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# UNLOCKING VALUE: HOW WACC, WARA, IRR, & CAC SHAPE INTANGIBLES IN PURCHASE PRICE ALLOCATION

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## 1. INTRODUCTION

In the context of business combinations, particularly as seen in the growth of Merger & Acquisition (M&A) and Private Equity deals in markets like India, the financial reporting framework is evolving, drawing on global practices to provide objective information for analysis. Under standards such as Indian Accounting Standard (Ind AS) 103, (globally – Internation Financial Reporting Standard (IFRS) 3, and US Generally Accepted Accounting Principles for Accounting Standards Codification (US GAAP ASC) 805 governing business combinations, acquired assets and assumed liabilities must be recognised at their fair values as of the acquisition date. Guidance on fair value measurement is provided by standards like Ind AS 113, (globally - IFRS 13, and US GAAP ASC 820).

Valuing assets, including intangible assets identified during a Purchase Price Allocation (PPA), often relies on the income approach, where expected future economic benefits are converted into a single present value. The Multi-Period Excess Earnings Method (MPEEM) is a commonly applied technique for valuing intangible assets within this approach. An important aspect of operating this income approach in valuation is applying the right discount rates (rate of return) and their corresponding interplay. Three fundamental rates frequently discussed are the Weighted Average Cost of Capital (WACC), the Internal Rate of Return (IRR), and the Weighted Average Return on Assets (WARA).

Further combining Contributory Asset Charges (CAC) along with WACC, WARA, IRR – gives the essential path to accurately assessing value in business combinations and allocating the purchase price to acquired assets.

### 1.1 Weighted Average Cost of Capital (WACC): The Basic Rate of Return for Investor

For any enterprise, the WACC embodies the minimum acceptable return that satisfies all capital providers, proportionally weighted by their contribution to the capital structure. In a Purchase Price Allocation (PPA) exercise, the WACC is typically calculated based on the market-based cost of capital for the acquired entity. It is a blended rate reflecting the perspective of a market participant investing in the entity's capital structure.

- **Role in PPA:** WACC serves as the discount rate used to determine the fair value of the overall acquired entity's Prospective Financial Information (PFI). It essentially provides the baseline return required by the market for an investment of this overall risk profile.
- **Calculation Components:** Calculating WACC involves estimating the cost of equity (often using models like CAPM and considering factors like company-specific risk premiums if quantifiable and supportable), the after-tax cost of debt, and the market value weighting of each capital source.
- **Factors Affecting WACC:** The WACC is influenced by market conditions, the entity's risk profile, and potentially country-specific factors like risk-free rates and illiquidity premiums, which can lead to higher rates in certain markets, such as the 17.8% seen in Indian e-commerce.

### 1.2 Internal Rate of Return (IRR): Transaction's Effective Yield

The IRR, in the context of an acquisition, is the discount rate at which the present value of the projected cash flows of the acquired entity equals the purchase consideration paid. Looking from the perspective of an acquirer, this is fundamentally the compounded rate of return implied that is likely to be earned on investment.

- **Role in PPA:** The IRR derived from the purchase price and the PFI is a key diagnostic tool. It indicates the market participant's expected rate of return from the specific transaction.
- **Relationship with WACC:** The IRR is compared to the calculated WACC and WARA to test the overall acquisition economics and the reasonableness of the valuation assumptions. In theory, these three metrics should be closely aligned. The relationship WARA ≈ WACC < IRR is often sought, suggesting a deal creates value (IRR exceeds the cost of capital, WACC).
- **Interpretation:** A significant difference between the IRR and WACC might suggest that the purchase price paid differs from the fair value of the acquired entity. Though purchase price is generally regarded as a good indicator of fair value, circumstances like overpayment or bargain purchase may happen. An IRR significantly above WACC could, theoretically, suggest a bargain purchase, while an IRR below WACC could indicate a value-destructive deal, though the purchase price's reflection of fair value must be confirmed first.

### 1.3 Weighted Average Return on Assets (WARA): Validating the Allocation

WARA represents the weighted average of the required rates of return for the acquired assets, weighted by their fair values as allocated in the PPA. As a process, purchase price needs to be allocated to identified assets be it tangible or intangible.

- **Role in PPA:** The primary purpose of WARA in PPA is to act as an analytical tool to validate the allocation of the purchase price to individual assets. It assesses whether the assigned rates of return to different asset categories are reasonable relative to each other and reconcile with the overall entity's required return (WACC).
- **Calculation:** WARA is calculated by summing the fair value of each asset (tangible assets, identified intangible assets, working capital, and goodwill) multiplied by its assigned asset-specific required rate of return, and then dividing this sum by the total allocated purchase price (or fair value of the entity). Note that non-operating assets and liabilities are typically excluded from the WARA calculation.
- **Reconciliation:** A fundamental phase in PPA is the reconciliation of WARA with WACC and IRR. If WARA significantly deviates from WACC (e.g., more than 2-3%), it can indicate potential issues with the valuation, such as overvaluation or

undervaluation of specific assets, or inappropriate asset-specific return rates. The WARA analysis can also be used to solve for the implied rate of return on goodwill by setting WARA equal to WACC.

