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The **Organismo Italiano di Valutazione (OIV)** is the independent standard setter responsible for developing the Italian Valuation Standards (PIV: Principi Italiani di Valutazione). OIV is sponsor of IVSC. OIV's mission is to improve the quality of valuations fostering sharing of ideas among valuers from different countries, cultures, experiences.

Roundtable: 10 big issues in business valuation

Tony Aaron - Wolfgang Ballwieser - Mauro Bini - Stefano Giuliani* - Eric Teo

A substantial percentage of business valuation differences around the world stem from a relatively short list of major issues. These major issues each have a profound influence on value. Some of the issues listed below are typically addressed in advanced course offerings as areas of controversy or concern, but no consensus is offered. The valuer is called upon to make these decisions without a good compass. This roundtable is designed to identify major issue areas and to increase awareness of the full range of solution adopted for each issue area.

Business valuers use either techniques that comply with the rigors of scientific studies or employ techniques consistently used by peers within the valuation profession. This places the business valuers in a particularly difficult position if there is no consensus among valuers or market participants on key valuation issues or if the common practices of the profession are at odds with recent studies.

The areas that influence value greatly are as follows:

- (1) DCF: Prospective Financial Information;
- (2) DCF: Terminal value;
- (3) DCF discount rate: ERP and risk free rate;
- (4) DCF discount rate: Wacc Capital structure;
- (5) DCF discount rate: Alpha;
- (6) DCF discount rate: size premium;
- (7) DCF discount rate and growth rate;
- (7) Multiples: multiple of public companies to evaluate private held companies;
- (8) Valuation of a minority interest: surplus or redundant assets;
- (9) Differences between Price and Value;
- (10) Business model analysis and valuation.

The objectives of this round table are: (i) to identify the range of choices available to the practitioner for addressing each issue area, and (ii) to help practitioners appreciate how substantially these choices influence values.

The participants at this first round-table are five members of the Editorial Board of BV OIV Journal. They represent different geographies around the world with different peers within the valuation profession. The responses are in alphabetic order:

- Tony Aaron [TA] (USA);
- Wolfgang Ballwieser [WB] (Germany);
- Mauro Bini [MB] (Italy);

- Stefano Giuliani [SG] (UK);
- Eric Teo [ET] (Singapore).

1. DCF: Prospective Financial Information (PFI)

The business valuer has to use professional skepticism in considering PFI. What are in your experience the analysis that the business valuers has to do for judging the reasonableness of the PFI?

TA:

I believe that business valuers historically have not, on average, performed enough procedures to come to a conclusion that PFI is reasonable for use in their valuations. I also believe that the level of “stress-testing” of PFI is on the rise among business valuers, which is a positive trend. There are clearly some individuals and firms that truly perform an adequate level of procedures, but many do not. That being said, I believe that the following procedures would be a minimum level of steps that should be followed:

1. review the process by which the entity prepares its PFI and investigate the qualifications of the individuals who actually prepare the PFI and those that review and approve it;
2. consider the purposes for the preparation of the PFI and evaluate whether such purposes might introduce bias into the PFI (e.g. budgeting, financing, capital budgeting, R&D, M&A activities, compensation, etc.);
3. compare PFI to historical performance for the entity;
4. compare PFI to information that can be obtained from industry studies, market studies, government studies and analyst’s reports for the industry and/or the entity or its peers;
5. compare prior years’ PFI to actual results to ascertain whether the entity tends to systematically miss its projections;
6. if “expected cash flows” can be ascertained, compare those expected cash flows to the PFI prepared by management (in practice, this can be a very difficult step, as sources for “expected cash flow” data may not exist).

WB:

Fortunately, most valuation objects have a history. PFI has to be in line with this history. Expected

* Caxton Europe LLP, London. “The views expressed in the roundtable are those of Stefano Giuliani and do not represent the views of Caxton Associates LP. This discussion is intended for information

purposes only and is not, and should not be considered as, an offer to invest in, or to buy or sell, any interests or shares in any funds, or to participate in any investment or trading strategy.”

changes have to be explained with convincing reasons. Only possible, but not plausible or – even stronger – probable measures and potential resulting cash flows do not count in the determination of a business value.

Analysis requirements are

- i. plausibility of planning, i.e. confirmability, consistency, free of contradictions;
- ii. computational consistency and consistency of assumptions, internal consistency (management explanation, historical background and future potentials) and external consistency (markets, competition & regulation);
- iii. integrated planning (P&L, Balance Sheet, Cash Flow Statement);
- iv. phase model (2 or 3 phases);
- v. careful estimation of perpetuity in last phase (terminal value).

MB:

To answer this question it is necessary first of all to define the meaning of professional skepticism in business valuation.

Professional skepticism is an attitude that includes a questioning mind and a critical assessment of the appropriateness and sufficiency of external and internal evidence and is based on three main attributes:

1. *competency*. This attribute refers to the business valuer's degree of knowledge, skills and experience;
2. *professional care*. This attribute refers to the completeness of the information base available to the business valuer to express an informed value judgment;
3. *objectiveness*. This attribute refers to the prospective that the business valuer must adopt in analysing specific facts and circumstances, weighing both corroborating evidence and contrary evidence.

The exercise of professional skepticism requires the simultaneous presence of all three attributes. Thus, for example, a highly competent business valuer, with good skills and vast experience but with an inadequate information base, cannot exercise effectively his professional skepticism in the specific context, simply because his knowledge of the facts and circumstances regarding the specific valuation is not adequate.

Competency, professional care and objectiveness become professional skepticism when they turn into action, that is when they define a specific "*modus operandi*" of the business valuer which in the literature is referred to as "fundamental analysis". Fundamental analysis precedes and accompanies the analysis of PFI.

Fundamental analysis must precede the analysis of PFI because in analysing prospective financial information the business valuer needs to have clear in mind: (i) the value drivers that the company undergoing valuation nurtures and manages; (ii) the company's source of competitive advantage; (iii) the company's market positioning, i.e. the void that the business fills.

Fundamental analysis must also accompany the ana-

lysis of PFI, as its support is necessary for the latter to be considered adequate.

In my experience, the best approach to the analysis of PFI is founded on a simple logical schema, wherein prospective financial information acts as a "bridge" between two company situations that could be defined as "start" and "end". The start situation (situation "as is") is the result of company's history at the valuation date, in terms of earning power, book value of equity, intangible assets and skills, customer relations etc. The end situation (situation "to be") is instead the target that management intends to achieve through specific strategic and operational actions, leveraging first of all the "start" assets and competencies. Many business plans are simple extrapolation exercises, in that they do not aim to attain and firm up a specific end situation in terms of earning power, competitive positioning, total assets. They merely express the best company-performance forecast, given a consensus macro-economic and/or industry scenario. To continue the metaphor, in these cases prospective financial information is not a "bridge" but a "stepping stone" suspended in mid-air

The business valuer's *first task* in analysing prospective financial information is precisely to draw a distinction between "bridges" and "stepping stones" for the simple reason that PFI of the latter type cannot constitute a reliable basis to estimate terminal value in DCF valuation.

The business valuer's *second task* is to evaluate the strength of the end situation, which should be: (i) sound, in terms of financial condition, operating performance and cash flows; (ii) realistic and not aspirational; (iii) consistent with the company's competitive context and advantages; (iv) attainable through a well-defined operational roadmap shared with the management lines involved; (v) realistic in terms of timing.

The business valuer's *third task* is the evaluation of the PFI's risk profile. Rarely do firms make plans on the basis of different scenarios. Typically, they make their plans on the basis of the most likely scenario. However, a plan that is well-designed and is based on a well-defined and shared roadmap often provides for corrective solutions in case of adverse scenarios, delays or, more generally, unexpected events. All things being equal, the more a plan provides for alternative and flexible solutions the lower the exposure of such plan to external risks.

The business valuer's *fourth task* concerns the identification of any impediments to the improvement of the plan's performances that might give rise to an asymmetrical risk exposure. For example, a company that plans to operate at full capacity would not be able to meet a higher-than-expected demand and would

underperform in the presence of a weaker-than-expected demand.

SG:

Using the information available in the proper way is a prerequisite of any sound valuation process. Therefore selecting, organizing, elaborating and interpreting all the data is the cornerstone of any fundamental assessment. The main pillars of this process are the following: strategic analysis (macro inputs, sector dynamics, resources and skills), historical examination of accounting, economic and financial data, market inputs (interest rates, returns, growth, betas), balance sheet situation (tangible and intangible assets, financial assets and liabilities), prospective estimates (business plans, budgets, macro analysis, sell side consensus), database on former transactions (for the company or peers), accounting due-diligence and market multiples for similar companies. Any valuation process then cannot avoid a preliminary view of the sector attractiveness (life cycle positioning, regulation, competitive forces, innovation and technology, human resources). Given that the valuation is always based on forward looking estimated results, it's important that any projection will be coherent with the historical, current and estimated inputs available, both quantitatively and qualitatively. A fundamental element of the process is the distinction between the internal value drivers (that the company can affect) and the external ones (taken as a given). In order to build a coherent and sound set of estimates we need a good information basis but also the capacity to translate that in accurate business plans and some degree of conservatism in the probability assigned to the execution. In this respect, the production of secondary information produced by companies (budgets, guidance and business plans) has become an essential tool in order to have a solid starting point for the fundamental analysis. Of course, the valuer cannot rely only on the static data, both historical and prospective, but has to apply her professional skill-set in order to build a coherent and solid process: She has to normalize historical accounting (eg. re-leveling the extraordinary elements, isolating the numbers not afferent to the core business, adjusting the fiscal policies, considering any potential inflation issue), integrate the accounting data with an analysis of intangibles (eg. R&D, marketing, IT), explicit a critical effort on the sustainability of the business plans and perform sensitivities. All that said, in order to define the prospective financial information (PFI) as reasonable, we have to balance different elements: the risks of the forward looking projections (analysis of the dispersion of results), the number of variables considered in the process, the granularity, reliability and completeness of the inputs used and the eventual presence of any external control. In a nutshell, the use of the PFI necessitates prudence, professional scepticism,

a deep knowledge of the matter and a proper distinction between forecasts and projections (if based on a reasonable information basis or on an expected state of the world based on specific assumptions).

ET:

To be able to judge the reasonableness of the PFI, a business valuer must first obtain good insights into the company's business model, its industry and external operating environment, often through site visits, engaging in discussions with the management and performing research.

We adhere closely to IVS [International Valuation Standards] in our work where under IVS 105, Paragraph 50.13, "*regardless of the source of the PFI, a valuer must perform analysis to evaluate the PFI, the assumptions underlying the PFI and their appropriateness for the valuation purpose. The suitability of the PFI and the underlying assumptions will depend upon the purpose of the valuation and the required bases of value. For example, cash flow used to determine market value should reflect PFI that would be anticipated by participants; in contrast, investment value can be measured using cash flow that is based on the reasonable forecasts from the perspective of a particular investor.*"

2. DCF Terminal value

The terminal value calculation is based on expected cash flows beyond the period of the explicit forecasts. Beyond the period over which the PFI preparer is confident of its forecasts. Do you use some prudence in estimating Terminal value to avoid errors?

TA:

I believe that terminal value calculations should reflect a "normalized" or long term stabilized outlook for the entity. Aside from calculational or logic errors, the valuation specialist should be very careful about the main inputs, i.e. stabilized cash flow, discount rates and growth rates.

WB:

Prudence is a concept of financial reporting and cannot avoid errors, since a valuer cannot be a prophet. Business valuation has to be done without prudence. Theoretically, one can discount certainty equivalents of probability distributions of cash flows with a risk-free rate of return or expected values of those probability distributions with risk-adjusted rates of return. Practitioners prefer the second approach. Both approaches require probable cash flows, not prudently determined ones.

MB:

Typically, applying DCF does not entail the adoption of different discount rates for the cash flows expected in the period of the explicit forecast and for the cash flows expected beyond the period of the explicit forecast, assuming implicitly that both sets of cash

flows exhibit the same risk. However, if the business plan covers the entire period over which management is confident about the reliability of its forecasts, it follows that such confidence evaporates or otherwise dwindles beyond this period. This means that the cash flows used to estimate terminal value can show the same risk as the cash flows expected in the explicit forecast period only if the business valuer makes an adjustment (to the downside), to make them consistent in terms of risk profile.

This adjustment is not dictated by prudence (the business valuer does not have to be prudent but objective) but by the consistency between numerator (cash flows or earning streams) and denominator (cost of capital) of the valuation formula.

If no adjustments are made in the estimation of terminal value, and the cash flows of the last year of the explicit forecast period is used as the perpetual annuity to be capitalized, not only will the company be overestimated, but an error is introduced that modifies the result of the estimate in relation to the extension of the plan period. In fact, if the plan calls for a return on invested capital higher than the cost of capital, as the plan's horizon extends the value of the company grows, not only by the amount of the net present value of the investments made but also by the projection in perpetuity of net present value of such investments in the estimation of the company's terminal value.

The adjustments to be made in the estimation of the cash flows to be used to calculate terminal value concern once again fundamental analysis. If the plan, as illustrated previously, is a "bridge" between start and end, terminal value must reflect the soundness of the end situation. This assumes a forward-looking analysis of market share, profitability and invested-capital turnover ratios, R&D expenditure and maintenance, etc. to check the consistency of the results with the company's and the industry's historical performance, with the consensus and, more generally, with outside forecast sources. Attention must be paid to the company's performance vis-à-vis the competition and to the volatility of the company's results over time. This analysis is intended to distinguish between recurring and non-recurring profits, based on the assumption that only recurring profits can be projected into perpetuity and, consequently, be used in the estimation of terminal value.

SG:

In a standard DCF, the Terminal value (TV) typically constitutes the majority of the companies' net worth. In order to take a balanced view and minimize errors, I think two solutions are available. In the first one, the valuer can consider an explicit set of coherent inputs and work on an extended time-frame (15-30 years) in order to be "forced" to explicitly estimate

the duration and the intensity of the capital advantage period (CAP, where $ROE > CoE$), before converging to the steady state ($ROE = CoE$, $Capex/D\&A = 1$). In so doing, the dynamics of the business in terms of growth, margins, capex needs, cash flows, target leverage and so on are adjusted year by year in an explicit manner: the growth rate can fade, the margin level, the capital turnover and the profitability can "smooth" towards a normalized state first (typically the sector average), and towards a steady state later on (no economic value creation). The first 3-4 years of analytical estimates can be built on an informed analysis of the company's business plans and budgets, as well as on sell side analysts' consensus estimates and other available set of data. A second period can move towards a sustainable, normalized behaviour of the business, if the planning period is still far from that situation, and then start to fade to the steady state. The CAP needs of course to be based on an in-depth fundamental analysis of the competitive landscape. In any case, at the end of the fading period, the TV will represent invariably the capital recovery (1x multiple). In a second scenario, the Terminal value is determined after a shorter period of time (typically year 5 to 10). Usually, the approach I have seen in two decades of financial markets experience is quite often based on a simple multiple applied to the last estimated figure of flow (earnings or cash) of the explicit period analysed. In this situation, a lot of inconsistencies can emerge. First of all, it's not a given that the last year of the explicit plan has to be the basis of TV calculation, if it is not representative of a "normal" year. Another topical issue relates to the fact that the capitalization of the last flow needs to be coherent with the sustainable reinvestments required to support the perpetuity growth assumptions, (eg. $(NOPAT \times (1 - g / ROIC)) / (WACC - g)$). I find that one of the most common inconsistencies is typically related to the implicit reinvestments in working capital and growth capex embedded in the calculation. Furthermore, I always link the long term growth estimate to the long term risk-free rate available in the market and, related to that, the ERP needs to be linked to those two variables, typically derived from current market prices, if the cost of capital is market consistent. When we are valuing a growth company, this approach can be of course conservative, if TV is estimated in a short time-frame (say, year 5). In this situation a "growth risk premium" can be in any case taken into consideration (the g factor in the Gordon Model can be effectively considered like a "financial summarizer", meaning that every discrete growth path can be transposed in a financially equivalent single growth factor in perpetuity). Looking at the financial gearing, a particular attention needs to be put in the calculation of the net financial position if we are using a cash-flow model rather than an economic approach in va-

luing the asset side (avoiding the risk to double count or to miss cash components of the flow, not reflected in the Net Financial Position we then subtract from the asset value). An important element to take into consideration is the analysis of the cycle for the company we are valuing: in presence of a cyclical business, the TV has to be necessary calculated on an over the cycle basis. Another useful cross-check is determining the implied “exit multiple” and comparing it with the current one, looking both at peers and at similar companies/sectors in terms of growth opportunities, return on capital and other fundamental drivers that can be considered in a “normalized” state of their life cycle.

ET:

Under IVS 105, Paragraph 50.21, the terminal value should consider:

- a) whether the asset is deteriorating/finite-lived in nature or indefinite-lived, as this will influence the method used to calculate a terminal value;
- b) whether there is future growth potential for the asset beyond the explicit forecast period;
- c) whether there is a pre-determined fixed capital amount expected to be received at the end of the explicit forecast period;
- d) the expected risk level of the asset at the time the terminal value is calculated;
- e) for cyclical assets, the terminal value should consider the cyclical nature of the asset and should not be performed in a way that assumes “peak” or “trough” levels of cash flows in perpetuity; and
- f) the tax attributes inherent in the asset at the end of the explicit forecast period (if any) and whether those tax attributes would be expected to continue into perpetuity.

