Income-based corporate valuation approaches and adjustments for specific markets.

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Abstract:

This paper reviews the main and most commonly used models to estimate the value of a business under the going concern premise, alongside with common adjustments proposed by academic and empirical literature dealing with this key topic covering a fundamental and complicated task for various parties aiming at a variety of purposes. In addition to the drawbacks and critiques addressed to the standard versions of valuation models, many considerations have to be observed by valuation practitioners before applying these models and valuation techniques for companies operating in different and specific economic landscapes.

ملخص:

تستعرض هذه الورقة النماذج الرئيسية والأكثر شيوعا لتقدير قيمة المؤسسات في إطار مبدأ الاستمرارية في النشاط بالإضافة إلى التعديلات الشائعة المقترحة من قبل الأدبيات الأكاديمية والتجريبية التي تتناول هذا الموضوع الرئيسي، والذي يعالج مهمة أساسية ومعقدة لأطراف مختلفة تسعى إلى مجموعة متنوعة من الغايات. بالإضافة إلى العوائق والانتقادات الموجهة إلى النسخ الاصلية لنماذج التقييم، ينبغي على القائمين على عمليات التقييم مراعاة العديد من الاعتبارات قبل اعتماد هذه النماذج وتقنيات التقييم في مؤسسات تنشط في بيئات اقتصادية مختلفة وخاصة.

Introduction :

Whether to sell or acquire a business or parts of it, to float a company on the stock market, or merely to assess one's wealth at any point in time, corporate valuation constitutes a key element of modern financial and strategic transactions. The process of valuation aims to determine a value of a company using a variety of approaches and techniques, each with advantages alongside with a set of drawbacks that academics and practitioners strive side by side to overcome or, at least, alleviate the consequences on the final estimated value for the business.

As a going concern, a company is commonly valued from within itself using its potential to create value in the future. This potential is generally approached by estimating the cash flows the company is expected to generate over its entire lifespan, then discounting them using an appropriate risk-adjusted factor.

Far from being flawless, valuation models are mostly devised to work under developed economic environments with specific founding assumptions that are most of the time not verified in emerging or developing economies, referred to in this paper as specific markets. Thus, valuation practitioners, both in local markets and within global investment strategies, need to perform certain adjustments in various parts of the models in order to account for significant differences between markets.

2. Purpose, standards and premises of business valuation

Any discussion of business valuation begins with one basic question: ‘‘What is the purpose of the valuation?’’ Valuations are required for countless reasons and from different perspectives in the business world as they provide interested parties with valuable information necessary to the decision-making process. For example, a lender may require a valuation of a business to support loan-underwriting decisions, whereas the owner-manager of a business may require a valuation for tax and estate planning purposes.

The purpose of the valuation being clear, it is also important to identify the standard of value and key assumptions to be used in the valuation of a business or business interest. Some of these standards are:

- Fair market value: it is generally defined as the cash amount at

which the business or business interest would change hands between a hypothetical willing buyer and a hypothetical willing seller when the buyer is not under compulsion to buy and the seller is not under compulsion to sell and with both parties having reasonable knowledge of relevant information and facts. Also referred to as the extrinsic value, it emerges as an equilibrium price between asset supply and demand in the financial markets, and is reached through a large number of buy-sell transactions. The extrinsic value of a real asset is the consensus price at which it is traded among many buyers and sellers; it does not reflect the perceptions, attitudes, and passions of a single, individual investor, but rather of those of all of them (Pereiro, 2002).

- Investment value : it refers to the value of the business or business interest to a specific investor, which is the more appropriate standard of value when parties are contemplating a specific transaction. In this case, the fair market value definition wouldn't apply since the buyer and seller are known, and one or the other may, in fact, be under compulsion to ensure the transaction is completed. Being an intrinsic value, it refers to the figure arrived at by an unbiased, qualified professional appraiser. Such an opinion is anchored in a rigorous qualitative and quantitative analysis of the economic value the company will be generating in the future. Intrinsic value is computed with reference to the fundamentals of the business, that is, free cash-flow or dividends. The term intrinsic means that the value estimate is anchored in the internal business drivers, rather than in the value opinion that a specific potential buyer or seller of the asset may hold (Pereiro, 2002).
- Fair value : this standard is typically used in the valuation of businesses and business interests in a legal context and, therefore, the definition will be different based upon applicable state statutes and case law.

