice.

Modeling Focus
Valuation should begin with:

- ROIC dynamics
- Invested capital dynamics Not with cash-flow forecasts.

Growth Reinterpreted Growth creates value only if: ROIC > WACC

Growth without spread destroys value.

Terminal Value Reinterpreted Terminal value is not a separate construct. It is the continuation of economic profit.

Discount Rate Reinterpreted
The discount rate scales value. It does not generate value.

Role of DCF
DCF becomes a consistency check, not a valuation engine.

Equity Analysis
ROE is derived from ROIC.

EPS is an accounting transformation. Neither is fundamental.

Theoretical Contributions of the Framework
The operating-state valuation framework developed in this paper contributes to corporate finance and valuation theory in several interconnected ways.

First, the paper advances a generative interpretation of Return on Invested Capital (ROIC), treating operating return not as a descriptive accounting ratio but as the primary state variable governing operating profit, economic profit, free cash flows, and intrinsic value formation.

Second, the framework establishes the economic primacy of economic profit (EVA) relative to discounted cash-flow representations. In this interpretation, value is generated through operating surplus above the cost of capital, while discounted cash-flow models operate as secondary representational transformations of deeper operating relationships.

Third, the paper develops a closed-loop valuation architecture linking invested capital, operating return, operating profit, economic profit, firm cash flows, equity cash flows, enterprise value, equity value, and credit capacity within a unified recursive structure. This architecture introduces an internal consistency requirement absent from conventional valuation systems.

Fourth, the framework introduces the distinction between investor equity and operating equity and proposes a Weighted Average Cost of Operating Equity (WACE) as an operating-state pricing mechanism intended to align equity pricing with productive operating capital rather than solely with market-based investor return requirements.

Fifth, the analysis establishes several structural propositions concerning:
- discount-timing distortions,
- discount-path neutrality under fixed and floating cost-of-capital regimes,
- the derivative nature of free cash flows,
- and the operating origin of debt capacity and solvency.

Finally, the paper proposes a broader shift in valuation methodology from a cash-flow-centric paradigm toward an operating-state paradigm centered on capital deployment, operating return persistence, and economic surplus generation.

Conclusion

This paper develops an operating-state theory of corporate valuation in which intrinsic value is generated by operating returns and capital deployment.

Return on invested capital is the generating variable. Economic profit is the mechanism of value creation. Cash flows are representations.
Discounting is a measurement tool.

Cost of capital is a benchmark, not a driver.

The theory provides a closed-loop valuation architecture that unifies operating performance, capital dynamics, cash flows, equity value, and credit capacity within a single coherent system.

The operating-state framework replaces cash-flow-centric valuation with an economics-first foundation.

Mathematical Appendix

Formal Derivations and Proof Sketches A1. ROIC Generating Identity

Let:

IC_t = Invested Capital at time t $ROIC_t$ = Return on Invested Capital
$NOPLAT_t$ = Net Operating Profit After Tax By definition of return:
$ROIC_t = NOPLAT_t / IC_t$

Rearranging:

$NOPLAT_t = ROIC_t \times IC_t$

This identity establishes operating profit as a deterministic function of return and capital.

A2. Economic Profit Identity

Let:

$WACC_t$ = Weighted Average Cost of Capital Economic profit (EVA):
$EP_t = NOPLAT_t - WACC_t \times IC_t$

Substitute $NOPLAT_t$:

$EP_t = IC_t \times ROIC_t - IC_t \times WACC_t$ $EP_t = IC_t \times (ROIC_t - WACC_t)$

A3. Decomposition of Operating Profit
From A2:

$NOPLAT_t = EP_t + WACC_t \times IC_t$

Thus:
$NOPLAT_t$ = Capital Charge + Economic Surplus

A4. FCFF Derivation from EVA
Define:

$FCFF_t = NOPLAT_t - \Delta IC_t$

Substitute $NOPLAT_t$:

$FCFF_t = WACC_t \times IC_t + EP_t - \Delta IC_t$

This shows FCFF as a transformation of EVA and capital dynamics.

A5. Enterprise Value from EVA
Define enterprise value:

$EV_0 = \Sigma\, FCFF_t / (1+WACC)^t$

Substitute A4:

$EV_0 = \Sigma\, [\, (WACC_t \times IC_t + EP_t - \Delta IC_t) / (1+WACC)^t \,]$

Split summation:

$EV_0 = \Sigma\, [\, WACC_t \times IC_t / (1+WACC)^t \,]$
$+ \Sigma\, [\, EP_t / (1+WACC)^t \,]$
$- \Sigma\, [\, \Delta IC_t / (1+WACC)^t \,]$

Using standard present-value identity:

$\Sigma\, [\, WACC \times IC_t / (1+WACC)^t \,] - \Sigma\, [\, \Delta IC_t / (1+WACC)^t \,] = IC_0$

Therefore:

$EV_0 = IC_0 + \Sigma\, [\, EP_t / (1+WACC)^t \,]$

A6. Equity Value Identity
Let:

$Equity_0 = EV_0 - NetDebt_0$ Substitute EV_0:

$\text{Equity}_0 = IC_0 + PV(EP) - \text{NetDebt}_0$

A7. FCFE–FCFF Relationship
Let:

$FCFE_t$ = Cash flow to equity Int_t = Interest expense after tax NB_t = Net borrowing

By cash-flow identity:

$FCFF_t = FCFE_t + Int_t - NB_t$ Rearranging:
$FCFE_t = FCFF_t - Int_t + NB_t$

Thus FCFF and FCFE differ only by financing flows.

A8. FCFE from EVA
From A4:

$FCFF_t = WACC_t \times IC_t + EP_t - \Delta IC_t$

Substitute into FCFE equation:

$FCFE_t = WACC_t \times IC_t + EP_t - \Delta IC_t - Int_t + NB_t$

Hence FCFE is also a transformation of EVA.

A9. ROE Derived from ROIC
Let:

$\text{Equity}_t = IC_t - \text{Debt}_t$ Net income:
$NI_t = NOPLAT_t - Int_t$ Substitute $NOPLAT_t$: $NI_t = ROIC_t \times IC_t - Int_t$
$ROE_t = NI_t / \text{Equity}_t$ Thus:
$ROE_t = [ROIC_t \times IC_t - Int_t] / (IC_t - \text{Debt}_t)$

ROE is therefore a mapping of ROIC through capital structure.

A10. Discount-Path Neutrality
Value from EVA:

$EV_0 = IC_0 + \Sigma [IC_t \times (ROIC_t - WACC_t) / (1+WACC_t)^t]$

If $ROIC_t$ and IC_t paths are fixed, then changes in $WACC_t$ affect numerator and denominator simultaneously.

First-order approximation:

$\partial EV / \partial WACC \approx 0$

Hence intrinsic value is locally invariant to discount-path changes.

A11. Closed-Loop Consistency
Chain:

ROIC → NOPLAT NOPLAT → EP EP → FCFF
FCFF → EV
EV → Equity Equity → FCFE
FCFE → FCFF → NOPLAT → ROIC

Thus, the system maps back to its origin.