In practice, when estimating the DCF Terminal value, one of the key components is the annual growth rate expected into perpetuity. A common way would be to compare this against the growth rate of the industry or country’s economic growth.

It is not uncommon to see valuations where the terminal value makes up a large chunk of the estimated value. Hence it is important to perform sensitivity analysis of the impact of a range of growth rates in estimating the DCF Terminal Value.

3. DCF discount rate: ERP and risk free rate

There is a relationship between ERP and risk free rate (RFR). How do you consider it in estimating the market return?

TA:

I believe that there is a definite and inverse relationship between ERP and the RFR. Over the long term (100-200 years of data), while equity returns have varied from year to year, there tends to be a relatively stable average level of nominal returns on equity in

the range of 8-9% (at least in the United States). That being said, I view the ERP, in effect, as a “spread” which can vary as the RFR moves up or down. While I believe that the average expected nominal return on equity is relatively stable (i.e. the 8-9% mentioned earlier), the ERP rises as the RFR falls and vice versa. Thus, I view market returns on equity as being relatively stable, on average over time, while the component parts vary inversely to one another.

WB:

If the expected value of the market rate of return is assumed to be constant, a decreasing risk-free rate implies an increasing ERP according to CAPM. It is an empirical question whether a decreasing risk-free rate changes the expected market rate of return. I do not know reliable evidence.

In Germany, the risk-free rate is normally approximated by spot rates of Government bonds at the valuation date which vary over time. At the same moment, the ERP is normally estimated by means of historical data. Therefore, there is a mixture of historical and future directed data which is inconsistent with the CAPM. Implied ERPs could help but have other disadvantages.

MB:

We know that equity market return is more stable than its constituent parts (ERP and RFR). The reason is the negative correlation between risk-free rate and equity risk premium. Risk-free rates show a pro-cyclical pattern (they rise when the economy grows and fall in recessions) while equity risk premiums are counter-cyclical (they fall in a growing economy and increase in recessions). This makes ERP dependant on risk-free rate levels.

When risk-free rate levels are normal so are equity risk premium levels. This makes it possible to identify a number of patterns, the most famous of which is definitely the Fed Model (introduced by Greenspan) whereby in normal condition the P/E of the U.S. stock market should approximate the inverse of the risk-free rate, based on the assumption that the nominal growth rate of the U.S. economy (“g”) is nearly equal to the equity risk premium (“ERP”). Against this background, the historical ERP can be taken as a reliable measure of the risk premium in estimating the cost of capital of a specific company.

However, when the situation is far from normal, significant caution is required in the use of historical ERPs. Historical ERPs are (arithmetic and geometric) means of risk premiums derived from secular investment horizons which assume (implicitly) risk-free rate levels in line with the long-term average. Today, in nearly the world over, we are going through a historical phase where risk-free rates have settled at levels that are extraordinarily lower than the long-term average (in many countries ten-year and longer risk-free

rates are negative) also as a result of the quantitative easing policies adopted by the central banks. In this context, the Fed Model cannot work.

Hence, two possible alternative solutions to estimate the cost of capital.

The first involves the normalization of risk-free rates on the assumption that they do not reflect the free interplay between demand and supply but are instead lowered artificially by the purchase of government bonds by central banks. As central banks can only intervene for limited periods of time, risk-free rate levels should normalize at the end of the quantitative easing phase. This solution, which raises the risk-free rate by normalizing it to levels more in line with long-term historical averages, makes it possible to adopt average normal ERPs that generally do not deviate substantially from long-term historical averages.

The second solution involves instead the use of current risk-free rates (including negative ones) and adjusted risk premium rates (generally higher than the historical average).

The choice of either solution is not neutral for the results of the valuation of a specific business. In fact, given the same market return ($= \text{risk-free rate} + \text{ERP}$), the greater the ERP the greater the cost of capital for firms with a beta greater than 1 and vice versa. The consequence is that, in case the second solution is adopted (negative risk-free rate and ERP higher than the historical average), the costs of capital for firms with different betas will be much more scattered than the costs of capital calculated by using the first solution. Hence, the need for greater accuracy in estimating the beta of a specific company. In the absence of closely comparable listed companies (thus in case of possible errors in the estimation of the beta coefficient), the first solution might be better.

Often, use is made of intermediate solutions. Instead of adjusting risk-free rates to levels considered normal in the long run, use is made of average 12- or 18- or 24-month rates and then measures of prospective ERP consensus are adopted (from surveys or stock analyst reports).

Whatever the solution adopted, it should still be considered that in the current market context, the breakdown of market return into its two constituent parts (time value of money and risk premium) is largely uncertain. A cursory review of the reports of equity analysts reveals the broad dispersion between risk-free rates and ERPs, with such dispersion narrowing when the focus shifts to the sum of the two constituents (risk-free rate + ERP). The consequence is that this uncertainty tends to be magnified in the estimation of the cost of capital of specific companies in relation to the beta of such companies.

That is why it would be appropriate also to check the reasonableness of the cost of capital on the basis of

synthetic estimation criteria, such as the implied cost of capital.

SG:

I think consistency is paramount in choosing the right approach. If I run a market valuation, I tend to use the current market risk free rate (RFR), a similar long term growth assumption and a market implied ERP. The risk free rate is effectively a reflection of what the investors estimate to be the economic growth path in the future, basically the expected real growth plus the inflation expectations. In a low interest rate environment, therefore, the expected growth should be relatively subdued. Another way to look at RFR, is related to the role it plays when the fear factor rises, as happens in a flight to quality environment. In this situation, that decrease of RFR affects also the risk premiums of all other asset classes: credit default spreads, cap rates on real estate and, of course, the equity risk premium. If we look at the market implied cost of capital in recent years, we have witnessed a shift in the relative weight between RFR and ERP in its composition. If we calculate risk free rates and market implied ERP for the last 20 years in the US, for instance, we can see that, while RFR decreased from 6% to 2%, the ERP grew almost symmetrically, with a relatively limited impact on the overall cost of equity capital (that has been a break compared to pre-crises periods). Partly related to that, we have to consider that the sensible reduction of credit spreads provided a clear incentive for corporates to follow a de-equitization path (debt-to-equity swap), in order to reduce WACC. Using this dynamic approach, where RFR, ERP and long term growth expectations are market consistent and time-varying, presents nonetheless some issues that need to be taken into account. First of all, it can be volatile, while the intrinsic value is typically more stable. Secondly the impact of market variables is asymmetrical versus higher risk/high growth companies, compared to lower risk/low growth ones. So another possible approach is to pursue a normalized valuation: here we can replace current inputs with normal – average – data (eg long term growth estimates, long term historical ERP and normalized fundamental drivers). This kind of approach implicitly assumes that the past and the future tend to be relatively similar on an over the cycle basis and that mean reversion will continue to work. In this case, the valuation can be much more stable, but the distance from some market prices can be huge, also for not trivial time-frames. What I don't do, in any case, is to use inconsistent inputs (like market RFR and long term average historical ERP, for instance). Needless to say, the RFR and ERP need to be calculated on a homogeneous basis in terms of reference markets, countries, currencies, real or nominal values, duration. A related argument that nowadays is overly present in

the market on this topic is the role of monetary policies and the related market behaviour in pricing risks that we are seeing after the advent of the crises of 2000 and, even more, of 2008. A decent amount of literature is starting to emerge, analysing the impact of unconventional monetary policies on financial asset prices and on the risk premiums of different asset classes. The typical argument relates to the historical analysis of credit fuelled bubbles (1929, 2000, 2008) where the herd behaviour in asset market booms drove the subsequent crashes. In other words, does the role a price insensitive global buyer of last resort (major central banks) is having on both RFR and risk premiums on different asset classes, affect the function of “price discovery machine” that the financial market always had? I think that’s a pretty relevant question when analysing input valuation parameters, above all if we consider the structural lack of safe assets available in the market nowadays. That situation can be tricky for equity valuation, if market rates are no longer fully representative of the monetary cycle, and liquidity can tighten without interest rates rising. In that situation, we probably need to become more used to operate in a quantity, as well as a price, world and to take into account more complex liquidity indicators in the inputs used in our valuation models.

ET:

ERP is estimated based on market studies and consensus views from fellow practitioners. We acknowledge that there is a relationship between ERP and risk-free rate. However, we take a long-term view on ERP and obtains the risk-free rate as at the respective valuation dates.

4. DCF discount rate: Wacc Capital Structure

Wacc is a function of Capital structure. In calculating wacc do you use the average capital structure of the peers, the specific capital structure of the firm that you are valuing or some other benchmark? Do you use different capital structure if you are valuing a control interest or a minority interest in the firm?

TA:

Typically, I have used an average capital structure for industry peers when valuing a controlling interest. For a minority interest, I believe there are circumstances where the specific capital structure in place may need to be utilized, as the minority shareholder may not have the ability to influence the capital structure decision and is left with having to accept the capital structure that management/controlling shareholders have implemented.

WB:

When using the FCF approach I take the specific capital structure of the firm according to a plausible planning. Capital structures of peers only might influ-

ence the result of the plausibility test. I do not use different capital structures for valuing a control interest or a minority interest.

MB:

It should be said right from the start that wacc (Weighted average cost of capital) cannot be applied to all companies. Use of wacc assumes implicitly the validity of the assumptions underlying the Modigliani-Miller (MM) theorem, in particular that the debt of the company (or its peers’) is risk free. Consequently, the MM model should be applied only to companies with an investment grade rating (for which the risk of default is objectively negligible). When the probability of default is no longer negligible, the discount rate should reflect also expected distress costs. In fact, if there is a significant probability that following a default the company should be liquidated, it is necessary either: to consider expressly in the valuation also the gone-concern scenario, in addition to the going-concern one, or to discount the benefit streams on a going concern basis but at a rate higher than wacc.

This introductory note was necessary because use of the peers’ average financial structure might not make sense when the entire industry in which the valuation subject operates is experiencing a crisis. In these cases the book value of the debt of comparable companies hardly reflects market value. In addition, in these cases the tax shield of interest expense is not certain (since the debt is risky). For a company operating in a sector experiencing a crisis, the discount rate of the levered cash flows stream can be lower than the unlevered cost of capital (which excludes the benefit of the debt tax shield)

Use of the average financial structure for the industry might not make sense also when the companies engaged in it adopt business models that differ substantially from one another due to totally diverse risk profiles and asset bases. In fact, it should be considered that the wacc should ideally correspond to the wara (weighted average return on assets). The wara in turn depends on the normal returns on the individual assets while returns are a function of the Loan-to-Value ratio (LTV) of the specific assets.

With that in mind, the normal financial structure of a firm should be the weighted average of the LTVs of the individual assets.

If as a result of the different business model the companies operating in the same industry use assets with varying LTVs, their wara too (and consequently their wacc) will vary.

The correspondence between wara and wacc throws a light on the relationship between asset structure and financial structure of a firm. If the company to be valued has an asset structure different from that of its peers, it will also have a normal financial structure different from that of its peers. This circumstance is

put in sharp relief in sectors where, for example, competing companies are characterized by widely varying sets of intangibles or where companies engaged solely in trading compete with vertically integrated companies, etc.

In these cases, instead of using industry average financial structures, typically it is better to calculate the maximum leverage that can be associated with a BBB (investment grade) rating and then use this leverage ratio to calculate the wacc. To calculate the maximum leverage that can be associated with a BBB rating, normally use is made of synthetic-rating estimates, deriving from the ratings of companies in the same industry the financial statement ratios that explain rating dispersion through regression analysis.

In theory, the financial structure so identified should not be significantly different from the financial structure that the valuation subject can achieve over the plan's horizon. For this reason, the analysis of the synthetic rating can be usefully applied also to the plan years, to check whether the starting financial structure has approached the target financial structure.

When minority interests are valued, the wacc estimation can refer to the company's current financial structure. This however is predicated on the notion that control over the company is not contestable and that since the minority shareholder cannot change the company's financial structure, such minority shareholder is penalized by the lack of tax benefits (in case the financial structure shows a level of indebtedness lower than the industry average) or, by converse, by greater expenses (in the form of distress costs for firms with a financial structure featuring a level of debt higher than the industry average). In these cases, it is always better to use APV (thus the unlevered discount rate to estimate the unlevered enterprise value, to which the effective debt tax shield is added to arrive at the equity value).

SG:

In the WACC calculation, I typically use the target debt structure of the company (cross-checked with the sector average of comparable firms), differently from the calculation of the cost of equity, where I use the effective current capital structure. The reason is one of coherence with relative flows: when we discount net flows, we are considering the actual leverage (interest costs are part of the flows discounted), while in discounting operating flows, they are gross of interest costs. So, when using the target structure in calculating the WACC we take into account all the possible tax-shields, while in discounting on a net basis the tax shields are only the ones the company is currently using. Therefore a cost of equity estimate using the target financial structure wouldn't be coherent. This approach is of course predicated on a valuation based on an investment grade level of risk. When I have to

analyse a situation of financial distress, an explicit analysis of bankruptcy costs (BC) is deserved. I usually take into consideration the credit spread and the asset risk (unlevered k): $BC = - (D \cdot \text{spread}) / uk$, where D is the net financial position. In this situation bankruptcy costs are a direct function of the debt level, so WACC varies during the explicit valuation period and we need to adjust it time-by-time until the target structure is reached. In terms of the nature of interest I'm valuing, I usually apply the target capital structure for a control interest or for a highly liquid public company, while I tend to use the current capital structure for a minority interest, especially if we are in a situation of sub-optimal management of the balance sheet, effectively applying a discount for a lower probability of re-adjustment opportunities.

ET:

If the objective of the management is to maximise the company value in the long run, the target weight can be a consideration for the capital structure

- Average capital structure of the company

If the subject of valuation does not have a targeted capital structure or valuers do not agree that it is an optimal capital structure, the average capital structure of well-performing comparable companies may be used. However, it would be important to understand how the industry-average capital structure is derived and whether or not it is reasonable to expect the subject company to achieve it, given (a) current conditions of the company itself and (b) current financial market conditions.

No difference for minority interests as they are not in a position to influence the capital structure decision and hence, adopt the capital structure that controlling interest utilised.

5. DCF discount rate: alpha

Do you adjust the cost of capital estimated with CAPM or other scientific models adding an alpha factor? When, why and how do you estimate it? Is it the adjustment consistent with CAPM or the other model you use?

TA:

I have typically used an "Adjusted CAPM" for the cost of equity, which may include premiums for size, country or idiosyncratic company risk. I have utilized size premium studies for size premiums, differences in country default risk or other sources for country premiums and either qualitative assessment or quantitative analysis (i.e. solving for discount rate differentials between management prepared PFI and "Expected Value" PFI) to estimate a company specific risk premium.

WB:

No, there is no adjustment with alpha.

MB:

By way of introduction, it should be noted that the

cost of capital is applied to expected cash flows. The business valuer that uses the most likely cash flows (except for the cases where the expected cash flows take a normal distribution shape) cannot use the cost of capital. In these cases, the business valuer must add a premium to the cost of capital for the additional risk (alpha factor).

In my experience it is always better to use – whenever possible – expected cash flows, thus avoiding arbitrary adjustments to the cost of capital. The weakness of this solution is that if the PFI does not express expected cash flows, it is up to the business valuer to adjust the expected cash flows, but this:

a) exposes the business valuer to undue risk. If responsibility for Prospective Financial Information lies with management, any change entails a potential liability for the business valuer;

b) requires in-depth fundamental analysis.

In many jurisdictions business valuers do not adjust PFI, to ensure that responsibility for the prospective information rests with management; as such, they incorporate the PFI risk in the discount rate. This solution is flawed in that the adjustment to the discount rate (the size of the alpha factor) is due to the wish to avoid the responsibilities that the adjustment of the expected cash flows would otherwise entail, and does not mean that the adjustment to the discount rate is theoretically better than discounting expected cash flows at the cost of capital in business valuation. Evidence to this is that the adjustment to the discount rate is used much more frequently in common law countries than in civil law countries.

Even though in mathematical terms raising the cost of capital by an alpha factor or otherwise reducing expected cash flows can lead to the same results, both solutions are not the same in terms of transparency of the valuation process. In fact, while the downside adjustment of the cash flows is obtained analytically thanks to an in-depth review of the plan and the adjustment of certain revenue, cost, invested-capital or financial-structure items, the alpha factor is estimated synthetically. At best, the business valuer only translates the effect of the alpha factor on the final result, showing the extent to which the expected cash flows (discounted at cost of capital) should be cut to obtain the same result.

When the expected cash flows are adjusted, it is easier to find external evidence that corroborates such adjustments (suffice to think, for example, of consensus forecasts by equity analysts who follow listed companies, which are typically lower than companies' guidance). In the case of the alpha factor, instead, it is much harder to find reliable external evidence. Even the implied cost of capital does not provide useful information, when it is derived from equity analysts'

consensus forecasts of PFI under the most likely scenario.