The premise of value is the overriding valuation assumption about the likely set of circumstances that apply to the subject company being valued, such as the market conditions and outlook for a business segment, industry, or economy as a whole, its competitive environment, its financial history and historical operations, the management's track record and its ability to secure adequate capital to

move forward as an ongoing entity. Depending on whether these factors are favorable or not, the two primary premises of value are going-concern value and liquidation value.

3. Valuation approaches and techniques

There are three core valuation approaches generally accepted for use in determining the value of a company as a going concern: the asset approach, the income approach, and the market approach, with several valuation methodologies within each approach. As far as the private equity industry is concerned, the literature explicitly introduces a dedicated valuation method labeled the VC method (Cumming, 2009), and a more theoretical then practical method based on options pricing named real option-pricing method.

When valuing a business as a going concern, all of the aforementioned approaches should be considered prior to choosing the most appropriate valuation approach (or approaches) to use. Entities that are going concerns are typically valued using the market approach and/or the income approach. However, depending on the industry, the asset approach may also be appropriate. For example, asset-intensive businesses with low profitability relative to their invested capital may be more appropriately valued using the asset approach under a going-concern assumption.

The use of more than one methodology is encouraged when developing a valuation opinion. Many times the use of varying approaches and methodologies will provide a clear indicator of the value of the business or business interest being valued by producing similar value indications, or the expected differences will give insight to the appropriate weighting of the different approaches. Other times, the values indicated by the different approaches and methods will diverge. In those instances it is appropriate to reexamine the inputs (such as management's projections or choice of comparable companies) of each valuation approach or methodology to see if errors have occurred.

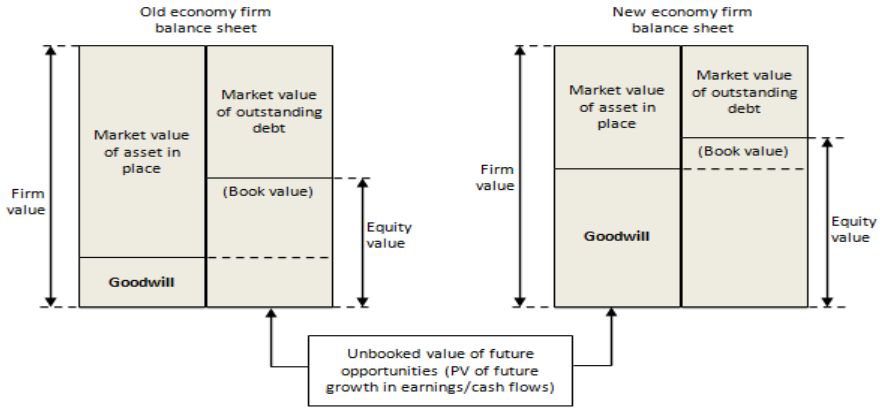
As far as private equity is concerned, Caselli & Gatti (2004) and Caselli (2013) consider that, at the very end, the determinants in the choice of a valuation method can be summed up in the following four:

- country in which the company that has to be estimated is set up;
- the industry in which it operates;

- the availability and the reliability of data on which the valuation is based;
- the condition of the company – public or private.

Old metrics applied to estimate the value of a firm by considering net worth, net earnings, cash flows or multiples as good proxies of the fair value of the firm are faced with many challenges when it comes to value new economy firms, for which these value parameters are not as viable as they might be for old economy or established firms. One feature of new economy firms is the small amount of tangible assets in their balance sheet, which leads to a low book value since much part of their value lays in 'unbooked' assets represented by the present value of opportunities (or "options") the firm will be able to reap in the future (figure 1). This feature strongly limits the use of the standard asset-based approach.

Figure 1: Balance sheet and company value in old and new economy firms.



Source : Caselli, S., & Gatti, S. Ed. (2004). Venture capital: A euro-system approach. Springer Science & Business Media. p87.