### 1.4 Contributory Asset Charges (CAC): Isolating Intangible Asset Earnings

CACs, also referred to as capital charges or economic rents, are a fundamental concept when valuing a specific intangible asset using the Multi-Period Excess Earnings Method (MPEEM). They represent the hypothetical charge or required return for the use of assets other than the subject intangible asset that are necessary to support its income generation.

- **Role in MPEEM:** In the MPEEM framework, the valuation starts with the PFI associated with a group of assets, including the subject intangible and other contributory assets. from the earnings stream, CACs are removed in order to isolate the "excess earnings" that are purely attributable to the subject intangible asset that is being valued. This prevents double-counting the value contributed by supporting assets.
- **Purpose:** CACs ensure that all capital investments required to generate the total earnings are accounted for before attributing residual earnings to the subject intangible asset. Applying CACs is essentially an allocation of earnings to the contributory assets.
- **Contributory Assets:** The income generation of a subject intangible asset are driven by various Assets i.e. contributory assets. These can include working capital, tangible assets (like Property, Plant & Equipment), assembled workforce, and other intangible assets that meet recognition criteria or even elements of goodwill that contribute, such as assembled workforce.
- **Typical Charge Rates (Example for E-commerce):** Some of typical charge rates for various contributory assets in the e-commerce sector for example:
  - **Working Capital:** WACC + 1-3%, based on average balances.
  - **Tangible Assets:** 8-12%, based on fair value or net book value.
  - **Corporate Overhead:** 3-5% of revenue, based on cost allocation.
  - **Base Technology:** 15-25% of tech costs, based on avoided development cost.
  - **Workforce (Assembled Workforce):** 20-35% premium, based on replacement cost. An assembled workforce, while often not recognised separately from goodwill, is considered a contributory asset in MPEEM.
- **Calculation Framework (MPEEM):** To value a specific intangible asset (e.g., Customer Relationships) using MPEEM:
  - Determine and isolate the distinct revenue stream directly attributable to the intangible asset under review.
  - Deduct direct costs and operating expenses related to that revenue.
  - Deduct Contributory Asset Charges (CACs) for all supporting assets required to generate that revenue (e.g., charges for working capital, tangible assets, supporting technology, assembled workforce, etc.).
  - The balance amount signifies the excess earnings that is purely attributable to the subject intangible asset.
  - Discount these excess earnings back to present value using a discount rate appropriate for the risk of the subject intangible asset.
  - Add the present value of the Tax Amortisation Benefit (TAB) related to the subject intangible

asset's fair value to arrive at its total fair value.

Let's consider some detailed common pitfalls to avoid when dealing with Contributory Asset Charges:

i. **Return On/Return Of:** CACs generally represent a return on the fair value of the contributory assets and, in some cases, a return of the capital invested, particularly for depreciating or amortising assets like fixed assets. For assets like working capital or land that don't depreciate, the charge is primarily a return on. For assets like assembled workforce valued using a cost approach, the return of is typically included in operating expenses, so the CAC is just a return on.

ii. **Mismatch in Calculation and Application:** An anomaly can occur when there is a mismatch in the manner of calculating CAC and its application. CAC must be treated consistently with its tax basis - applying pre-tax calculated costs in after-tax frameworks constitutes a methodological error. If a pre-tax cost is used in an income approach analysis that values the contributory asset, the addition of a Tax Amortisation Benefit (TAB) is not commonly considered appropriate, whereas a TAB is commonly appropriate with an after-tax cost. Care should be taken to make sure tax depreciation is consistent if used.

iii. **Calculating CACs off Unreasonably Low or High Growth Rates:** The projected financial information (PFI) used in the MPEEM should reflect market participant assumptions and normalised levels of required contributory assets. Basing the CAC calculation on PFI that includes unreasonable growth rate assumptions can lead to inaccurate CACs.

iv. **Confusion over Net and Gross Royalty Rates:** When royalty rates are a component of the overall CAC (particularly for intellectual property like technology or trademarks supporting another asset's earnings), confusion over net and gross royalty rates can arise. A gross royalty is based on revenue before deduction of certain expenses, while a net royalty means the licensee (the subject intangible asset group, in this context) is responsible for a portion of related expenses. When using a net royalty assumption, it's essential for the PFI to align with cost levels that match these obligations.

v. **Overlooking Implicit Assets:** Not all assets are explicitly listed on a balance sheet. Overlooking implicit assets that contribute to the subject intangible asset's earnings can lead to an understated CAC. Examples of implicit assets include founder reputation, regulatory approvals, and vendor relationships.

vi. **Misapplying Return Rates:** Using a single, blanket rate like the Weighted Average Cost of Capital (WACC) for all contributory assets without adjusting for the specific risk profile of each asset is a pitfall. Different asset classes have different risk levels; for instance, working capital typically has a lower required return than intangible assets. Ignoring asset-specific risk adjustments or liquidity premiums can lead to inaccurate CACs. Although the overall WACC serves as a baseline, the return on each asset should align with the specific risk of investing in that asset.