That said, it is not always possible to refer to expected cash flows. To that end, it is necessary to distinguish between two different situations:

a) the case where the company's plan features simultaneously expected cash flows and most likely cash flows, e.g. when the plan reflects not only ordinary business operations – for which the prospective information expresses expected cash flows – but also the launch of new products in new markets whose expected results represent the most likely scenario;

b) the case of start-ups or declining companies, for which the outlook involves a binary outcome, of the hit-or-miss type.

In my experience, in the former case (mixed-cash-flow plan) a distinction should be made between expected cash flows and most likely cash flows, discounting them separately at cost of capital and at the rate of return required by investors for new projects (private equity or venture capital funds), respectively.

In the latter case (start-ups or declining companies), the valuation must start with the estimation of the most likely expected cash flows and a higher discount rate. However, in these cases the discount rate is not the sum of the cost of capital and the alpha factor but is the direct expression of the rate of return required by investors for deploying their capital in similar companies. Once again, reference can be made to private equity or venture capital firms.

SG:

Yes, if I'm using most likely cash flows. The reality is that the financial market approach in calculating discount rates tends to be usually over-simplistic and the relationship between the nature of the flows discounted ("expected" vs "most likely") and the relative cost of capital is rarely explicit. Typically a standard CAPM formula is used: 10 years risk-free rate (of the country where the company is listed or a weighted average of the countries where a multi-national company runs its businesses), a standard equity risk-premium (4-6%) and an historical beta (usually calculated on a two to five years weekly timeframe). As a first check I have a look at the statistical strength of the outcomes, meaning that, for instance, if t statistics, standard error, alpha or R^2 of the regression in the Beta calculation are within certain limits I'm more confident on the stability of the results. I tend to be market consistent in the calculation of risk-free rates and ERP (meaning, either I assume market price and market implied level in the model, respectively, or use a normalized long term growth assumption for the RFR, associated with a long term average ERP). As far as the Beta factor is concerned, I sometimes use the Blume adjustment, when I think that some degree of mean reversion of returns are reasonable, while I don't

take into account the Vasicek's technique (a bit more complex and with modest empirical results). Another typical adjustment that I follow happens when the company changes its risk profile during the period in which the historical Beta is calculated. In case of an M&A that changed the volatility of the revenue stream or the operating leverage, or in case of a meaningful change of financial leverage, for instance, I try to look either at some meaningful comparables or to re-lever the Beta to take into account the impact of the new business mix and/or gearing levels. I rarely use the Fama-French model (due to the variability of results coming from the multiple factor approach - size and P/BV). I sometimes try to discriminate for some specific factor (size, industry or volatility premiums) through the build-up method. One specific case in which I focus my attention on the significance of the Beta contribution to the cost of equity is when I value Banks. Looking at the academic literature, as well as the market experience, the focus is almost constantly based on the equity approach. Given that the definition of debt for a bank is "hard" to get and non-consensual (given its own nature, the operational and financial cash flows "cannot" be separated), the standard approach is to apply the equity method tout-court, either in the form of a DDM, or as a FCFE (essentially equal to earnings net of reinvestments in regulatory capital). The Beta coefficient is simply "market driven". Now, the fact that we skip the definition of debt and leverage doesn't mean that it's not an issue. At the end of the day, the financial gearing is embedded in the Beta itself. I would present just some consideration on the topic, given the time we have available here: starting from the role of regulatory capital in the cost of equity calculation (and the "public safety net" argument, just think about the regulatory changes occurred in the last 10 years impacting the Banks' liabilities risk profile), someone proposes to look at the mark-down as a value driver generated by deposit funding. If we calculate a free cash flow from assets (FCFA) of the bank like: after tax operating profit +/- non cash transactions +/- NWC +/- delta tangible and intangible assets, we can generate a fair value balance sheet where we have the asset side based on value of deposits (discounting mark-down benefits), value of tax shield and value of assets discounting FCFA, while in the liability side we'd have deposits at nominal value, other debt (discounting interests paid on non-deposits) and Equity. The different costs of capital used to discount every piece of partial flow are based on a modified M&M proposition. Another simplified approach looks at separating operational from financial liabilities, considering as net financial debt only the interest bearing liabilities exceeding interest earning assets, while the operating profit would be net of negative interests with operating nature. So, I

think that working on the cost of capital of financial firms is a really important task, considering the relatively weak effort that both the academy and the profession usually dedicate to the topic.

ET:

Yes, we will add an alpha factor within the discount rate computation. In assessing the alpha to add, we will consider company specific factors such as key man risks, riskiness of forecast, customer concentration risk, product concentration risk etc. The quantum of alpha to add will depend on the overall reasonableness of the discount rate adopted.

6. DCF discount rate: size premium

In the calculation of the discount rate do you add a size premium? When, why and how do you estimate it?

TA:

Yes, using size premium studies, as mentioned above.

WB:

I do not use a size premium, since it is inconsistent with using the CAPM. Empirical data also show heterogeneous and controversial results for different countries and different time periods. Size premiums are also not accepted in German court decisions about compensation of minority interest in the case of squeeze-out or merger.

MB:

The existence of a size premium is a controversial issue in the literature. Historically, shares of smaller companies fared better than the shares of larger firms but this phenomenon seems to have run its course.

On close scrutiny, the causes of size premium can vary substantially and sometime they do not concern strictly the size of the company, as:

a) to determine empirically the existence of the size premium, size is measured on the basis of market capitalization, with the result that the small company category includes also big companies with low market capitalization due to restructuring or experiencing operational or financial troubles, even though they are big in terms of revenue, number of employees, invested capital;

b) survival bias, which characterizes historical returns calculated on market indices instead of closed-end portfolios of companies, takes on added significance in the case of small companies, with their greater birth/death rate compared to larger companies;

c) the shares of smaller companies are less liquid than shares of big companies;

d) smaller companies can be subject to a greater competitive displacement risk, compared to larger companies.

It is clear that:

a. the first cause does not refer to small companies (strictly speaking);

b. the second cause refers to a measurement bias;
c. the third cause concerns the liquidity of shares, but not a greater fundamental risk related to small firms;

d. accordingly, only the fourth cause has a direct impact on the fundamentals of small companies.

For reasons already mentioned, it is more appropriate to address this risk in the estimation of future cash flows (and the estimation of terminal value). It is a fact that smaller companies can more easily fail due to the competitive pressure of larger firms, compared to larger firms which are better equipped to fight back, though no generalization can be made out of this circumstance. It is also a fact that small companies that adopt a traditional business model bear the brunt of the competition of larger firm, as is the case with, for example, an independent small shop that is threatened by the opening of a shopping centre in the same area or an independent hotel that is penalized by a hotel chain that sets up an operation in the same location; a textile manufacturing company may be hurt by the competition of manufacturers from low-wage countries as tariffs are lowered, etc. On the other hand, however, small companies that adopt innovative business models can be a threat for industry incumbents. Independent boutique hotels can attract customers away from large hotel chains, e-commerce represents an opportunity for independent retailers and smaller manufacturers, allowing them access to markets previously unreachable, etc.

In my opinion, applying a size premium just because a company is small is a mistake. There is no evidence that investors require higher returns on smaller companies, whatever their business model. Surely smaller firms that adopt traditional (mature or obsolete) business models are exposed to greater competition risks, but this should be properly captured in the estimation of terminal value, more than in a size premium, of a business valuation.

SG:

Talking about discounts, I think it's important to affirm that they always need to be estimated after the fundamental valuation analysis. So, the ideal process is split in two phases: we firstly calculate the fundamental value of the asset, and secondly we eventually apply a discount, in order to get a notional fair market value. In presence of a small cap (or more generally of a low liquidity stock), I tend to increase my required return. Theoretically, we are in presence of a put option (of abandonment). More specifically, we have a waiver on a short put position on the stock. Its value is driven by the price, the volatility and the fair value of the underlying asset, plus the holding period of the investment. The less liquid is the stock, the higher is the delta between the fundamental value and the fair market value of the share. Given the

difficulties to calculate a stable value of such an option, I usually refer to some rules of thumb we can infer from market prices (being the expected returns of small caps, or real transactions involving less liquid stocks). Empirically, we have of course a huge range of discounts available even if a more common average is in the ballpark of 10-20% (discounts for non-marketability tend to be closer to 30-40%). From another angle, looking at the finance literature, we can infer some 2-4% increase in the expected return, even if a lot of issues emerged during recent years, namely: a) the premiums seem to be time-varying (stronger before 1980's, weaker thereafter), b) clustering between small caps and micro caps, the effect can be much less evident, c) a huge January effect seems to be present, d) standard errors tend to be large, e) it's more relevant in less sophisticated markets (less so in US, for instance). Some academics are even arguing that the small-cap premium doesn't exist, based on both implicit market-price expected returns and some historical evidence, mainly from the US market. Having said all that, I tend to be reasonable and pragmatic in applying size/liquidity discounts. I firstly focus on the drivers of illiquidity: high bid-ask spreads, the risk of impacting the price of the stock (how many volumes do we need to trade compared to average daily value?), the opportunity cost of waiting to trade (linked to my risk-adjusted forecasted holding period), the eventual higher trading cost and the nature of the investment (a low risk-low volatility company vs high risk-high volatility one). Looking at all the drivers mentioned it's possible to build a matrix to help me assess a proper discount. Of course the larger the bid-ask spread, the higher the risk of impacting the price, the higher the opportunity cost of not to trade, the higher the trading costs and the more risky-more volatile the stock is, the higher the discount applied will be.

ET:

Yes, we include a size premium in the computation of the discount rate. Our estimation is based on empirical studies which show the typical size premium to consider based on the size of the company.

Empirical studies have provided evidence that the degree of risk and corresponding cost of capital increase with a decrease in the size of the company. Hence, when performing a valuation for smaller companies, inclusion of a size premium which commensurate with the size of the subject of valuation is necessary. At current, references are drawn from different empirical studies, which stipulates the size premium to be considered for different companies.

7. DCF discount rate: discount rate and growth rate

Growth is risky. How do you consider the relationship between discount rate and growth? Is your cost of capital

estimate independent from the growth rate of the specific firm you are valuing?

TA:

Given that, as growth expectations increase, risk of achieving such growth also increases, I believe that discount rates are commonly higher as expectations around growth increases. When one considers that a discount rate is the sum of the capitalization rate and the growth rate, all other things equal, higher growth expectations should in turn expand the discount rate.

WB:

Growth is a characteristic of cash flows. Both measures have to be taken as expectation values. In the Gordon-Shapiro model the expected growth rate comes only technically into the denominator of the PV formula. Therefore, the riskiness of growth influences the expected value of cash flows and is independent from the discount rate.

MB:

The relationship between growth and cost of capital should be clarified.

First of all, in many cases growth is risky simply because it is calculated on the basis of the most likely cash flows, not on the basis of the expected cash flows. This is the case with start-ups, more than mature companies that launch a new product in a new market, as mentioned previously. In these cases, however, the cash flows should not be discounted at the cost of capital and the risk premium (alpha factor) does not concern growth in itself but the circumstance that the cash flows being discounted are greater than expected cash flows.

In the second place, profit growth can be the consequence of a mere accounting effect. If the company is incurring R&D or advertising expenditures, which cannot be capitalized, future profits will grow not only because the expenditures that reduced current profit will generate future benefits but also because in the future it might be enough to incur maintenance expenditures much lower than the initial outlays. In these cases growth is fuelled by an accounting effect (accounting conservatism) and does not entail greater risk.

When the effects of these growth measurement aspects are excluded, taking into account only the increase of expected cash flows, we should distinguish three different types of growth:

- a) Expected growth over the plan's time horizon (CAGR% and length of plan's horizon);
- b) The growth expressed by the percentage increase of the highest profit to be projected in perpetuity to estimate terminal value (end situation) with respect to current profit (start situation);
- c) The growth rate used to estimate terminal value (the growth factor "g" in Gordon's formula).

By adopting the approach I suggested previously to

analyse PFI, whereby PFI acts as a "bridge" between the "start" situation and the "end" situation, the assessment of the profit level of the "end" situation must precede the analysis of the growth expected to be achieved over the plan's horizon, for the simple reason that when the end point is not a realistic target, the plan ("the bridge") turns into a "stepping stone" suspended in mid-air. This perspective casts light also on the relationship between the start situation and the end situation. Many times enterprise value is broken down into two components: value of assets in place and future growth opportunities. The idea underlying this breakdown is that the earning power achieved by the company in the current situation is a value floor to which the net present value of future investments needs to be added. From this standpoint, a company's growth is regarded as a series of additions – given the initial value the final value is obtained by adding the contribution of new investments, based on the assumption that some sort of rack-and-pinion effect applies - and that once a profit level has been attained there will be no rollback, regardless of the contribution of the investments made.

In my experience, this growth model "by addition" is increasingly rare. Competition forces companies to grow or perish and only few companies, operating in protected niches, can preserve their earning power while remaining stable. The competitive displacement risk materializes mostly with companies that do not grow, do not innovate, and do not change their business model. Regarding the profitability of assets in place as less risky than the profitability of future investments stands in stark contrast with the evidence that the main source of risk for a company is "doing nothing" (no investment, no innovation etc.), that is to keep the assets in place. Slumbering companies or companies that are slow to react to competitive pressures risk much more than an active and reactive company. Obviously, acting entails the risk of making wrong choices but this does not mean that this risk is necessarily greater than the risk of doing nothing.

The attempt to separate the risk of steady-state firms from the risk of future growth opportunities is not supported, in my opinion, by fundamental analysis or by evidence gathered in the market, where companies with high growth prospects, thanks to a sound and scalable business model, are considered by investors as less risky than companies that are stable but unable to act as platforms for add-on businesses.

Even financial theory does not show any positive correlation between growth and cost of capital. Growth shares provide returns much lower than value shares. This evidence suggests that growth is an "antidote" to risk, more than a source of risk in itself. This interpretation is predicated on the assumption that growth helps to defend the profitability of assets in

place and generates additional benefits. Obviously, growth must find in the company's starting situation the engine of its fulfilment in terms of competitive advantages, ability to attract capital and talent, etc.

As to the growth of expected cash flows over the plan's horizon, it is necessary to distinguish two extreme situations:

a) If the plan is a bridge between the start situation and the end situation, and the latter is a target in view of which the company has already laid the groundwork, the risk over the plan's growth horizon is not greater than the profitability of the assets in place;

b) If instead the plan is prepared by extrapolation and is not supported by a solid end situation, growth is definitely risky, simply because the plan expresses generic projections.

Lastly, it is necessary to consider the relationship between the growth rate "g" in the estimation of terminal value and the cost of capital. To this end, I just want to make a remark of a general nature. Risk does not concern the growth rate in itself but the profitability associated with that growth. For example, in a levered DCF valuation the growth rate g of net profit is equal to the earning retention rate (b) multiplied by the expected ROE. If the plan covers the time horizon over which the competitive advantage of the firm runs out of steam, the marginal investment that the company could make after the explicit forecast period cannot be different from the cost of capital. This means that a higher growth rate g must go hand in hand with a higher earnings retention rate without any effect on terminal value. In my view, the risk implicit in unrealistic earning growth rates in estimating terminal value needs to be addressed when the investments necessary to achieve that growth are estimated, more than arbitrarily raising the cost of capital.

SG:

The risk of growth depends on its nature. We can have risky growth profiles, where the company pursues growth for the sake of it, in a situation that is hardly defensible in competitive terms and its profitability can be diluted, or genuine growth where the profitability and the volatility attached to it are based on some sort of competitive advantage and can be valuable both in terms of returns on additional capital and of the marginal risk profile. In presence of above average growth opportunities, sometimes I try to split the value of assets in place from the value of growth, following the approach introduced in 1977 by Myers and Turnbull. We need to calculate the value of assets in place and, separately, the NPV of growth opportunities (NPVGO). Differently from the original approach, I don't consider the former entirely based on tangible resources and the latter mostly based on intangibles. If the risk of the assets in place is lower than the one related to growth, the latter can be considered, finan-

cially, as a call option with a higher systematic risk contribution. Therefore, the cost of equity of the company will be an average of the two different sources of value and, as a consequence, the betas of two firms with different NPVGO would not be comparable. I often try to infer the beta of the assets in place from the observable market beta (for no-growth peers, when available) and to isolate the higher beta related to the growth opportunities calculated on the residual market cap, given that assuming future investments as belonging to similar classes of risk versus the assets in place is not always a fair assumption. Another layer of analysis is related to the sustainability and intensity of growth prospects. Given that we have to figure out all the drivers of the process (sizing the market, estimating capex, operating margins, capital intensity, returns on capital, cash flows) and develop a weighted scenario, the less certain those drivers will be, the higher the applied cost of capital will result. Sometimes I use different costs of capital for different periods of time when valuing NPVGO, starting with a higher beta for the first period, where uncertainty is higher, and reducing it while the growth fades towards a more stable state of development, while the opposite is true when valuing young/start-up companies, where initial losses are almost certain and future growth is less predictable (I'm aware that this approach is debatable among academics). A quick back-on-the-envelope approach I use in relative valuations in order to discriminate for growth is looking at the market multiples in an integrated way. P/E and P/BV are linked by ROE, so analysing companies with different levels of P/E vs P/BV can help to dissect the relationship between beta and growth: high P/BV and low P/E can be related to a low financial risk - low growth company with a low beta, the opposite being true for low P/BV and high P/E. When we have high P/BV and high P/E (low financial risk but high growth) or low P/BV and low P/E (high financial risk and low growth), the level of the beta factor is less straight-forward, and we probably need deeper level of analysis on the contribution to the profitability coming from intangibles. Needless to say, the long term growth cannot be higher than the growth of the economy as a whole therefore I always try not to inflate the terminal value. Another useful cross-check is to back-solve the implicit market share discounted by the valuation (looking at the company analysed and at the sector in which it operates). It's not uncommon to find irreconcilable analysis, where adding the market shares at a certain time in the future for growth companies in the same business, the total doesn't sum up to 100%, compared with the estimated sector growth. Interestingly enough, in recent years the market performance coming from growth companies vs value ones has been pretty strong, showing a net positive contribution in terms of risk profile, in a situa-

tion where growth opportunities are overly scarce and interest rates are so low.