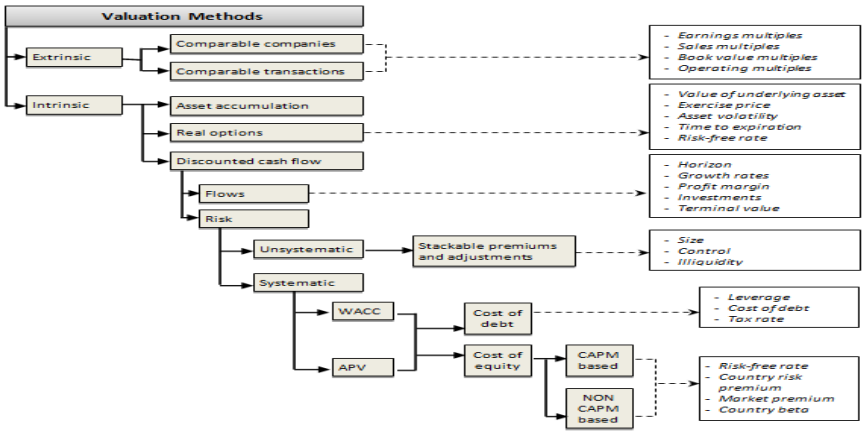
Another feature of high tech companies, especially if recently started up, is having a poor track record, which represents a crucial point particularly for private equity investors targeting new ventures (venture capital) mostly at the beginning of their life, requiring a large amount of investment (the larger the growth of the industry, the larger the amount of the investments needed) and, of course, of cash. These characteristics put the cash-flow based valuation approach under

serious troubles regarding the estimation of cash-flows, the cost of capital and growth prospects. Moreover, the newness and uniqueness of high tech firms business models cause a lack of sufficient number of market comparables that can be used as benchmarks to estimate the market value of the appraised private firm.

The above discussion shows a variety of perspectives from which the value of a firm can be approached. When private firms, particularly new ventures, are the subject of the valuation process, a number of limits are imposed, either by the firm's intrinsic or market distinctive features, regarding the use of standard valuation methods, requiring professionals to introduce adjustments on multiple levels in order to account for crucial differences and characteristics.

Based on the distinction between intrinsic and extrinsic value drivers, Pereiro (2002) summarizes the various valuation methods with reference to the underlying information required to implement each of them.

Figure 2: Valuation methods



Source : Pereiro, L. E. (2002). Valuation of companies in emerging markets: a practical approach (Vol. 156). John Wiley & Sons. p76

The rest of this paper focuses on the most common valuation method used to estimate the value of private equity under the going concern premise, namely the DCF, with special reference to recommended adjustments required to take into account the specificities of both private equity investments and emerging markets.

4. Income-based methods

The founding financial theory of income-based valuation methods states that the fair market value of an ongoing business is the present value of its expected cash flows. This simple conceptual framework is known as the discounted-cash-flow valuation approach. This technique partly relies on the basic Dividend-Discount Model to estimate a terminal value parameter.

4.1. Dividend-Discount Models (DDM)

In its purest form, the DDM approach values the stream of cash flows that shareholders expect to receive. Although these models are easy to use and easy to abuse as well, the modeling techniques used by DDMs are still quite useful because they can be used elsewhere, such as with the free-cash flow based approaches.

Many forms of DDM exist depending on the assumption retained regarding the growth rhythm of the company's cash-flows being considered for valuation.

4.1.1. Constant Growth Model

The constant growth model estimates the current value of a stock as follows:

$$P_0 = \frac{D_0(1+g)}{k_e - g} \qquad (eq.1)$$

Where:

- P_0 : Current price of stock
- D_0 : Dividend payment today
- g : Dividend growth rate
- k_e : cost of equity

This basic model is based on a set of simplistic, fairly strict assumptions, mainly the constant growth rate of dividends to infinity, which is also assumed to be less than the cost of equity, as well as the implicit constant return on reinvested equity.

An alternative version of this model introduces a different assumption regarding the return on reinvested equity (Larrabee & Voss, 2012, p271):

$$P_0 = \frac{EPS_1 \times b}{k_e} + \frac{EPS_1(1-b)\left(\frac{ROE}{k_e}\right)}{k_e} \qquad (eq.2)$$

Where:

- P_0 : Current price of stock

- ESP_1 : earnings per share in the next period
- b : dividend payout ratio (dividend per share/earnings per share)
- ROE: Return on Equity
- k_e : cost of equity

The first term of (eq. 2) is the present value of the stream of dividends if one assumes earnings and the payout ratio remain constant, while the second term captures the value of all the earnings that will be reinvested in the firm in the future (retained earnings) and that, presumably, will generate additional dividends at some point in the future.