vii. **Double-Dipping:** This occurs when the CAC calculation effectively charges for the contribution of the same asset or business component more than once. Examples include charging for both a technology platform and the developers who maintain it, or counting a logistics network in both tangible assets and certain intangible assets. Properly identifying contributory assets and their fair value, and ensuring the PFI adjustments (like removing profit from inventory step-ups) align with the CAC basis, helps avoid double-counting.

viii. **Simultaneous MPEEM Applications:** Best practices discourage the use of overlapping MPEEM applications with cross charges for intangibles that rely on the same underlying revenue or cash flows. This can lead to complex and potentially distortive CAC calculations. Alternatives include splitting the PFI by asset or using alternative valuation methods for some assets (like relief from royalty or cost approach).

ix. **Incorrect Handling of One-Time Business Combination Adjustments:** One-time adjustments to working capital resulting from a business combination, such as inventory step-ups, should be excluded from the working capital basis used in the CAC calculation. This prevents including value or profit that isn't part of the ongoing operational earnings stream to which the subject intangible asset contributes.

x. **Incorrect Handling of Growth Investments:** For certain contributory assets, such as assembled workforce, investments made for growth should be treated differently from maintenance costs

when calculating the CAC. While maintenance costs are often included in operating expenses (serving as a proxy for return of the investment), the CAC for these assets is primarily the return on the asset's fair value. To ensure valuation integrity, the pre-tax growth investment in assembled workforce must be added back to the excess income projection—this prevents overlap between the initial investment and CAC. Though typically a small adjustment, it is fundamental for proper value reconciliation.

xi. **CACs Leading to Negative Aggregate Value:** If the application of CACs in the MPEEM results in negative excess earnings for individual periods or indicates a negative aggregate value solely due to the CACs, the valuation specialist should review the calculations and inputs. While a negative value for one asset might be offset by others, or represent a liability, a negative aggregate value solely from CACs warrants careful scrutiny of the methodology and inputs. The calculation of CACs should not create or destroy aggregate asset value; it is an allocation of earnings.

By being mindful of these potential pitfalls and applying rigorous analysis and documentation, valuation specialists can enhance the accuracy and defensibility of their CAC calculations and, consequently, the overall PPA. Documenting all assumptions for audit trails is crucial.

## 2. INTERPLAY AND RECONCILIATION SUMMARY

The WACC-WARA-IRR relationship serves as a diagnostic tool for PPA validation, where any material divergence between these metrics indicates potential misallocation or valuation errors.

i. **Determine WACC:** Establish the overall market participant's required return for the entity.

ii. **Calculate IRR:** Determine the transaction's implicit return based on the purchase price and expected cash flows. Compare IRR to WACC to assess deal economics.

iii. **Allocate Purchase Price:** Allocate the total value (usually the purchase price, adjusted if necessary for over/underpayment) to individual tangible and intangible assets and goodwill using appropriate valuation methods. The Multi-Period Excess Earnings Method (MPEEM) represents a widely-accepted valuation approach for intangible assets, which inherently necessitates a comprehensive Contributory Asset Charge (CAC) analysis.

iv. **Calculate WARA:** Compute the weighted average return based on the allocated asset values and their assigned, asset-specific rates of return. These asset-specific rates should reflect relative risk, with intangible assets generally requiring higher returns than tangible assets or working capital. Goodwill often commands the highest return.

v. **Reconcile:** Compare WARA to WACC and IRR. Deviations necessitate reviewing PFI assumptions, asset values, or assigned return rates.

## 3. SUMMARISING COMMON PITFALLS

Mistakes in applying these concepts can lead to inaccurate valuations. Common pitfalls include:

- Using poorly supported discount rates or applying subjective premiums without quantitative support.
- Failing to differentiate discount rates based on varying risk profiles among intangible assets constitutes a methodological flaw in valuation
- Ignoring or understating risk differences, leading to potentially unreasonable implied returns on goodwill relative to identified intangibles.
- Mismatches in CAC calculations (e.g., pre-tax vs. after-tax application).
- Confusion over "net" vs. "gross" royalty rates when they are used as CACs, potentially leading to double-counting of expenses.
- Mechanically applying CACs or overlooking necessary contributory assets like an assembled workforce.
- Failing to adequately consider economic obsolescence, which can lead to overvalued assets, particularly those valued using the cost approach.

## 4. CONCLUSION

In summary, WACC, WARA, IRR, and CAC are interconnected metrics used in the valuation and allocation process during business combinations. WACC provides the overall required return, IRR the transaction's return, WARA validates the asset allocation, and CACs are specifically used within MPEEM to isolate earnings attributable to a subject intangible asset by accounting for the required returns of supporting assets. Proper analysis and reconciliation of these concepts, supported by thorough documentation, are crucial for accurate financial reporting and strategic insights.

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