ET:

Our cost of capital estimate is not independent from the growth rate of the firm that we are valuing. If the PFI is risky due to the unreasonable growth rate assumptions, we will consider an alpha adjustment to the cost of capital to account for it. In addition, it is reasonable to expect a different level of risk to be associated with cash flows at different growth stages. We would expect a company to face greater risk during its high-growth stage relative to its stable-growth stage. Valuers would often employ different discount rates to the cash flows for different stages of growth as the situation warrants it.

8. Valuation of minority interest and surplus assets

In valuing minority interest in a company with surplus or redundant assets how do you consider those assets: (i) you exclude them, because the minority shareholders cannot dispose them; (ii) you consider them just for their contribution to net income (that could be disproportionate from their replacement cost); (iii) do you add the replacement cost of those assets to a valuation based on income from core business?

TA:

This is one of those questions where the answer is “it depends”. If management/controlling shareholders are not expected to dispose of such assets in the foreseeable future, then I may only include any income to be received from such “non-operating” assets. If, however, the entity is expected to be sold in the near future, or if there is a plan in place by management to dispose of such assets, then I may consider them in whole or in part, with adjustments for the time value associated with the time to sale of the entity or disposal of the assets.

WB:

In Germany, valuation of minority interest follows an indirect share valuation, i.e., the value of the share is derived from the business’ total value. Surplus assets are a component of business’ total value. They are valued as part of DCF or – assuming they are nonessential operational assets which can be freely disposed of without affecting the normal activities of the business – with selling prices, not replacement cost.

MB:

There can only be one answer to this question: “depends on the specific facts and circumstances”.

Specific facts and circumstances combine to define two different analysis levels:

a) when the redundant assets are identified, as it is not the nature of the asset that defines its pertinence, or lack thereof, to the core business, but the company’s strategy;

b) when the redundant assets are valued, as it is the existence of an active market for the assets, or lack thereof, that suggests the adoption of a value-in-exchange valuation or a value-in-use valuation.

The definition of surplus or redundant asset depends on the company’s strategy. A company may have purchased an office building in the past which turned out to be too big for its needs. Consequently, management plans to relocate to another building (to be rented) and to sell the previously purchased building. In this case the sale of the building is part of the company’s strategy. It is the strategy that makes the building redundant originally purchased and the same strategy replaces the cost incurred in the form of depreciation of the building purchased with the rent for the new building.

Another example where the strategy can trigger transfers from the core business to redundant assets is the case of a retailer that decides to extend the term of its trade payables, paying its suppliers a higher price for their goods. As a result of its choice, the retailer will have more cash on hand, despite an increase in operating costs. Unless it is used in the core business, the cash on hand is a surplus asset that offsets the loss of value of the core business.

Another example of strategy that defines the redundancy of an asset is a minority interest in a key supplier or distributor. In these cases the investment is intended to strengthen sales or procurement ties with key partners. Even if the investment does not contribute to the bottom line (e.g. because the investee does not distribute dividends), or makes a small contribution (because the dividend yield is very low), it does produce indirect benefits in terms of greater revenue or lower purchasing costs or lower risk of failure to secure key commodities or intermediate goods for the company’s production process. In all these cases the distinction between redundant assets and core business is not dictated by the nature of the assets in and of itself but by the strategy adopted to manage the core business.

Thus, extreme caution is required in identifying redundant or surplus assets. The key is to consider whether the specific asset contributes directly or indirectly to the profitability of the core business. Only when there is absolute certainty that an asset does not contribute to the profit of the core business can such asset be considered redundant.

Once the surplus assets are identified, it is necessary to value them.

To that end, it is necessary to ask oneself what benefits might surplus assets produce. Any asset can produce benefits either through its sale (value in exchange) or through its use (value in use). Typically, the firm that holds surplus assets is not capable of making their highest and best use. This means that if the redundant asset is a liquid asset (with an active

market) and the market price reflects the highest and best use of the asset from the point of view of the market participant, the asset should contribute to the value of minority interests for its market value (which should exceed its value in use). When the redundant asset has no active market it is preferable to estimate the value of an asset for its use in production. In this case the redundant asset contributes to value in light of its contribution to the company's profit.

SG:

In such a situation, as a general rule, I try to value surplus assets separately and add them to the valuation of core business. As a second best, I can consider valuing them for their contribution to net income, if I don't have enough information to calculate their fair value and the overall size of those assets are not big enough to impair the valuation process. If the company owns the assets and they have some economic value, there's no reason to ignore them. Of course we need enough information to determine the nature of redundant assets (that can or cannot contribute to the economic profit of the firm): typically we can have excess cash, marketable securities, non-consolidated subsidiaries, tax loss carry-forwards, discontinued operations, unutilized real estate assets, recreational vehicles, excess net working capital and so on. The valuation process should start from valuing the core business of the minority interest, excluding any income contribution coming from the surplus assets (if present) and then adding back their value. In order to determine this value, we have different options: in some cases (cash, marketable securities) the result is relatively straightforward, in others we need to calculate a fair value. Let's take a surplus real estate asset as an example: If we can use some sort of market value basis (sales price comparison, direct capitalization) we can follow this route, otherwise we need to use a depreciated replacement cost (DRC) approach: we should calculate the construction cost appraisal, add the appraisal of ancillary costs and detract the replacement cost depreciation. It's clear that in order to use a replacement cost approach we need a set of information not always available from the outside (land value, building value, deterioration and obsolescence, nature of the asset, dynamic depreciation functions etc.). DRC is in fact defined as the current cost of replacing an asset with its modern equivalent less deductions for physical deterioration and all relevant forms of obsolescence and optimization, so it's typically used when there is no active market for the asset being valued and it is impractical to produce a reliable valuation using other methods. Given the specific cases in which that circumstance usually happens and the related information-heavy nature of the valuation process, in financial market practice it is seldom followed. A market approach of some nature is the first choice, even if the

value determined in this way can be different from its replacement cost. I think the most important rule to follow is focusing on the impact on total value. Some error estimate can be tolerated if the role of surplus assets is negligible. If the contribution to the total value of the company is significant, on the other hand, the valuer needs to find the best appropriate way to get a fair value that can be a decent approximation of the DRC.

ET:

In valuing minority interest in a company, we will value it on a 100% equity interest basis first and adjust it through a discount for lack of control. In estimating the 100% equity interest in the company, we will include all the surplus or redundant assets.

9. Price vs. Value

Intrinsic or fundamental value is different from Price (or market value). What are the value drivers that intrinsic value includes or excludes in comparison with market value?

TA:

I believe that price and value are two distinct concepts. Price is affected by supply and demand as well as the efficiency of informational access. Value is more of a "normative" concept, i.e. what the price "should be" if the market was efficient, and all information about the entity was readily accessible. Value might be ultimately determined by consensus price, but price may or may not equal value on a given day, due to varying levels of supply and demand for the shares of the entity's stock. Price, in the short term, may be affected by numerous current events, such as interest rate changes, the publication of economic data, world events, etc., which may or may not reflect the true impact of such factors on fundamental value.

WB:

Intrinsic value is a non-observable financial dimension of utility that is attributed to a business by an actual or potential market participant. Usually, value of a business is calculated by means of a PV approach (DCF) for a going concern or by means of liquidation value for a non-going concern. Price is the empirical result of a transaction of a business.

According to economic theory and neglecting other than financial aspects, a business is sold, if its price exceeds the individual value for the seller and a business is bought, if the individual value for the buyer exceeds price. Of course, other than financial aspects may be the reason for an observed price in reality.

For a potential buyer of a business, synergies may lead to a difference between intrinsic value and price. Other drivers may be different expectations about cash flows, different opportunity cost and different risk preference. The term "market value" as equivalent for

price is also misleading when this value is measured by market capitalisation. Normally, a business is transacted at a price which differs from market capitalisation.

MB:

Price and value can diverge, widely as well, for the simple reason that the value in exchange of an asset is different from its value in use. Value in exchange reflects certain characteristics of the market in which the asset can be sold (active or inactive market, presence or absence of information traders, etc.), the bargaining power of the parties (in relation to the presence of substitute assets and the interest of potential buyers), the possibility to use the asset in different and better ways than currently, etc.

However, in comparing price and value it is necessary:

a) that the comparison be made on a consistent basis, i.e. same unit of valuation (e.g. single share or entity as a whole or controlling interest, etc.), same perspective (e.g. investment value or investment price, etc.), etc.;

b) to identify the market of reference, which may be an active market (where prices can be checked continuously, on objective bases, so that price is a given) or an inactive market (where prices are available occasionally and only to reflect specific facts and circumstances relating to: the company, the buyer or the seller, the degree of market liquidity. Thus the historical price is only indicative of the price that would be feasible in that particular market at the current date);

c) to check whether there is information asymmetry between market participants and the party that estimates intrinsic value. If intrinsic value is estimated on the basis of private information not available to the market, the comparison between price and value is not consistent;

d) check whether the market price incorporates expectation of a change of the company's control. If the company is contestable, and rumours are spread of a change of control that might benefit the shareholders, the market price incorporates part of the expected benefits (in proportion to the probability of success of the change of control) while intrinsic value reflects the value of the company as is (without change of control).

Also when the comparison is made on a consistent basis, and refers to prices formed in an active market, in the absence of information asymmetry or rumours of a change of control, the difference between price and value can be substantial. In the literature many authors studied the relationship between (intrinsic) values – estimated on the basis of public information the consensus of stock analysts – and prices formed in equity markets, concluding that in the long run the Price-to-Value ratio tends to revert to the mean, or close to 1

(when the Price-to-Value ratio = 1 it means that price = value), but it is highly volatile in the short term, with the ratio varying from 2.0x to 0.5x (where price can be double the intrinsic value or half the intrinsic value). Behavioural finance contributed to explain why markets can express inefficient prices in fundamental terms. The main cause are transaction costs (trading costs, holding costs and information costs), though the difference between price and value is due mostly to information costs.

In my experience the difference between the price prevailing in active markets and value can be explained with the different time perspective adopted by the business valuer in estimating intrinsic value compared to the perspective implicit in market prices. Typically, in rising markets prices incorporate values significantly higher than those that can be derived from the business prospects of a company as is while in market drops prices incorporate only short-term or very-short-term business prospects. In both bull and bear markets sell side analysts do not estimate target prices based on absolute values and only issue views based on relative valuations obtained through multiples. This translates into:

a) a greater reaction of market prices to events with only temporary effects;

b) markets falling more easily under the sway of irrational factors (speculative bubbles);

c) higher market price volatility compared to the intrinsic value of the same assets.

When called upon to estimate intrinsic value, in the presence of a substantial difference between intrinsic value and market price, the business valuer must in any case be able to explain the main reasons, as price (even if it is formed in a fundamentally inefficient market) constitute solid external evidence. In that respect, attention is called to the reverse engineering techniques that, starting from the consensus of the equity analysts who follow the company and the current market price of its share, derive the drivers implicit in the valuation. It is up to the business valuer to explain convincingly which drivers should not be reflected in the intrinsic value (as they have no fundamental support) and which should instead be considered also in intrinsic value.

SG:

The difference between value and price is the cornerstone of most valuation exercises. For listed companies, this delta justifies the existence of value investors (that try to exploit it in order to get a return), while the traders tend to be less reliant on the fundamental value concept (being just one driver of the potential performance). Furthermore, in situations where the company is not listed, the reference to quoted peers or to transactions of similar firms is not necessarily aligned with its intrinsic value. With an

obvious oversimplification, we can say that the value is based only on fundamentals (profitability, growth and risk), while the price can be affected by a lot of other drivers (demand and supply conditions, mood, narratives, liquidity, short term flows, technical and many others). Let's try to separate the two concepts looking at what factors I consider in discriminating between value and market price. We've seen that in order to build a sound valuation process, we need a solid and granular set of data in terms of historical and estimated parameters (accounting, macro/sector/business drivers, company's secondary information) and a coherent and consistent process in order to allow us to properly model the forward looking fundamentals and calculate what we think is the more reasonable value of the asset. This value will depend on our estimates of revenues, margins, cash flows, growth, profitability, operational and financial risks, adjusted for the cost of risk in investing in the specific asset (it's a net present value of future results). When we look at the price of a listed asset instead, we need to consider a lot of other factors that not necessarily affect the fundamentals of the company. To name a few of those factors, I would underline: any potential information asymmetry between buyers and sellers, the current situation of supply and demand of that specific stock (for reasons not linked to any fundamental changes), incremental information (news, stories, rumors) that can shift the mood in the short term without necessarily affecting any value driver, technical indicators that can drive a price move, the role of the so called factor investing (typically quantitative algos that use to trade on some specific characteristics like the level of multiples, recent price or earnings momentum, growth or quality characteristics, size etc.) that is gaining more and more share of daily trading in equity markets, geo-political situations that are unlikely to affect the fundamentals, the holding period on which the trade - buy or sell - is based (value tends to be much more stable than price), the prominent role of narratives that contribute to the success of a story in the market through thematic investing and the liquidity of the stock traded (we discussed the liquidity premium, that in particular circumstances can affect the market price in a significant way).

ET:

In our opinion, a key value driver for the derivation of the intrinsic value for an asset is based on its ability to generate cash flows for investors. Price/market value does not always fully consider this element and is also subject to volatility of markets. It is an outcome of the economics of demand and supply based on the dynamics of the buyers' and sellers' willingness to transact for the asset.

10. Business model analysis and valuation

In valuing a business do you consider the obsolescence of the business model? How do you integrate the business model analysis with the traditional valuation analysis?

TA:

I am not sure what is meant here by "Business Model". If, for instance, this means changes in the nature of the way entities conduct business over time (e.g. Retailers use of "brick and mortar" stores vs. the internet to distribute their products), then I would say that I definitely consider whether an entity is pursuing an "antiquated" strategy that may imperil its competitive advantage. Typically, I would assume that competent management would eventually gravitate toward a strategy that maintains competitive advantage, but if the current model is out of date, then there would be reorganization costs to consider in the valuation analysis, in order for the entity to realign its strategies to maximize competitive advantage. If it means something else, I cannot provide an answer.

WB:

The consideration of the obsolescence of the business model is necessary, when obsolescence is plausible and probable. Technical or regulatory changes or disruptions may be reasons for obsolescence. One way of integration may be scenario analysis.

MB:

In my opinion a valuation is of good quality if the business valuer has been able to understand the business model, the success factors (value proposition and profit formula) and the related obsolescence risks. Understanding these elements is paramount to translate them into enterprise value. Investors in shares buy a business and do not just make a financial investment.

However, it is necessary to explain what "business model" means. A business model is a blueprint of the modus operandi adopted to generate revenue and profit. It can be depicted through six main profiles:

1. value proposition;
2. market segments served and the spectrum of activities performed;
3. model to generate revenue;
4. cost structure;
5. positioning in the value chain;
6. types of assets (and capital intensity).

Every business is characterized by revenue, costs, assets and liabilities and every business buys inputs from the outside, which it then processes to produce an output that is sold in the market. However, the business model adopted determines the interrelations among these variables and, consequently, the cash flow conversion cycle. If the business is regarded as management's effort to create value by generating cash inflows in excess of cash outflows for the use of the resources employed, the cash conversion cycle pro-

vides an understanding of how the business model works, the risks to which it is exposed and the business's growth prospects.

An example is a company that incurs higher costs to provide better quality services to its customers (= value proposition). We assume also that the value proposition is successful and the company's revenue grows faster than that of its peers, given the same number of new customers acquired, due to greater customer loyalty compared to the competition.

Business model analysis is based on non-financial metrics. In the example of the firm that intends to develop customer loyalty, the key metrics are the customer churn rate, the rate of acquisition of new customers, acquisition cost per customer and retention cost per customer. These metrics explain the company's profit formula as reflected by revenue growth, return on sales and invested capital turnover.