4.1.2. Two Stage Model

This model, which is not conceptually much different from the constant growth model, divides the company's life cycle into two growth stages. In the first sage, the company is expected to grow at a high rate (g_1) in the short term and then to decline, in the second stage, to some sustainable level in the long run with a second growth rate (g_∞). The present value of the entire stream of cash flows is captured by $(eq.3)$:

$$P_0 = \frac{D_0(1+g_1)}{k_e - g_1} \times \left[1 - \left(\frac{1+g_1}{1+k_e}\right)^n\right] + \frac{D_0(1+g_1)(1+g_\infty)}{(k_e - g_\infty)(1+k_e)^n} \qquad (eq.3)$$

Where:

- P_0 : Current price of stock
- D_0 : Dividend payment today
- g_1 : growth rate of the first growth stage
- n : number of years of the first growth phase
- g_∞ : growth rate of the second growth stage to infinity
- k_e : cost of equity

Using this model $(eq.3)$ to value firms having this growth profile comes to discount dividends during the high growth phase individually and then apply the constant growth model to value subsequent dividends (assumed to grow indefinitely at a constant sustainable growth rate).

4.2. Discounted Cash Flow method

According to Larrabee & Voss (2012), the calculations necessary in a DCF approach are equally simple: add the present values of the individual cash-flow estimates for each year from one to infinity. Although the DCF approach is the technically correct way to value a company, and although it is deceptively simple in theoretical execution, in practice it is quite complex and very subjective.

4.2.1. DCF formula

The basic DCF formula consists of reducing the cash flow (CF) for each time period (n) to its present value using the compound-interest term. Under this perspective, the value of the company equals the sum of the present values for all periods, one to infinity $(eq.4)$.

Given the difficulty to work with distant future time periods, the latter are typically combined into one value representing the estimated sale price or terminal value (what the company could be sold for at the end of the period) at some relatively close point in time to be added to the sum of the present values for the periods of the predictable time horizon $(eq.5)$.

$$Value = \frac{CF_1}{(1+i)^1} + \frac{CF_2}{(1+i)^2} + \frac{CF_3}{(1+i)^3} + \cdots + \frac{CF_\infty}{(1+i)^\infty} = \sum_{n=1}^{\infty} \frac{CF_n}{(1+i)^n} \qquad (eq.4)$$

Where:

- CF : cash flow
- i : discount rate
- n : time periods from one to infinity.

$$Fair\ market\ Value = \sum_{n=1}^{t} \frac{CF_n}{(1+i)^n} + \frac{TV_t}{(1+i)^t} \qquad (eq.5)$$

Where:

- CF : cash flow
- i : discount rate
- n : time periods from one to t
- t: last time period of the predictable time horizon
- TV: terminal value

The use of this method $(eq.5)$ to estimate the value of a business requires the prior estimation of three main components: cash flows, discount rate and terminal value.

4.2.2. Equity, Firm and Adjusted Present Value (APV) Valuations

Damodaran (2012) distinguishes between three paths to discounted cash flow valuation -- the first is to value just the equity stake in the business, the second is to value the entire firm, which includes, besides equity, the other claimholders in the firm (bondholders, preferred stockholders, etc.) and the third is to value the firm in pieces, beginning with its operations and adding the effects on value of debt and other non-equity claims. While all three approaches discount expected cash flows, the relevant cash flows and discount rates are different under each approach.

a) Equity value

The value of equity is obtained by discounting expected cash flows to equity, i.e., the residual cash flows after meeting all expenses, reinvestment needs, tax obligations and net debt payments (interest, principal payments and new debt issuance), at the cost of equity (the rate of return required by equity investors in the firm). The dividend discount model $(eq.1)$ is a specialized case of equity valuation, where the value of the equity is the present value of expected future dividends (Damodaran, 2012, p3).

$$Equity\ Value = \sum_{n=1}^{t} \frac{FCFE_n}{(1+k_e)^n} \qquad (eq.6)$$

Where:

- FCFE : Free Cash Flow to Equity
- k_e : cost of equity
- n : time periods

b) Firm value

The value of the firm is obtained by discounting expected cash flows to the firm, i.e., the residual cash flows after meeting all operating expenses, reinvestment needs and taxes, but prior to any payments to either debt or equity holders, at the weighted average cost

of capital, which is the cost of the different components of financing used by the firm, weighted by their market value proportions.

$$Firm\ Value = \sum_{n=1}^{t} \frac{FCFF_n}{(1+k_c)^n} \qquad (eq.7)$$

Where:

- FCFF : Free Cash Flow to Firm
- k_c : Weighted Average Cost of Capital (WACC)
- n : time periods

c) Adjusted Present Value (APV)

A third path to DCF valuation is to device the value of the firm by valuing each claim on it separately. In this approach, which is called Adjusted Present Value (APV), equity in the firm is first valued, assuming that it was financed only with equity, and then the value added by debt is considered as the present value of the tax benefits that flow from debt (and eventually the expected bankruptcy costs). In fact, this approach can be generalized to allow different cash flows to the firm to be discounted at different rates, given their relative riskiness.

As shown in $(eq.8)$, the APV method consists of separating the operating cash flow of the business from all the effects of financial leverage. In practice, two independent cash flows are modeled: one for the operation and another for the tax shields derived from financial leverage, each of them have to be discounted at a proper rate. The business cash flow, composed of operating inflows and outflows, must be discounted with the cost of equity, as if the whole business were financed exclusively by equity. The tax shield cash flow is discounted with the cost of debt, the true cost at which the company can issue debt in the market.

$$Firm\ Value = \sum_{n=1}^{t} \frac{FCFF_n}{(1+k_u)^n} + \sum_{n=1}^{t} \frac{Tax_n \times F_n}{(1+k_d)^n} \qquad (eq.8)$$

Where:

- FCFF : Free Cash Flow to Firm
- k_u : Unlevered WACC (basically the cost of equity)
- n : time periods
- Tax: tax rate
- F: interests

- k_d: cost of debt

The great advantage of APV is that it allows the manager, investor, or analyst to get a deeper understanding of the value creation process, because it splits up cash flows in two subcomponents, which separate the intrinsic operational soundness of the project from the effects of financing. The WACC, in contrast, includes all value drivers of the business into a single figure, and is much more difficult to interpret, in particular, when it has been manipulated to introduce the complexities of the tax structure or other exotic financial engineering (Pereiro, 2002).

According to Larrabee & Voss (2012), the APV method is easier to use in instances when a firm has a changing capital structure because it involves forecasting the unit interest payments rather than the debt-to-value ratio, which is inherently difficult to estimate in an exercise where the goal is to estimate the value of the firm or its securities in the first place. It is worth noting however that, with the way this method is typically applied, it implies that more debt is always better. The problem is that bankruptcy costs are missing from the calculation. Typically, as a firm levers up, the probability that it will get into financial difficulty increases. There is thus an increase in the expected costs associated with financial distress, which should cause the value of the company to start curving down at some point. Consequently, when the APV method is applied, analysts should be sure to include not only the benefits of debt (such as the value of the tax shield) but also the costs (such as bankruptcy costs and possibly debt issuance costs).

4.2.3. Estimation of cash flows

The definition of the cash flow stream is critical to this type of analysis. Most practitioners use free cash flow or net cash flow that can normally be defined as follows based on the income statement.

Exhibit 1: Free Cash Flow computation from the income statement

Income statement	Sales revenue - Costs and operating expenses (except interest expenses, depreciation and amortization) = Earnings before interests, taxes, depreciations, and amortizations (EBITDA) - Depreciations and amortizations = Earnings before interests and taxes, or operating income (EBIT) - Interest expenses = Earnings before taxes (EBT) - Income tax = Net income
Free Cash Flow to the Firm (FCFF)	EBIT - (EBIT x Tax rate) + Depreciations and amortizations - Operating investments (capital expenses 1) - Working capital investments (capital expenses 2) = Free Cash Flow to the Firm (FCFF)
Free Cash Flow to the Equity (FCFE)	Net income + Depreciations and amortizations - Operating investments (capital expenses 1) - Working capital investments (capital expenses 2) - Debt decreases + Debt increases = Free Cash Flow to Equity (FCFE)
Transforming FCFF into FCFE	FCFF - Interests × (1 – Tax rate) - Debt decreases + Debt increases = FCFE
Transforming FCFE into FCFF	FCFE + Interests (1 – Tax rate) + Debt decreases - Debt increases = FCFF

Source : Pereiro, L. E. (2002).Op-cit, p78.