Every business model has its strengths and weaknesses and can be more or less successful. Thus, the business model defines the value proposition of the company and how the company is structured to provide that value proposition to its target market. The success or failure of a business is explained by non-financial metrics and confirmed by financial metrics.

The business valuer must be capable of depicting the business model (i.e. the idea behind the business) and management's execution of that idea through key non-financial metrics, the cash flow conversion cycle and the profit formula. Valuation is all about translating these metrics into enterprise value.

In my experience, business model analysis is the heart of fundamental analysis. If the business valuer does not understand the business model he cannot interpret the company's performances and translate them into value, simply because he cannot appraise its risks and growth potential (business model scalability) of the company to be valued.

Business model analysis does not require sector specialization. In my experience, the greater the exposure of the business valuer to different sectors the greater his ability to grasp the risks related to the introduction of new business models by potential new entrants in the industry or by start-ups capable of combining in different ways competencies and talents already present in the industry.

SG:

Since the contributions of Porter, Rappaport and others emerged in the 1980s, the strategic analysis started to be incorporated in the valuation process. The inter-link between strategy and management practices with finance theory meets two different needs: from one side, the company itself starts to consider the economic value creation for its stakeholders as a prominent target of its own existence, from the other the economic value of invested capital is not

only something to analyse in specific circumstances (IPOs, M&A) or a prerogative of listed firms, but becomes part of the "daily language" in any analysis of corporate performance. That means that in valuing a company the competitive situation, the soundness of the business model, the reliability of the firms' strategy, the risk of its execution and the state of the art of the company's resources (both material and immaterial) are fundamental pillars of a solid process. When approaching a valuation I always start from some simple questions: how does the firm make money? What are the strengths and weaknesses of the strategy? What is its competitive position within the sector? What is the set of resources, tangible and intangible, on which it relies? Understanding the way in which the business produces its economic results is often given for granted, but in my experience the degree of knowledge the valuer shows can be sometimes relatively superficial, and the belief that "if I have a model, I can value everything" is not that uncommon. First of all, I start from the sector analysis, trying to determine its attractiveness: number of competitors and their rivalry, potential new entrants, uniqueness of the products/services sold, pricing power versus clients and suppliers, economies of scale and scope, legal/regulatory framework, growth opportunities and potential to increase penetration. A second necessary step is the focus on what the company does better or worse than competitors and why: is there any competitive advantage on which the current strategy can rely on? Is it the focus on cost or on differentiation? In this phase, focusing on the typical value chain of the firm and the sector in which it operates can be extremely helpful. The third layer of analysis is the resource assessment: does the company own unique resources compared to peers? Are they tangible or intangible? What is their risk of obsolescence? How much capital does it need to protect and renew them? Adding to that a proper focus on the obsolescence of the products and skills compared to the degree of variability of the external and internal factors is usually a strong tool to set-up a coherent risk-adjusted framework from which I build my estimates. The focus on the state of the cycle (early stage-development-maturity-decline) is another powerful lens through which I run the valuation. After the competitive and strategic analysis is done, all the information needs to be linked to the quantitative set-up we use to calculate the economic value. As an example, if the company generates most of its operating return from a high operating margin, it's probable that it relies on some sort of consumer advantage (high costs of switching or searching for substitutes versus the habitual current use), while if most of the return comes from a high turnover it's more likely that we are in a situation of product advantage (privileged access to some inputs or proprietary technology difficult or

expensive to imitate). Another topic that needs to be qualified with the strategic analysis of the business model is typically the CAPEX evolution. All future investments can come from reinvested capital or from new resources (externally financed). If the competitive dynamics of the sector and the current state of company's resources are reasonably similar to the past, looking at a normalized historical level can be a good solution otherwise a different evolution of investment level needs to be considered. All the information we put together with the business model analysis will be used to support the estimates necessary for the valuation model: growth, margins, cash flows, capital needs, risks and sustainability of competitive advantage period.

Valuing a business is not only a financial modelling exercise.

ET:

It is important to engage in discussions with the management as they are at the best position to ascertain if there is any obsolescence of the business model. External research should also be performed to assess if there is any indication of obsolescence. If there is, it should be reflected in the explicit forecast cash flows and explicit forecast period.

Conversely the discount rate determined to discount this set of forecast cash flows must match the riskiness of the forecast cash flows; that is, more uncertain cash flows should be discounted at a higher discount rate, possibly with alpha adjustments.

The limits of accounting rates of return and the calibration trap in applying accounting-based models in modern business valuation practice

Matthias Meitner - Felix Streitferdt - Maximilian Levasier

Accounting-based terminal value models - such as the Value-Driver-Model - require accounting rates of return as an input for determining the model-relevant long-term growth rate. Accounting rates of return are calculated as a ratio of accounting earnings over an accounting-based capital measure. However, they equal economic rates of return only under very specific circumstances. In particular, the existence of a larger amount of (non-capitalized) intangibles regularly leads to non-negligible differences between the two kinds of rates of return. As valuation professionals usually approach terminal value models from an economic perspective, and as our modern business world is more and more driven by intangibles, there is big risk of miscalibration of accounting-based terminal value models in practice.

1. Introduction

International financial reporting systems such as US-GAAP and IFRS have been continuously refined over the last years. E.g., the International Accounting Standards Board (IASB, the body responsible for the development of IFRS) just recently finished its big, multi-year update cycle with new rules on revenue recognition, leasing, financial instruments and insurance contracts now in place. In future it is time for the standards board to tackle some of the more general reporting challenges: For the next months, the treatment of so-called non-GAAP measures (performance measures which companies see as decision useful but which do not follow GAAP) and the big topic of non-capitalizable, but economically relevant intangible assets.¹ This latter topic touches the problem that financial reporting systems cannot – for mostly good reasons – bring all economic assets, such as e.g. brands, network effects, customer relationships, know-how, research or high-quality data sets, etc. onto the balance sheet.

This intangibles problem is seen as one of the biggest challenges of modern reporting systems. In the literature this point is sometimes even seen as unsolvable and as a trigger for the death of financial reporting as we know it today.² The authors of this article do not want to go that far but they acknowledge the necessity for a sound solution to this problem.

The intangibles problem is not new at all, it has rather always been part of conservative accounting systems. But it gains a lot of additional relevance every

day in our modern world which moves at an increasing speed towards a more and more intangibles- and services-driven one. The practical impact of this problem is not only restricted to the pure analytical context – i.e. the question whether the basic idea of IFRS, the decision usefulness, can still be maintained – but also highly relevant for the application within some of our well-known business valuation models.

In this article, we want to shed some fresh light on the nature of accounting rates of return and on how they feed into accounting based valuation models – in particular vis-à-vis the development of the modern business environment. As this is a highly practical issue, this contribution does not follow a pure theoretical approach but rather focuses in its core on decision-maker-relevant aspects. For reasons of simplicity and focus, we abstract from any debt financing and taxation issues in this paper. The findings can, however, easily extended to a setting which includes financing and tax effects.

The structure of the article is as follows: After a short overview of the development of the value relevance of accounting in general in recent years (section 2), we will show the consequences of this development for the derivation of accounting-based performance measures such as accounting rates of return in section 3. In section 4 we shed light on why it is quite problematic in today's business environment to apply valuation models that use accounting performance measures as an input, and why we see so many practitioners falling for the “calibration trap” when using these models.

¹ See the interview with Hans Hoogervorst, Chairman of the IASB on 20 June 2019: <https://www.ifrs.org/news-and-events/2019/06/strengthening-the-relevance-of-financial-reporting/>

² See e.g. Lev/Gu (2016), *The End of Accounting*, Hoboken.

And finally, in section 6 we provide some solutions on how to solve the problem associated with this calibration trap. The summary in section 7 rounds off this article.

2. Challenges of Financial Reporting in a Modern Business Environment

US-GAAP as well as IFRS are reporting systems that are based on the idea of accounting conservatism. Conservatism is not at all a new characteristic of reporting systems. It has already been applied in certain reporting systems in the medieval period³, and a 1924 explanation of conservatism as “anticipate no profit, but anticipate all losses”⁴ is still a good description for certain specifications of accounting conservatism today.

Today, we usually differentiate in two sub-forms of accounting conservatism:⁵ a) conditional conservatism, which rather targets the timeliness of the recognition of positive vs. negative news in the income statement⁶ and b) unconditional conservatism, which clearly focuses on the recognition and measurement of assets vs. liabilities in the way that net assets are systematically understated on the balance sheet.

It is this latter, unconditional specification of accounting conservatism – which by the way stands against the academic ideal of an “unbiased accounting system”⁷ – that is of particular interest for this paper. The conceptual background idea for the application of unconditional conservatism is the clear wish of standard setters to prevent an overstatement of asset values, combined with the observation that the risk of asset value overstatement increases with increasing management discretion (if no rules would prevent it).⁸ Therefore, unconditional conservatism and its consequences for practical application – i.e. rather low book values of assets as compared to economic

values or even no recognition of some assets on the balance sheet at all – are particularly relevant in cases where the degree of management discretion for valuation is high, e.g. for certain intangible assets. While unconditional conservatism is perfectly tolerable from a practical reporting application point of view, it is also quite plausible that higher conservatism often comes along with lower (economic) value relevance of accounting figures⁹ or at least with some additional analytical challenges for investors.

In terms of business trends, recent years (even decades) have seen a tendency towards a more and more intangibles-driven environment. Studies, such as from the European Central Bank¹⁰, highlight the growing investments in intangible assets as percent of total investments. Additionally, the ratio of (research & development plus selling, general and administrative expenses) as a percentage of revenues has strongly increased over the last years.¹¹ As a consequence of this tendency, the degree of accounting conservatism has also increased over the years.

³ See Basu (1997). The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics* 24, 3-37.

⁴ Bliss (1924). *Management through Accounts*, New York.

⁵ See Beaver/Ryan (2005). Conditional and Unconditional Conservatism: Concepts and Modeling. *Review of Accounting Studies* 10, 269-309.

⁶ See also Basu (1997). The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics* 24, 3-37, for this definition.

⁷ See Feltham/Ohlson (1995): Valuation and Clean Surplus Accounting for Operating and Financial Activities, *Contemporary Accounting Research* 11, 689-731; Feltham/Ohlson (1996): Uncertainty Resolution and the Theory of Depreciation Measurement, *Journal of Accounting Research*, 34, 209-234. An unbiased accounting system is one where market values on average equal book values.

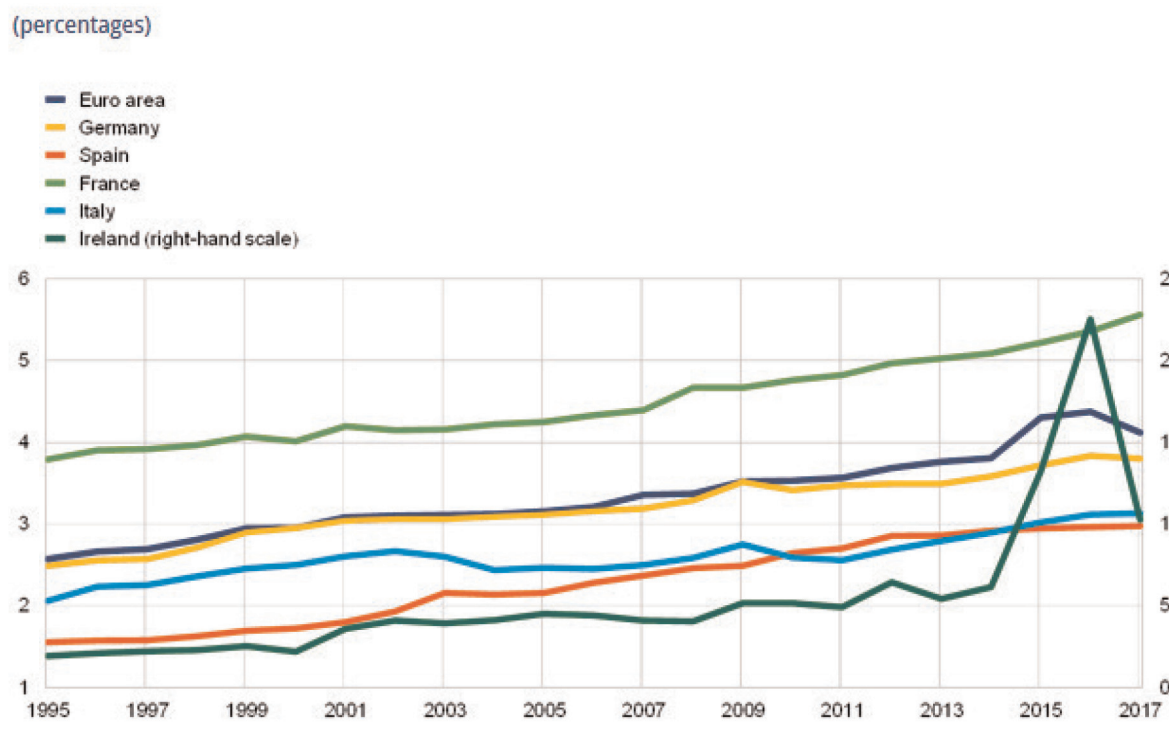
⁸ See Watts (2003). Conservatism in Accounting part I: Explanations and Implications. *Accounting Horizons* 17, 207-221.

⁹ This is also often supported by academic evidence, e.g. Lev/Zarowin (1999). The boundaries of financial reporting and how to extend them. *Journal of Accounting Research* 37, 353-385, found that more

R&D on the balance sheet comes along with a decline in value relevance. Ciftci/Darrough/Mashruwala (2014), Value relevance of accounting information for intangible-intensive industries and the impact of scale: The US evidence. *European Accounting Review* 23 (2), 199-226, could also find a strong negative relationship between intangibles heaviness and value relevance of accounting numbers. This observation can also be made with regard to conditional conservatism, see Thijssen/Willem/latridis, 2016, Conditional conservatism and value relevance of financial reporting: A study in view of converging accounting standards, *Journal of Multinational Financial Management*, 37, 48-70. However, Balachandran/Mohanram, P. (2011). Is the decline in the value relevance of accounting driven by increased conservatism? *Review of Accounting Studies* 16 (2): 272-301, could not detect a clear relationship between conservatism and value relevance.

¹⁰ See Figure 1, Source: ECB Economic Bulletin, Issue 7/2018.

¹¹ See Srivastava (2014) Why have Measures of Earnings Quality Changed over Time? *Journal of Accounting and Economics*, 57, 196-217, Lev/Gu (2016), *The End of Accounting*, Hoboken, 89. These are the positions in the income statement where spending for intangibles is usually hid due to accounting conservatism.

Figure 1: Intangible investment as a percentage of total investment

Sources: Eurostat and ECB calculations.

Notes: Here, "intangible investment" refers to intellectual property products included in the national accounts. Volatility in Irish and Dutch data, which is mainly due to intellectual property-related transactions conducted by large multinational companies, makes a significant contribution to fluctuations in euro area data.

It is this combination of both effects (lower value relevance of accounting figures vis-à-vis increasing accounting conservatism) that brings a lot of challenges to investors in these days. In fact, it gets more and more difficult to draw conclusions or get an understanding for the value of a business simply based on accounting numbers. The concrete forms of these challenges and problems can be very well observed in general in the determination of certain performance measures such as accounting rates of return and in particular in the application of well-known accounting based business valuation models. This will be analysed in the following sections.

3. Modern Firms and Accounting vs. Economic Rates of Return

3.1. Ideal Accounting System

One desirable aspect of real-world accounting systems is that it is possible to determine – based on information from this accounting system – rates of return that equal the economic rates of return (here economic rates of return are defined as the relative periodical change in economic value of a particular investment). In this context it can be shown that in particular two requirements of the reporting system are necessary in order to allow the proper application of such a performance measurement based on accounting figures by using simple ratios of the general form $\frac{\text{earnings}}{\text{capital}}$ ¹²:

- Initial recognition: all economic assets have to be initially recognised on the balance sheet at their original cost.

- Carrying valuation: the depreciation and amortization technique has to follow the so-called relative ben-

¹² See, Meitner (2013), Multi-Period Asset Lifetimes and Accounting-Based Equity Valuation: Take Care with Constant-Growth Term-

inal Value Models!, Abacus 49 (3), 340-366.

efit depreciation schedule¹³ which ensures that periodical value changes in assets follow an economic path.

Below, we provide an example that highlights the identity of accounting rates of return and economic rates of return in a steady state setting. All numbers base on an annually repeating project with the following cash flow stream paid in arrears (Internal Rate of Return of the project is 10%):

Table 1: Standard Project

Time	t=0	t=1	t=2	t=3
Investment	-100			
Revenues minus periodical cash costs		39.47	40.26	41.06

Here the development of net cash flows in period 1 to 3 is set in a way that these cash flows are growing at a constant rate of $g=2\%$ which equals the inflation rate in our example. This also implies that the initial investment grows at the rate $g=2\%$ from one project to the next.

Table 2: Full Recognition of Assets

	-4	-3	-2	-1	0	1	2	3	4	5	6
Revenues ./ Cash Costs		39.47	80.51	123.19	125.65	128.16	130.73	133.34	136.01	138.73	141.50
Depreciation & Amortization		-33.33	-67.33	-102.01	-104.05	-106.13	-108.26	-110.42	-112.63	-114.88	-117.18
Net Income		6.13	13.18	21.17	21.60	22.03	22.47	22.92	23.38	23.84	24.32
<i>g</i>			114.9%	60.6%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Capex	-100.00	-102.00	-104.04	-106.12	-108.24	-110.41	-112.62	-114.87	-117.17	-119.51	-121.90
Net Assets	100.00	168.67	205.37	209.48	213.67	217.94	222.30	226.75	231.28	235.91	240.63
ROE		6.13%	7.81%	10.31%	10.31%	10.31%	10.31%	10.31%	10.31%	10.31%	10.31%
ROE (relative benefit depreciation)		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%

In Table 2 there is a ramp-up phase necessary until the steady-state is reached. Here, net assets are defined as gross assets minus cumulated depreciation & amortization. The useful life of assets equals the project length, i.e. 3 years. Furthermore RoE is calculated as follows $RoE = \frac{NI_t}{B_{t-1}}$ with B being the book value of net assets and NI the Net income. Be aware that the Depreciation in $t=-2$ is not equal to 66.67 because the second project already needs an initial investment of 102 and is depreciated with 34 per annum. Therefore the total depreciation in $t = 2$ is 33.33 for the first machine plus 34 being equal to 67.33, and so on.

Due to the bias in periodical value adjustments induced by the straight-line method of depreciation, ROE is at 10.31% slightly higher in the steady-state than the economic rate of return (here the internal rate of return of 10%). However, if we applied a depreciation & amortization schedule according to the

relative benefit depreciation schedule, the calculated RoEs would exactly equal the economic rates of return.

3.2. Impact of non-capitalized Intangibles on Performance Measurement

In a variant of the above example we now assume that the company still goes for the same set of investment projects in cash flow terms but that the accounting system does not allow to recognise all economic assets on the balance sheet. It is highly important to note that nothing has changed in economic terms here, the projects are still the same and also the internal rate of return remains at 10%.

This new assumption is designed to show the effects of the already mentioned non-capitalization of certain intangibles. It makes our example more realistic as it brings it closer to the real-world proceeding in IFRS or US-GAAP (but also many national GAAP). Below, we assume that 50% of the initial investment will immediately be expensed through the profit & loss statement.

¹³ See Reichelstein (1997): Investment Decisions and Managerial Performance Evaluation, in: Review of Accounting Studies, 2, 157–180. Due to its forward looking character the relative benefit depreciation

schedule is usually not reasonably applicable in accounting practice.

Table 3: Partial Recognition of Assets

	-4	-3	-2	-1	0	1	2	3	4	5	6
Revenues ./ Cash Costs (original)		39.47	80.51	123.19	125.65	128.16	130.73	133.34	136.01	138.73	141.50
./ Immediately expensed investments into economic assets	-50.00	-51.00	-52.02	-53.06	-54.12	-55.20	-56.31	-57.43	-58.58	-59.75	-60.95
Depreciation & Amortization		-16.67	-33.67	-51.01	-52.03	-53.07	-54.13	-55.21	-56.32	-57.44	-58.59
Net Income	-50.00	-28.20	-5.17	19.12	19.50	19.89	20.29	20.69	21.11	21.53	21.96
<i>g</i>			-81.7%	-469.6%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Capex	-50.00	-51.00	-52.02	-53.06	-54.12	-55.20	-56.31	-57.43	-58.58	-59.75	-60.95
Net Assets	50.00	84.33	102.69	104.74	106.84	108.97	111.15	113.37	115.64	117.95	120.31
ROE		-56.40%	-6.13%	18.62%	18.62%	18.62%	18.62%	18.62%	18.62%	18.62%	18.62%
ROE (relative benefit depreciation)		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%

In Table 3 one can see that e.g. in period 1 the original capex from Table 2 (110.41) is now split into a capex part of 55.20 plus an immediately expensed part of also 55.20. Even though from an economic point of view the whole amount of 110.41 are assets, only 50% of this number generates assets from an accounting point of view.

In this steady state analysis of this not-full-capitalization example, we can now see that the accounting rates of return are at 18.62% much higher as compared to the original ideal accounting system example. The reason for this effect is that the performance measure (here: Net Income; the numerator in the ROE ratio) is only mildly affected by this change – e.g. in year 0 at 19.50 vs. 21.60 before – as immediate expenses are just substituted by (lagging) amortisation charges.¹⁴ However, in contrast, the amount of capital recognised (here: book value of equity; the denominator in the ROE ratio) is much lower than in the previous example. Or putting it differently: From an accounting point of view, now only 50% of the assets are needed to generate an almost comparable income as in Table 2. An analytical translation from accounting rates of return in a full-capitalization setting to a partial-capitalization setting can be found in the appendix.

With this higher level of accounting rates of return obviously also the distance to the economic rates of return of still 10% increases. In fact, in the example case it is no longer possible to even roughly infer the economic rates of return from the accounting rates. Hence, without any information on the concrete amount of non-capitalized spending – which would

allow a recalculation – no reasonable conclusion on the profitability of the company's projects is possible.

In this context, it is also worth noting that this positive deviation of accounting rates of return from economic rates of return is something that we can see on a regular basis in steady-state analyses of real world accounting systems. It is also something that we can observe in non-steady-state settings for companies that are somewhere in the middle of their life cycle or even mature (basically for the most part of publicly listed companies). However, for fast growing and young companies which are still in the phase of massively and increasingly building up non-capitalized intangibles we can sometimes observe that the negative numerator effect (earnings are lower because of the high amount of immediately recognised expenses) dominates the negative denominator effect which leads to accounting rates of return being lower than economic rates of return. This has been the case e.g. for Google in its earlier days.¹⁵

3.3. Unobservability of Performance Causes

Looking at the not-full-capitalization example from the previous section again, there is an important conclusion to draw. In fact, for an analyst it is not possible to understand from the raw numbers whether the company a) really builds up economic assets on a sustainable basis – which it might support by future economic investments but which will remain assets also in the long-run – or b) is temporarily outperforming with no real sustainable assets that back its performance (and that might fade away over a shorter or longer competitive advantage period (CAP)).

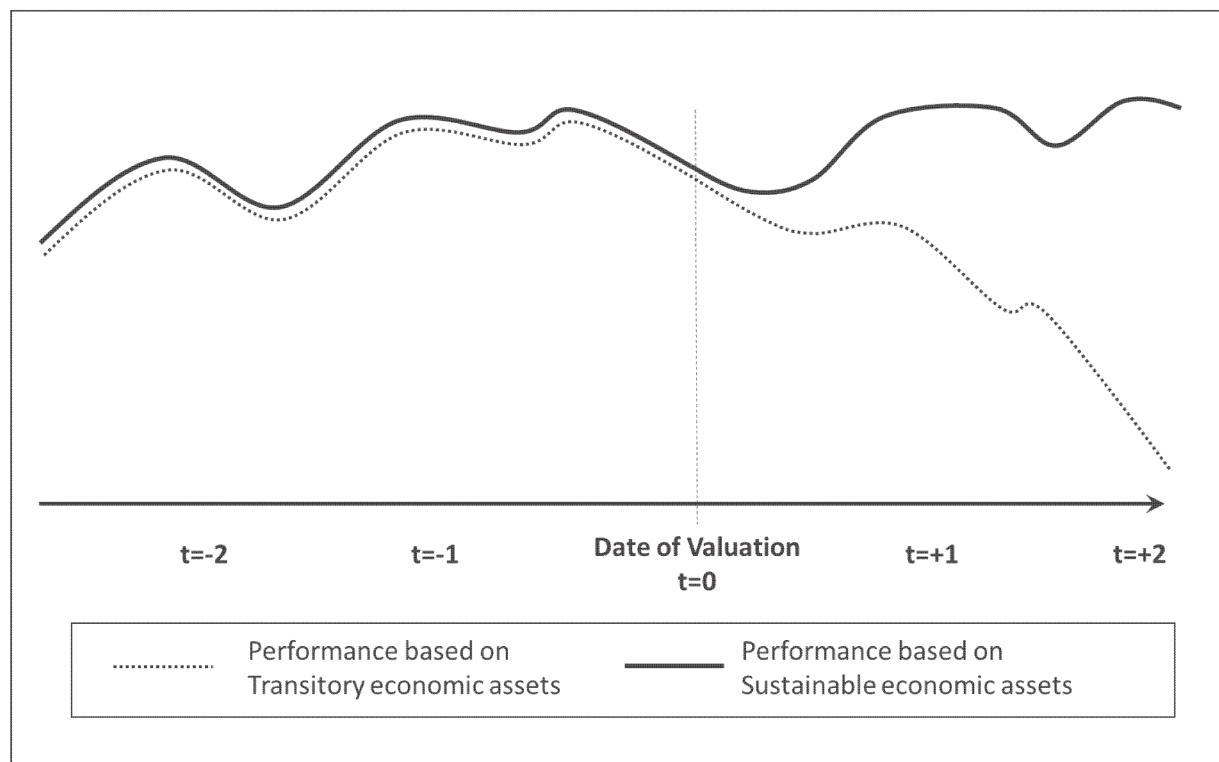
¹⁴ This lag in recognition in a growing business environments leads to amortization charges being slightly lower than the immediate expenses in the full-capitalization example.

¹⁵ See Lev/Sarath/Sougiannis (2005), R&D Reporting Biases and their Consequences, Contemporary Accounting Research, 22, 977-1026.

I.e., a company that shows the accounting patterns depicted in Table 3 might do this a) because certain sustainable economic assets cannot be found on the balance sheet because of accounting restrictions or b) simply performs this way because of some temporary, transitory business assets. These temporary business

assets can be first-mover advantages (or certain effects thereof), temporary market inefficiencies, etc.¹⁶ They might disappear over time and will not provide any support for the future long-term cash flow generation and profitability.

Figure 2: The Unobservability Puzzle of Performance Reasons



This unobservability of performance causes might not look very material for analysis reasons at first glance. However, it is a massive problem for investors or other parties being interested in the valuation of companies. This is the cases because the question about the real nature of the company's performance determines the future development of cash flows and hence the value of the company. If these assets are only transitory, then future cash flows will be lower compared to a situation where the assets are sustainable in nature.

The unobservability puzzle can only be resolved by fundamental analysis which goes beyond the raw accounting numbers. This issue highlights the big (and increasing) limits of pure accounting numbers for making forecasts on future accounting numbers or cash flows.¹⁷

For clarification, it is also not observable without a

deeper analysis whether the capitalized assets – both intangible and tangible – are sustainable in nature. But due to accounting rules (recognition only when they fulfil much stricter criteria), these assets are sustainable at much higher probability than the non-capitalized economic assets discussed above. While we are aware of this issue also potentially being relevant in practice, we abstract from it here in our analysis to allow full focus on the core problem of the article.

4. The Accounting Based Value Driver Model in a Modern Environment

4.1. Model Structure

The Accounting Based Value Driver Model (VDM)

¹⁶ We assume here that any performance requires certain economic assets as a support, even if they are only very short-term in nature. There are other opinions on this issue amongst investors (e.g. that a temporary outperformance does not require any assets to support it) but the concrete reasons for transitory performance are not relevant for the

central findings of this article.

¹⁷ See Lev/Li/Sougiannis (2010), The Usefulness of Accounting Estimates for Predicting Cash Flows and Earnings, Review of Accounting Studies, 15, 779-807.

that goes back to the works of Gordon and Shapiro¹⁸, also very prominently supported by consulting firm McKinsey, is quite simple in its structure, although it is often derived in quite complex terms in some publications. We shortly explain all that is necessary to understand this model below.

First it is assumed that the accounting system suffices the so-called clean surplus relation (CSR):

$$B_{t+1} - B_t = NI_{t+1} - D_{t+1}$$

which means that all changes in the book value of equity B are due to either net income from the profit &

$$TV_0 = \frac{D_1}{k - g} = \frac{D_1}{k - \frac{B_1 - B_0}{B_0}} = \frac{D_1}{k - \frac{NI_1 - D_1}{B_0}} = \frac{D_1}{k - \frac{NI_1}{B_0} \cdot \frac{NI_1 - D_1}{NI_1}} = \frac{D_1}{k - \frac{NI_1}{B_0} \cdot (1 - q)} = \frac{NI_1 \cdot q}{k - RoE \cdot (1 - q)}$$

Here k is the cost of equity, $q = \frac{D_1}{NI_1}$ is the constant pay-out ratio of net income (which also leads to $\frac{D_{t+1}}{D_t} - 1 = g$), and the return on equity $RoE = \frac{NI_1}{B_0}$ is an accounting rate of return.²² Voilà the VDM.

4.2. Calibration Trap

From the derivation of the VDM above it becomes

$$TV_0 = \frac{NI_1 \cdot q}{k - RoE \cdot (1 - q)} = \frac{22.03 \cdot 80.60\%}{10\% - 10.31\% \cdot (1 - 80.60\%)} = 221.93$$

Here, the pay-out ratio q is determined for t=1 numbers by:

$$q = \frac{\text{available cash flow for pay - out}}{\text{Net Income}} = \frac{\text{Revenues} - \text{Cash Costs} - \text{Capex}}{\text{Net Income}} = \frac{128.16 - 110.41}{22.03} = 80.60\%$$

loss statements NI or transactions with shareholders (here for reasons of simplicity defined as dividends D).¹⁹

In a steady state²⁰ equity should earn a stable rate of return which demands that net income and the book value of equity have to grow at the same rate g^{21} , i.e.

$$\frac{B_{t+1}}{B_t} - 1 = g \text{ and } \frac{NI_{t+1}}{NI_t} - 1 = g.$$

Further assuming that the Dividend Discount Model applies and setting $t=0$, we can write for the terminal value TV:

clear that the assumed growth rate is a function of the plow-back ratio $(1 - q)$ and the accounting (sic!) rate of return. Hence, for our original example (Table 2), the VDM applied for valuation in $t=0$ (setting the cost of equity equal to the economic rate of return of 10%) gets us to:

¹⁸ See Gordon/Shapiro (1956): Capital Equipment Analysis: The Required Rate of Profit. In: Management Science, 3, 102-110.

¹⁹ In fact, real-world accounting systems do not follow the CSR in a strict way. E.g. in IFRS-accounting there are certain changes in book equity which take place outside the profit & loss statement and company-owner-transactions, such as changes in actuarial assumptions for pension liability accounting, certain currency effects, etc. They are accounted for in an equity subaccount called "Other Comprehensive Income" (OCI). But in valuation, these violations of the CSR are usually not meaningful as they rarely are considered in forecasted financials and hence usually do not impact our valuation models. Moreover, the VDM also works without the CSR under certain conditions which are not closer described here.

²⁰ Steady-state in economic and accounting terms. The requirements for an accounting steady state are quite strict, see Meitner (2013): Multi-Period Asset Lifetimes and Accounting-Based Equity Valuation: Take Care with Constant-Growth Terminal Value Models!,

Abacus 49 (3), 340-366, and Knoll (2016): Continuing Value in Disunion: Steady State or Value Neutrality?, Corporate Finance, 7, S. 33-34. They are rarely fulfilled in practical valuations when it goes into the terminal value phase. But we do want to put too much stress on this here.

²¹ See Chiang/Wainwright (2005): Fundamental Methods of Mathematical Economics, 4th Edition, 501.

²² In a strict sense it is the return on retained earnings, sometimes also called return on new equity RoNE, that is needed here. But as our analysis is based on a collection of a repeated standard project, we do not have to make this distinction clear here. In a practical setting, however, this distinction is highly important – not only for decision values but also in appraisal settings such as e.g. the proceeding according to valuation recommendations for specific reasons of the IDW (Institut der Wirtschaftsprüfer in Deutschland; Institute of Public Auditors in Germany), see IDW Standard 1: Principles for the Performance of Business Valuations (IDW S 1) 2008, recital 37.

Take care to use the accounting rate of 10.31% here as an input for application of the VDM.

If we now move into the setting of Table 3 above – further assuming that the economic assets build-up

outside of the balance sheet are sustainable in nature – and value the company at time 0, we get based on the VDM:

$$TV_0 = \frac{NI_1 \cdot q}{k - RoE \cdot (1 - q)} = \frac{19.89 \cdot 89.26\%}{10\% - 18.62\% \cdot (1 - 89.26\%)} = 221.93$$

These calculations are also equal to a direct flow to equity (FTE) based valuation of the form $TV_0 = \frac{FTE_1}{k-g}$:²³

$$TV_0 = \frac{FTE_1}{k - g} = \frac{128.16 - 110.41}{10\% - 2\%} = \frac{17.75}{8\%} = 221.93$$

The important point is here that it is the accounting rate of return that feeds into the VDM (i.e. 10.31% in the Table 2 setting and 18.62% in the Table 3 setting), not an economic rate of return. Hence, despite these optically high rates of return, in the valuations above we assume that operating projects do not generate an outperformance but rather perform exactly at the cost of equity in economic terms (remember: the economic rate of return equals the cost of equity [10%]) – they are net present value (NPV) neutral and create no outperformance. This finding is so important that we want to repeat it here: For assumption of NPV neutrality of investments from plowed-back earnings, it is necessary to include the accounting rate

of return into the VDM. This rate might differ materially from the economic rate of return as we have already shown above without any value being created or destroyed.