Stated in simplified form, free cash flow is the sum of the sources of cash, less the capital expenditures necessary to stay in business and continue to grow at the expected rate. These expenses must be

included because a company cannot remain in business if its capital machinery gets old and outdated, nor can it grow without increases in working capital. The goal is to estimate recurring operating earnings and all cash flow items associated with those earnings, including necessary capital expenditures.

4.2.4. Discount Rate

The discount rate refers to the rate of return an investor would require to be induced to invest in the cash flow stream being discounted. Many factors, both external and internal, are reported to have an influence on discount rates, such as (1) the general economic conditions; (2) yields available on alternative investments; (3) industry conditions and outlook; (4) financial risk; (5) operating risk, and (6) the risk associated with the estimation of the cash-flow stream.

Depending on the cash flow being discounted, different discount rates have to be considered:

- The free-cash flow to equity (FCFE) method uses a discount rate that reflects the shareholders' perception about the company, i.e. the required rate of return on equity (cost of equity from the company's viewpoint);
- The free-cash flow to firm (FCFF) method uses a discount rate that incorporates the different claims on this particular cash flow (debt and equity), i.e. the cost of capital as a weighted average of the cost of debt and equity ;
- The adjusted present value (APV) technique separates the operating cash flow from the leverage-induced cash flow, and hence uses the cost of equity (unlevered cost of capital) to discount the first part of the firm's cash flow and the cost of debt to estimate the present value of the second part of the cash flow.

a) Cost of Equity

According to Damodaran (2012), the cost of equity is the rate of return investors require on an equity investment in a firm. It includes, in addition to the riskless rate, a premium for the equity risk in the investment. A number of models are commonly used to estimate these inputs to make up an expected return on equity that can be written, under the CAPM (capital asset pricing model), as shown in $(eq.9)$ below:

Expected return = Riskless rate + Beta (Risk premium) $(eq.9)$.

- Most risk and return models in finance start off with an asset that is defined as risk free and use the expected return on that asset as the risk free rate. The expected returns on risky investments are then measured relative to the risk free rate, with the risk creating an expected risk premium that is added on to the risk free rate.

- The beta of an investment is the risk that the investment adds to a market portfolio, which is conventionally estimated as a regression $(eq.10)$ of the historical returns on the investment (R_j) against the historical returns on a market index (R_m).

$$R_j = \alpha + \beta \, x \, R_m \qquad (eq.10)$$

Where :

- α : Intercept from the regression;
- β : Slope of the regression, that is equivalent to $\frac{COV\,(R_j\,;R_m)}{\sigma_m^2}$

Historical stock prices and index values, corrected for distributions, are used respectively to estimate stock returns (R_j) and market returns (R_m). Then, for any time interval t of the selected time period, the stock return is derived as shown in $(eq.11)$.

$$R_{j(t)} = \frac{P_{j(t)} - P_{j(t-1)} + D_{J(t)}}{P_{j(t-1)}} \qquad (eq.11)$$

Where :

- $P_{j(t)}$: company's stock price at time interval t ;
- $P_{j(t-1)}$: company's stock price at previous time interval ;
- $D_{J(t)}$: dividend paid on the company's stock at time interval t ;

$$R_{m(t)} = \frac{I_{(t)} - I_{(t-1)} + D_{(t)}}{I_{(t-1)}} \qquad (eq.12)$$

Where :

- $I_{(t)}$: the level of the market index at time interval t ;
- $I_{(t-1)}$: the level of the market index at previous time interval ;
- $D_{(t)}$: dividends paid on in the market index at time interval t ;

b) Cost of Debt

The cost of debt represents the rate at which a firm can borrow money. The cost of debt is normally not a difficult parameter to obtain, since there is a consensus, observable market value for it.