Despite the relatively clear structure of the VDM, in practical valuation settings we often observe a completely different calibration of this model. In real life, valuers who want to map NPV neutrality for retained earnings feel regularly forced to set the RoE equal to the cost of equity in pure quantitative terms (we admit that this tempting if one takes a superficial look at the formula for the VDM). I.e. they calibrate the VDM in the setting of e.g. Table 3 as follows:

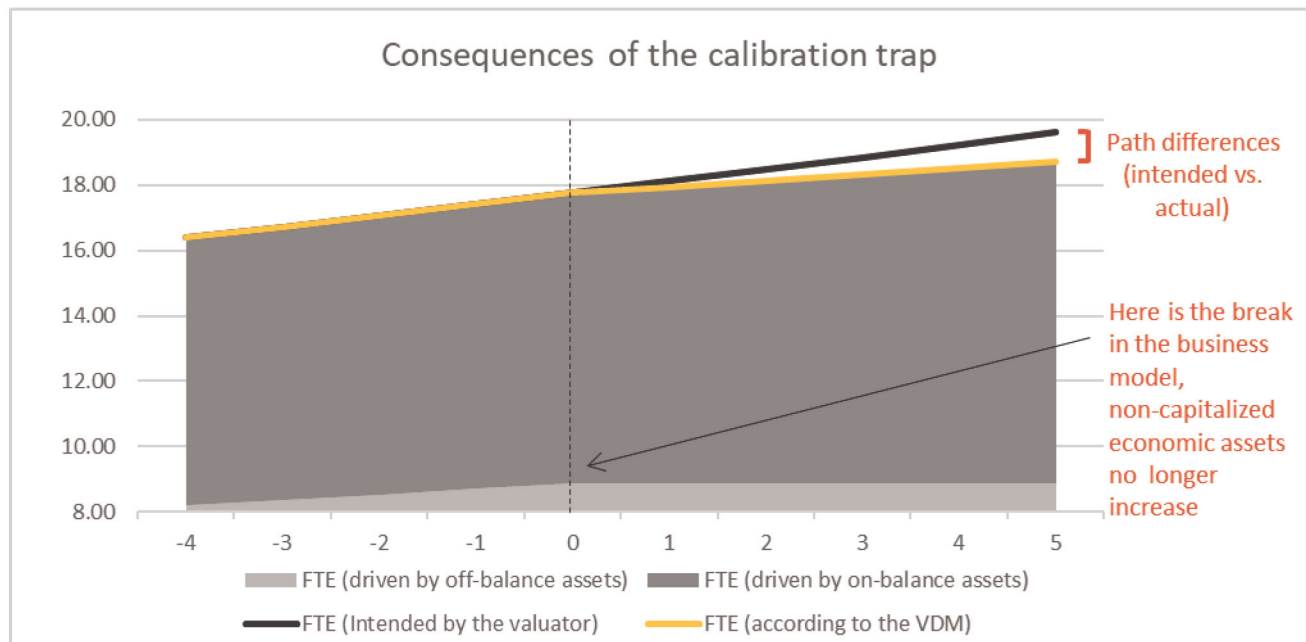
$$TV_{0,false} = \frac{NI_1 \cdot q}{k - ERR \cdot (1 - q)} = \frac{19.89 \cdot 89.26\%}{10\% - 10.00\% \cdot (1 - 89.26\%)} = 198.91$$

Here, ERR equals the economic rate of return, i.e. 10%. Obviously this false application of the ERR in the VDM leads to a much lower value. And it is quite interesting to see which implicit economic assumption the valuator makes if he calibrates the model this way. In fact, when putting the ERR instead of the accounting rate of return into the VDM, valuers implicitly

assume that any spending that generated historical growth of the non-capitalized economic assets immediately stops at time of valuation. The company does not build up any further non-capitalized economic assets – but it still keeps its level of total spending. It basically totally changes its business model! This is shown in Figure 3 below.

²³ Here full pay-out of Flows-to-Equity is assumed, i.e. $FTE = D$.

Figure 3: The Calibration Trap



Obviously falling for this calibration trap can lead to massive mis-valuations²⁴ of the company if in fact these economic assets exist, are sustainable in nature if supported by future spending and are part of the core business model of the company – similar to the assets that we can see on the balance sheet.

Of course, it could also be that behind the setting of RoE equalling the cost of equity in pure quantitative terms stands the active assumption that the economic assets indeed stop being assets at the time of terminal value calculation. In this case, the calibration is absolutely ok (but then this massive break of the business model at the time of terminal value calibration should clearly be described in the comments relating to the valuation).

5. Possible Solutions to the Calibration Trap

5.1. Using transformed Accounting Rates of Return

From the explanations above, it clearly seems as if the easiest way for dealing with the problem of the VDM calibration trap is to apply the transformed accounting rates of return as a variable input into the model. It admittedly works, but comes along with several problems in valuation practice.

If a valuator wants to know e.g. what the transformed accounting rate is for implying a NPV neutral

investment of retained earnings she has to drill out the whole accounting system in order to really understand what rate she has to apply for determining the growth rate of the VDM. In reality, this is not as easy as in our example cases in this article: How much of the spending is periodical expense and how much leads to economic assets? How sustainable are these assets? Etc. This is not an impossible task, but it requires deep fundamental analysis – far beyond a simple digestion of accounting numbers.

5.2. Setting margins back to immediate-expense levels

If a valuator wants to stick to the VDM and wishes to set RoE equalling the cost of equity in pure quantitative terms, and hence make the non-capitalized economic assets ceasing being assets at time of terminal value calculation, then she should adjust spending of the company to a level that only covers the periodical expenses. From an economic point of view it otherwise is extremely difficult to argue why the company has build-up assets over time by doing some sort of economic investing but now doesn't. If these assets are no assets anymore then there is no reason for investing money in their development – only a very stupid CFO would do this, and this is not a sound default assumption for the terminal value.

In our Table 3 setting we would e.g. have to cut expenses by 2.055 in year 1 (iteratively determined)

²⁴ To be clear: A mis-valuation is given when a valuator applies a model or assumptions within this model which contradict what the valuator wants to say in economic terms. It is, however, not a mis-

valuation if assumptions are set and correctly mapped in the valuation model but turn out to be wrong in the future.

in order to cope with the assumed effect of no more economic assets being generated by any further spend-

ing. This leads to the following VDM valuation equation:

$$TV_0 = \frac{NI_1 \cdot q}{k - RoE \cdot (1 - q)} = \frac{17.75 + 2.055}{10\% - 10.00\% \cdot (1 - 89.26\%)} = 221.93$$

Obviously, here the impact can be neutralised. The curbing of spending exactly offsets the loss of asset characteristics. However, this is only the case here because all projects are assumed to generate an economic rate of return equalling the cost of capital. In a real-world setting we would observe a loss in value as compared to the original economic setting if we take out the growth investment component for non-capitalized economic assets if these non-capitalized economic assets generate an economic return higher than the cost of capital, and vice versa.

In a real-world setting the determination of the portion of spending that has to be curbed in order to

change to a pure economic immediate-expense setting of future spending is quite difficult to determine. In fact, it requires a deep analytical process to understand the real nature of the spending.

5.3. Considering economic investments directly in the valuation model

An approach that does no longer make use of the VBM but rather changes the whole model setting, is to allow for a more direct economic determination of the growth rate. A model that relates more to economic value drivers is e.g. the so-called Bradley/Jarrell-Model:²⁵

$$TV_0 = \frac{BCF_1 \cdot q_{BTF}}{k - i + (ERR - i) \cdot (1 - q_{BTF})}$$

Here, i is the inflation rate, BCF is the basis cash flow (the cash flow which just allows for real capital preservation of the company in economic terms) and q_{BTF} is the pay-out ratio based on BCF.

While we do not want to go deeper into the economics of this model here, we still want to highlight that the application of this model is not a silver-bullet, as it also requires deep fundamental analysis – in particular about the concrete amount of BCF where all economic spending for maintaining all economic assets is already included. However, this model follows typical analytical and economic ideas which clearly puts it into a better position than the VDM.

5.4. So what?

If a valuator understands that there is spending of the company which does not translate into accounting assets but does so into sustainable economic assets, there is no way out of putting the analytical helmet onto its valuation head. In a time where accounting rules are less and less able to map the spending of a company correctly in economic terms there is an increasingly forced necessity to look beyond the raw numbers from financial statements. We showed different ways how to deal with the accounting deficiencies in order to still derive a value that is sound in econom-

ic terms. None of them is easy in practical application but all require an in-depth fundamental analysis.

This, however, should not come as a surprise. If our core source of information (financial reporting) could not deliver the way we need it, we have to make up our mind ourselves. In addition, no matter which of the different ways we described a valuator thinks is best to follow, it always requires to build-up an economic understanding of the situation the target company is in.

6. Summary

There is an old saying in the investment community: “The standard setters are the last ones to admit that there is something wrong with accounting”. This bon mot is based on the fact, that usually standard setters do not at all want to see their set of rules as inferior for decision making and only react if evidence is overwhelming. This creates on a regular basis room for forensic accounting analysts to make a difference in investment analysis, but it also forces normal investors to look deeper into accounting topics than just digesting the raw numbers.

After years of comments, complaints and head shaking of investors, the IASB now eventually has under-

²⁵ See, Bradley/Jarrell, (2008), Expected Inflation and the Constant-growth Valuation Model’, Journal of Applied Corporate Finance, 20.

stood that the problem of non-capitalized intangibles is a massive one and has put this issue on its agenda.²⁶ Interestingly, this time they are not the last ones to react. We still see many appraisal cases in the real valuation world which deny the existence of this problem. These cases are falling for the VDM calibration trap described in this article – mostly due to the nice optical appearance of the model if accounting rates equal cost of capital in pure quantitative terms, but which is wrong in economic terms.

We have discussed this issue in different settings and audiences over the last years, but now eventually the evidence seems to be overwhelming. We do not see any excuses anymore to fall for the VDM calibration trap. The only good reason for the application of the RoE equalling the cost of equity in pure quantitative terms (or of similar application with some variable variations in an enterprise setting) is when valuers *actively* (and supported by documentation) assume that the non-capitalized assets cease to grow exactly at the time of terminal value calculation – i.e. a change of the business model. At the same time, they have to assume that the spending of the company still stays at the same level (despite no more economic assets are created). In our opinion, this is a thread of arguments and analytical conclusions which will be very difficult to argue for – especially if one takes into consideration the nature of our modern business world.

We admit that in real-world settings, there are more things to consider than we did in this article. In parti-

cular, the existence of corporate taxes (which are determined on tax accounting numbers) or debt financing were not considered in this article. But none of them is too problematic to be included into a sound application of a terminal value model, whatever shape it takes – as long as it follows the economic ideas and analytical assessments of the valuator.

The real finding of this article is that the application of a terminal value is not a quick-and-dirty or mechanical task. It is a highly fundamental exercise, forcing the investor/analyst/valuator into a rigorous analytical process into the company's fundamentals. Only based on such analytical depth a sound valuation of a company is possible. And the terminal value with its value weight in typical valuation cases (not rarely more than 60% even for mature companies and often much more for the valuation of growth companies) deserves this analytical treatment. This is good news for those who have always seen valuation as an analytical task, but bad news for those who want to stick to the status quo of a fast application of such models as the Accounting based Value Driver Model.

7. Appendix: Accounting Rates of Return for full vs. partial Recognition of Assets

In case of full recognition of all economic assets on the balance sheet, accounting rates of return are calculated in the steady state (straight-line depreciation) as:

$$ARR_{1,Full} = \frac{NI_{1,full}}{B_{0,full}} = \frac{Revenues - CashCosts_{periodical} - DA}{B_0}$$

In case that only the portion b (with $0 < b < 1$) of all economic assets is recognised as accounting assets, ac-

counting rates of return are calculated in the steady state (straight-line depreciation) as:

$$ARR_{1,partial} = \frac{NI_{1,partial}}{B_{0,partial}} = \frac{Revenues - CashCosts_{periodical} - (1 - b) \cdot Spending_{EconomicAssets} - b \cdot DA}{b \cdot B_0}$$

Transforming these equations and substituting, leads to:

$$ARR_{1,partial} = ARR_{1,Full} \cdot \frac{Revenues - CashCosts_{periodical} - (1 - b) \cdot Spending_{EconomicAssets} - b \cdot DA}{b \cdot (Revenues - CashCosts_{periodical} - DA)}$$

²⁶ At our experience it was also the very strong book Lev/Gu (2016), *The End of Accounting*, Hoboken, which ultimately pushed standard setters over the edge.

For the calculation of accounting rate of return according to the setting in Table 3 (50% recognition of economic assets) in period 1 based on the information

from Table 2 (full recognition of economic assets), we get:

$$ARR_{50\%} = 10.31\% \cdot \frac{128.16 - (1 - 50\%) \cdot 110.41 - 50\% \cdot 106.13}{50\% \cdot (128.16 - 106.13)} = 18.62\%$$

We can also read this $ARR_{50\%}$ -value from the calculations in Table 3.

Connecting economic value to company strategy: critical issues and new perspectives

Giorgio Donna*

In estimating a company's economic value strategy should be a key reference, as it is a main driver for future financial performance. Consequently, it is important to endow the value measurement process with a robust and structured strategic content. But strategy and value are talked about in different languages not easy to combine, and the value measurement models usually employed show some critical weaknesses in dealing with the strategic variables. To improve the current practices, the article outlines some ideas and proposals by focusing on two main topics: first, which financial algorithms to choose to estimate value; second, how to translate the 'words and narratives' of corporate strategy paradigms into the 'numbers' that those algorithms require to identify. A real case is briefly presented to demonstrate how to proceed practically. Finally, the idea of a 'value selfie' to be taken periodically is suggested, along with a responsibility for CFOs to assume in diffusing an 'economic value culture' within their companies.

In order to make engagement with shareholders as productive as possible, companies must be able to describe their strategic framework for long-term value creation and explicitly affirm that it has been reviewed by their board of directors.
Larry Fink, CEO, BlackRock (2018)

This article develops the idea that a critical weakness currently exists concerning the link between the evaluation financial models and a company's strategy. To bridge the gap, it makes some suggestions aimed at better combining the conceptual paradigms of finance and strategy in a theoretically robust as well as a practically feasible way. It benefits from the contributions (not so many, to tell the truth) of the most authoritative academics and of the most respected consultants who have been working on the same subject matter.¹ The intent of the author (neither a professional business appraiser nor a financial market analyst, but an academic and professional strategist with a background in economics and finance) is not to indicate easy solutions, but rather to promote a debate about a fascinating, as well as critical, topic.

1. Current practices and critical issues

It is obvious that, since measuring value requires

looking forward, a key unavoidable input should consist of an accurate analysis of the company's strategic profile. If the strategy is the project of the future that a company is willing to pursue, the appreciation of the company's economic value needs a clear understanding of that project, and of its suitability and risks.

Strategy and value are two sides of the same coin, since both look at a company globally and with a long-term horizon. They need each other, too: without considering strategy, value may be a poor measure; without measuring value, strategy may result in a poor choice.

Consequently, a good evaluation approach should include a consistent consideration of the main strategic variables, such as the business prospects, the company's business model and its competitive risks. Is this the case? Do the models in place incorporate those variables properly?

Unfortunately, the marriage between value and strategy is far from a happy one, both in theory and in practice.

One reason is that they are usually talked about in two different languages that are not easy to combine: discourses concerning strategy are based on words and narratives, while those concerning value are focused on numbers and mathematical formulas. This may be a relevant problem, if "storytellers and number crunchers behave as two tribes, each one speaking its own language and each convinced that it has a monopoly

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The author wants to thank two anonymous reviewers for their comments on a previous draft of the article, which have contributed to some significant adjustments in its setting and text.

¹ The academic pioneer on the subject was Alfred Rappaport (1986,

1998). Concerning the consulting industry side, a distinctive contribution has come from SternStewart (Bennett Stewart, 1991), Marakon Associates (McTaggart et al., 1994) and above all McKinsey, whose best-seller *Valuation*, firstly published in 1990 (coauthored by T. Copeland, T. Koller and J. Murrin), has reached its 6th edition (Koller et al., 2015).

on the truth and that the other side is the one that is wrong" (Damodaran 2017, p. 1).

From a technical perspective, the prevailing practices appear loosely connected to the strategic variables, and for some aspects even in contradiction with some basic strategy theorems. To be convinced, let us take a deeper look at the main evaluation items.

a) Perpetuity

Usually, value measurement practices employ the *perpetuity* mathematical scheme, which means considering value as a perpetual rent based on three expected rates: profitability, growth and the shareholders' cost of capital (see Box A).²

Box A - Measuring value according to the perpetuity scheme

Assuming that, by definition, value is the net present value of the cash-flows that shareholders can expect to receive in the future, the perpetuity scheme hypothesizes that the company's future will be characterized by steady conditions in terms of profitability and growth. Hence the expression of value of Equity as $V_E = \text{DIV}_1 / (c_E - g)$, where DIV_1 is the dividends expected for the first year to come, c_E is the shareholders' cost of capital and g is the annual growth rate.