This parameter is defined by the following variables (Damodaran, 2001):

- The current level of interest rates: As the level of interest rates increases, the cost of debt for firms will also increase.
- The default risk of the company: As the default risk of a firm increases, the cost of borrowing money will also increase.
- The tax advantage associated with debt: Since interest is tax deductible, the after-tax cost of debt is a function of the tax rate. The tax benefit that accrues from paying interest makes the after-tax cost of debt lower than the pre-tax cost. Furthermore, this benefit increases as the tax rate increases.

After-tax cost of debt = Pre-tax cost of debt (1 - tax rate) $(eq.13)$

4.2.5. Terminal Value

Since cash flows cannot be estimated forever, a closure is generally imposed in discounted cash flow valuation by stopping the estimation of cash flows sometime in the future and then computing a terminal value that reflects the value of the firm at that point (Damodaran, 2012). The Discounted cash flow approach assumes that the cash flows of the firm will grow at a constant rate forever – a stable growth rate. With stable growth, the terminal value can be estimated using a perpetual growth model, as described in section 4.1 of this paper.

5. Main challenges and adjustments for emerging markets

The discounted cash flow valuation method presents difficult challenges to the financial practitioners in emerging markets, particularly when it comes to value closely held private firms. Therefore, most of the valuation parameters discussed earlier, mainly cash flows and discount rates, need to be properly adjusted to account for the special features of transitioning markets.

5.1. Cash flow adjustments

Three adjustments are to be considered to adapt cash flows of companies operating in emerging markets (Periero, 2002):

- Adjusting for overcompensation: salaries versus dividends
- Adjusting for overexpensing: personal versus corporate spending
- Adjusting currencies: exchange risk and inflation

a) Overcompensation

Usually, the first distortion encountered relates to the overcompensation of owner-managers, as compared to average market salaries. Most closely held companies belong to owner-managers or entrepreneurs: the founders, relatives, and heirs, who, besides holding company shares, also fill active managing roles in the company. Very frequently, the salaries that owner-managers pay themselves are above those paid on average in the labor market for similar roles in similar companies.

Since salaries are computed as operation expenses in the cash statement, overcompensation artificially depresses free cash flow; hence the target company seems to be worth less than what it actually is. The difference between the figure that the entrepreneur actually withdraws and the market average salary for his or her managerial role must in fact be interpreted as dividends paid in advance accruing to future profits, not as an operating expense. When doing a valuation, such excess must be duly estimated and added to free cash flow with a positive sign.

b) Overexpensing

A second cash flow-related distortion relates to excessive and undue accretion as corporate expenses of personal spending of owner-managers. The result of this practice is that corporate operating expenses are overestimated, and free cash flow and company value are unduly depressed.

It is hence necessary, for the valuation to be accurate, to carefully scrutinize the accounts of corporate expenses to detect and eliminate (that is, add back to the free cash flow) purely personal expenses not related to the normal operation of the business. As in the case of overcompensation, such excess expenses may be conceptually considered as dividends paid in advance, accruing to future distributions of profit.

c) Exchange risk and inflation

Exchange risk adjustments are necessary since assets with equal expected returns in one currency do not necessarily have equal expected return in a different currency. Some models that use foreign figures need to align cash flows by expressing them in the reference

currency. This is most commonly performed using forward exchange rates as shown on $(eq.14)$:

$$ER_{(t)} = ER_{(0)} \text{ x } \frac{(1+r_{Ref(t)})^t}{(1+r_{Loc(t)})^t} \qquad (eq.14)$$

Where :

- $ER_{(t)}$: Exchange rate of the reference currency to the local one at time t ;
- $ER_{(0)}$: Spot exchange rate of the reference currency to the local one at time t ;
- $r_{Ref(t)}$: The spot interest rate of the reference currency at a term t ;
- $r_{Loc(t)}$: The spot interest rate of the local currency at a term t ;

As for inflation, it is common practice among analysts to factor the risk of unexpected inflation directly into the discount rate, as part of a country-risk premium; thus inflation adjustment is not introduced in the cash flows. The use of real data should however be completed by an inflation adjustment of nominal ones as follows:

$$CF_{R(t)} = \frac{CF_{N(t)}}{(1+f)^t} \qquad (eq.15)$$

Where :

- $CF_{R(t)}$: Real cash flow at time t ;
- $CF_{N(t)}$: nomnal cash flow at time t ;
- f : expected inflation rate.

5.2. Discount rate adjustments

Most practitioners using free-cash flows-to-the-firm (FCFF) models compute a weighted average of both the cost-of-equity capital and the cost of debt—the WACC. If the cost of debt is normally not a difficult parameter to obtain, the cost of equity remains problematic and requires some adjustments to the metrics commonly used in developed markets so as to make out of them market specific versions.

The application of the plain CAPM to emerging markets is a controversial endeavor, and is subject to a set of specific adjustments aiming to alleviate some of the flaws of the plain version of the model. Considering local specific market characteristics, an Adjusted Local

CAPM variant can be used to estimate the cost of equity in emerging market where stock markets are not developed enough for the standard model estimations to be meaningful. As for economies that don't have a stock market, other non-CAPM based models can be adapted to estimate the cost of equity, and hence the cost of capital.

a) Adjusted Local CAPM

Under the local variant of the CAMP, domestic risk, or country risk, can be conceptualized as an aggregate of country-idiosyncratic risk components (Pereiro, 2002):

- Risk derived from social and/or political turmoil, which may negatively affect company performance.
- The chance of expropriation of private assets by the government.
- The potential of emergence of barriers to the free flow of cross-border capital streams, which may restrain, for instance, the remittance of royalties to headquarters.
- The possibility of currency devaluation—that is, currency risk.
- The chance that the government will not pay its international lenders, which may make the country credit rating plunge and the local cost of money soar—that is, sovereign risk or default risk.
- The risk derived from inflation or, in extremis, from a hyperinflation.

Under the conceptual lack of a full world markets integration, the local CAPM can be restated as shown in $(eq.16)$ to account for use of some global metrics adapted to local environments:

$$K_E = R_{fL} + \beta_{LL}\, x\, \left(R_{mL} - R_{fL}\right) \qquad (eq.16)$$

Where :

- K_E : cost of equity ;
- R_{fL}: local risk-free rate as composite of global risk-free rate and country risk premium ($R_{fG} + R_C$);
- β_{LL} : local company Beta computed against a local market index;
- R_{mL} : return of the local market ;

To account for the problem of potential overestimation of risk induced by the inclusion of a country risk premium into the CAPM equation $(eq.\ 16)$ that already includes part of it in the market risk premium, an extra adjustment is required using the complement (1-R_i^2) of the coefficient of determination of the regression between the volatility of returns of the local company i and the variation of country risk. Correcting the systematic risk premium gives an adjusted local CAMP variant $(eq.17)$:

$$K_E = R_{fL} + \beta_{LL}\, x\, (R_{mL} - R_{fL}) x (1 + R_i^2) \qquad (eq.\ 17)$$

R_i^2 may be thought of as the amount of variance in the equity volatility of the target company i that is explained by country risk; hence the inclusion of the $(1 + R_i^2)$ factor in the equation depresses the equity risk premium to partially counter the overestimation problem.

b) Erb-Harvey-Viskanta Model

For economies without a stock market, Erb, Harvey, and Viskanta (1996) proposed the use of a credit-risk rating-based model that specifies an external ex-ante risk measure. The authors require the candidate risk measure to be available for all 135 countries of their sample and available in a timely fashion. This eliminates risk measures based solely on the equity market, and also eliminates measures based on macroeconomic data that is subject to irregular releases and often-dramatic revisions. They focus on country credit ratings that incorporate political, exchange, inflation, and other typical country risk variables.

$$R_{i,t} = a_0 + a_1\, x\, Ln(CR_{i,t-1}) + \varepsilon_{i,t} \qquad (eq.18)$$

Where :

- $R_{i,t}$: the semi-annual excess return in U.S. Dollars for country i ;
- $Ln(CR_{i,t-1})$: the natural logarithm of the country credit rating which is available at the end of March and the end of September each year;
- ε : is the regression residual.

6. Conclusion

Income-based corporate valuation techniques are commonly used to estimate the value a company as a going concern based on its expected performance. The discounted-cash flow model is widely used, combined with other techniques and approaches, to derive the present value of the company's future cash flows using an appropriate discount factor.

Even though this model is being widely adopted by finance practitioners in developed markets, its application in different economic environments rises many controversies and critiques. Attempts have been made to introduce a set of adjustments in different stages of the valuation process.

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