In the no-growth case ($g = 0$) the whole Net Profit (NP) can be distributed, so $\text{DIV} = \text{NP}$ and $V_E = \text{NP}/c_E$. As return on equity is $\text{ROE} = \text{NP}/E$, it follows that $V_E = E \times \text{ROE}/c_E$. If a positive growth rate, g , is introduced, the net profit cannot be totally distributed because of the need to finance growth, so $\text{DIV} = \text{NP} - g \times E = E \times (\text{ROE} - g)$. At the same time, the dividends themselves will be expected to grow (perpetually) at rate g . Conclusively, according to the perpetuity scheme (applied to the case of a perpetual rent growing at rate g), it will be: $V_E = E \times (\text{ROE} - g)/(c_E - g)$.

The perpetuity scheme is questionable from a strategic point of view. In particular, the theory of strategy specifies that:

- to create value (i.e. to realize enduring profitability that is greater than the cost of capital) a company has to own some type of competitive advantage. If this is not the case, its profitability will be forced by the competition to align with the cost of capital itself;

- a competitive advantage cannot be considered as a perpetual rent. Like a runner leading a race who is aware that his pursuers will try to catch him, a company owning a competitive advantage can be certain that its competitors will be strongly committed to neutralizing it through either imitation or innovation (that is, by excogitating a new kind of advantage). Thus, the fatal end for its profitability is to erode, sooner or later, to the cost of capital level, pushing the value creation spread to zero.³ The real question is not *whether* this will happen but *how long* it will take to happen. These concepts bring into play the *competitive advantage period* - a variable up to recent years neglected by valuation theorists and eluded by value practitioners.⁴

Beyond economic logic, common sense and statistics, one more reason can support the idea of value creation as a temporary attitude for a company. Actually, it seems reasonable to assume that, along with the natural decline of any competitive advantage, the cost of capital should increase somewhat. In fact, a competitive advantage is per se a risk-mitigating factor: the stronger the company, the more stable the results that it can be expected to achieve due to its superior resilience during economic downturns.⁵ In conclusion, the value creation margin seems destined to be squeezed because of declining profitability and a rising cost of capital. Nothing could be farther away from a perpetual source of value creation!

b) Growth Rate

The measure of value can be distorted by a second factor, namely the growth rate. In addition to the problem of defining a reasonable estimate in the short-term, growth rate is also a critical item in computing the terminal value. The assessment of a single rate which can realistically combine the long-term expectations about inflation, the general economy, a specific business evolution and a company's growth objectives is a challenge of heroic proportions.⁶ Like everything and everyone in the world, companies and businesses follow a life cycle, and growth rates can be expected to

² It is worth mentioning that the perpetuity scheme comes into play for any kind of evaluation model employed. For example, if value is computed by adding the so-called *terminal value* to the net present value of the cash flows expected for the years covered by a business plan, generally the terminal value itself is calculated by applying the perpetuity hypothesis.

³ In truth, few companies in few industries show steadily high profitability in very extended time horizons. But even in this case the perpetuity assumptions can be questioned: is it correct to ascribe the long-term results to a pre-existing competitive advantage, or should they rather be attributed to the managers' ability to reinforce and/or reproduce and/or renovate an advantageous position over time? If this should be the case, would you pay in advance for a value creation which will be on your shoulders to achieve?

⁴ The subject of the competitive advantage duration or sustainability

has been explored in the economic literature only sporadically, at least until the end of the last century. A mention of a similar concept can be found (in a footnote, by the way) in Modigliani and Miller (1961), but Rappaport (1986) was the first to identify and discuss it (named as 'value growth duration'). He was then followed by, among others, Mauboussin and Johnson (1997), Williams (2000), Rappaport and Mauboussin (2001), Wiggins and Ruefli (2002), Leibowitz (2004), Fritz (2008), Madden (2010), Mauboussin and Callahan (2013), Brilliant and Collins (2014), and Holland and Matthews (2017).

⁵ As it will be noted later, the mainstream of the cost of capital theory does not pay explicit attention to the strategic and competitive variables.

⁶ For a significant contribution to the technical aspects of the problem, see Buttignon (2015).

be very different according to each life stage. Moreover, growth is never free and is a risky adventure, because it requires investment (in R&D, advertising, customer retention, acquisitions, plants, etc.) and may induce policies (e.g. pricing, entering new markets and customer segments) that can cut the margins and profitability. In particular, many authors (e.g. Penman 2010, ch. 4; Holland and Matthews, 2017, ch. 10; Koller et al., 2015, ch. 5; Damodaran, 2017, ch. 7) have underlined the danger of overestimating the benefits of growth for value.⁷ As a general warning, one must be aware that “it’s difficult to create value without growing, but growth alone doesn’t necessarily create value. It all depends on what type of growth a company achieves and what the returns on that growth are.” (Koller et al., 2011, p. vii).

c) Cost of Capital

In measuring value, cost of capital is another insidious variable: a necessary ingredient but unfortunately a terribly blurry and elusive one. It is the Holy Grail that finance theorists have been seeking since the 1950s, and we must be grateful for their energy and intelligence as we now have data, ideas and models that are able to define it in a much less discretionary and rough way than before. Despite decades of work, we are still in the swamp, as is demonstrated by the strong debate still raging about many technical and theoretical issues concerning the most widely employed models and approaches.

Since this article looks at value from the perspective of strategy, the basic questions are: must the strategic dimensions (e.g. business attractiveness, a company’s competitive position, the strategy it intends to pursue) be taken in consideration in computing the cost of capital? If yes, do those models give them the right attention? If this is not the case, what can we do?

In a nutshell (sorry for oversimplifying the matter) two basic models are identifiable, the Market Approach and the Fundamental Approach. It could be said that the first focuses on “what the market thinks and implicitly says”, the second on “what the company is and what it intends to do”.

The Market Approach is undoubtedly fascinating for its semblance of objectivity, which probably is the main reason for its current predominance. Starting from the assumption that for every company a precise cost of capital exists but is hidden in Mr. Market’s⁸

mind, it works to discover that number by crunching the capital market data (basically the share prices of the listed companies) through more or less sophisticated statistical models. In its family many children compete to be the favorite, like CAPM, APT, Fama&-French’s “three or five factors”, the HOLT Discount Rate or the market-implied cost of capital, only to cite the most popular ones.

All these technical proposals share three basic premises: first, market efficiency and rationality (the idea that market share prices are a good proxy for the intrinsic value of listed companies); second, full portfolio diversification as a dominant characteristic of the typical shareholder; third, the distinction between systematic and specific (or idiosyncratic) risk, the former to be included and the latter excluded, thanks to the investor diversification, in computing the cost of capital.

The Fundamental Approach makes the following criticisms of the Market Approach:

i. Mr. Market is not a totally trustworthy and rational character, being strongly influenced by emotionality and by a (growing) speculative instinct. “There is much inefficiency in the market. When the price of a stock can be influenced by a herd on Wall Street with prices set at the margin by the most emotional or the greediest or the most depressed person, it is hard to argue that the market always prices rationally. In fact, market prices are frequently nonsensical.” (W. Buffett, 2007, p. 546).

ii. Full diversification of the investors’ portfolio looks like a rather abstract assumption, since is not supported by statistical evidence, and today it is more difficult to realize than in the past. (Pratt and Grabowski, 2004, p. 210).

iii. Several researches show that the market does not take in account just the systematic but also the specific risk (especially with regard to the small companies), and that the weight of the latter is significantly growing (Pratt and Grabowsky, 2004, ch. 15).

iv. The market approach has been developed with reference to public listed companies, so it hardly gives accountable solutions to the problem of measuring the cost of capital for an unlisted company or a single business unit of a diversified one (listed or not)⁹.

v. The suggestion that the specific risk has to be included in the expected cash-flows or profits and excluded from the discount rate is practically ambiguous.

⁷ “We can all agree that no company can grow so much that it becomes larger than the economy in which it operates. That may be stating the obvious, but I am surprised at how often I see this simple mathematical constraint violated in valuation. Moreover, no matter how successful you think a company will be in capturing market share, its eventual market share cannot exceed 100%. That obvious constraint is also violated in many valuations and one reason for it is

our trust in past growth” (Damodaran, 2017, pp. 112-113).

⁸ Mr. Market is the imaginary character invented by Graham (1949) to better explain the value investing philosophy.

⁹ To solve this problem, you have to look for other companies in the same industry and/or other companies with similar profiles. By the way, the latter was one of the ideas developed by Al Rappaport and Carl Nobles in the 1980’s as part of their Alcar initiative (Rappaport, 1986).

Which are the factors to be considered in each risk category? How can the specific risk factors be incorporated into the future expected results? The assumption is also conceptually questionable: is it right to apply the same cost of capital to an aggressive strategy and to a conservative one? or to strategies characterized by the same average expected profitability and by very different variances?¹⁰

vi. Last but not least, the language and the tools used by the market approach seem to convey the message that the cost of capital is a strictly financial concept, a number generated by capital markets that the company's management must accept (even without completely understanding what it means) but cannot influence. Is this right, or should it be more logical to consider the cost of capital as a significant lever for managers to create value?

In the world of finance, the Fundamentalist Approach is connected to the *value investing* philosophy, the school of thought founded by the legendary Benjamin Graham around the concept of the *intelligent investor* (Graham, 1949), which counts the similarly influential Warren Buffett among its most famous proponents. Rather than the perfectly diversified financial investor's perspective of the Market Approach, the Fundamentalist Approach looks at a company from the point of view of an *intrinsic* investor, who identifies as a steady owner of a business and not as a temporary holder of some shares. Consequently, in appreciating risk he cannot but take in consideration factors such as the competitive advantage, management competences and accountability, business prospects and strategic challenges, which are quite difficult to reconcile with the parameters statistically extracted from the market prices. "These investors do not discuss beta, the capital asset pricing model, or covariance in returns among securities. These are not subjects of any interest to them. In fact, most of them would have difficulty to define those terms." (Buffett, 2007, p. 540).

Obviously, this approach (by far less popular in practice, to tell the truth) is afflicted by a major weakness: rather than an objective measure to discover, cost of capital has to be conceived as an estimate coming from personal judgment. This changes the nature of the problem substantially: the basic question no longer

consists of finding the best statistical model (even if data and statistics are useful anyway), but rather of supporting an informed opinion. According to Fernandez (2015, p. 21), "a reasonable person should compute the beta of each company using common sense and good logic, experience and some business and financial knowledge about the company, its industry, national economies and so on". Buffett (quoted in Greenwald et al. 2001, p. 168) writes that this is the way to follow for being "approximately right instead of precisely wrong".

The practical solutions offered by the supporters of the Fundamentalist Approach can be classified in two groups: the accounting model and the qualitative model. Both are aimed at substituting β , the systematic risk coefficient of the CAPM, with a different one, respectively based on accounting evidences¹¹ and on scoreboards designed around a check-list of risk variables.¹²

Of course, the two have opposite strengths and weaknesses: the accounting model is based on hard data but is past-oriented, while the qualitative one looks at the future but is unavoidably subjective.

d) Multiples

A further trap comes from the siren call of multiples (e.g. P/E, EV/EBIT, etc.), due to their apparent ease, logic and statistical robustness. The search for the right multiple requires the identification of a perfect clone company for comparison (the industry multiples often employed may be non-sensical, given the quite different profiles of the companies competing in each industry). Another problem caused by using multiples is their basic assumption of defining value as a linear function of short-term economic results (e.g. Earnings, EBIT or EBITDA). Like any comfortable habit that easily degenerates into a dangerous vice, the widespread use of multiples can contribute to worsen the so-called *short termism* that is increasingly affecting managers' attitudes and consequently companies' behavior. It is evident: if value is defined as a multiple of current earnings then managers, to maximize it, may be tempted to reduce or at least to defer long-term-oriented expenses and investments (R&D, brand promotion, training, plant maintenance and updating, etc.).¹³ Paradoxically, they may depress the economic

¹⁰ As it is well-known, a basic principle of finance theory states that the rational investor is risk-averse. As a consequence, two investments promising the same average return have to be discounted at different rates if the variances of their expected returns are different (the bigger the variance, the bigger the discount rate). So, in the author's opinion to consider the specific risk factors to appreciate both the expected return and the cost of capital is not a double-counting mistake.

¹¹ For example, the Duff & Phelps model is based on three measures of risk: the operating margin level, the variation in operating margin and the variation in return on equity (Pratt and Grabowski 2004, ch. 15). The Business Index Risk developed in the 1990's by Stern Stewart

was based on 18 accounting measures grouped in 4 risk factors: operating risk, profitability and growth, asset management, size and international diversity (Bennett Stewart, 1990, ch. 12).

¹² Fernandez (2015) mentions some proposals pertaining to this group, such as MASCOFLAPEC, MARTILLO, BAMIFLEX and CAMEL (a Goldman Sachs method). The acronyms come from the initials of the risk drivers identified by each method (for example M stands for Management, C for Country, P for Products, and so on).

¹³ For example, a survey by Graham et al. (2005) shows that nearly four out of five companies would take value-decreasing decisions (like sacrificing investment projects with positive net present value, cutting

value just to show, thanks to multiples, that the value has increased. The apotheosis of short-termism!

To stimulate the debate around these critical issues, some ideas will be provided about two points: first, which algorithms to choose for estimating value; second, how to introduce the strategic variables into the algorithms itself. Before concluding, a short case will be presented to exemplify a possible way to proceed.

2. Choosing the evaluation algorithms

To measure value, assuming that it is the net present value of the future expected cash flows, finance theory and mathematics provide different well-known algorithms. For example, one can choose to discount the expected dividends, operating cash-flows or residual incomes. It can be said that all the calculation models are roughly equivalent: they can't avoid converging towards the same result *if* the numbers put into each of them are based on the same hypotheses concerning how the company's sales, margins, assets and financial leverage will evolve in the future. In other words, mathematically "all roads lead to Rome", since each algorithm can be traced back to any other. Consequently, the main problem does not consist of deciding which model to opt for, but of defining the pathway that those variables can be expected to follow.

However, the choice of the algorithm is very relevant from a practical point of view, since each calculation scheme may make it more or less easy to transform the main strategic variables into the parameters that it requires to quantify.

In this regard, two basic choices seem to be appropriate: first, to measure value according to the residual income scheme; second, to separate the operating variables from the ones connected to the company's financial structure.¹⁴ Let us briefly consider why.

The residual income paradigm is the only one that explicitly requires the assessment of the competitive advantage period. In fact, it defines the economic value of shareholders' capital as

$$V_E = E + \sum EP_i / (1 + c_E)^i \text{ with } 1 \leq i \leq n, [1]$$

where E stands for Equity, EP_i for Economic Profit in year i , and n for the duration of the competitive advantage period. Since the EP depends on the spread between the rate of return (ROE) and the cost of equity (c_E), written as $EP = [(ROE - c_E) \times E]$, and the spread is justifiable only assuming the existence

and persistence of a competitive advantage, then the EP can be expected to fade gradually with the decay of the competitive advantage itself.

The second choice - considering the operating flows independently from those connected to the company's financial leverage - is important to avoid confusing the value creation promised by the company's business strategy with that arising from its financial policy. This is a critical problem for diversified companies in particular, since their business units may present different competitive risk profiles and hence require the assignment of different cost of capital rates.

It's worth noting that an initial reassessment of the Balance Sheet and Income Statement may be required. Amendments may need to be made to correct the misrepresentations induced by the accounting principles, which can mask the actual size of the invested capital and the actual level of the economic performance. The main adjustments generally involve tangible and intangible fixed assets (e.g. accumulated depreciation, operating leases and acquired goodwill) and the treatment of forward-looking expenses (e.g. R&D, marketing, training).¹⁵ To measure value it is important to recognize and exclude "the profits generated (or hidden) by accounting" (Penman 2010).

After adjusting the accounts, the next step is the evaluation of the company *as if it were unlevered*, that is, supposing that the net invested capital is totally covered by the equity, with a zero net financial position.

According to the residual income scheme, [1] transforms as follows:

$$UV_{NIC} = NIC + \sum OEP_i / (1 + c_u)^i \text{ with } 1 \leq i \leq n [2],$$

where:

UV_{NIC} = the economic value of net invested capital in the unlevered case;

c_u = the unlevered cost of capital;

OEP = the Operating Economic Profit, defined as $OEP = [ROI \times (1 - t) - c_u] \times NIC$, being ROI = Operating Profit/NIC, and t = tax rate;¹⁶

n = duration of the competitive advantage period.

If the last term in [2] is labeled as Operating Goodwill or OGW, then

$$OGW = \sum OEP_i / (1 + c_u)^i = UV_{NIC} - NIC [3].$$

What does OGW mean? It measures the value creation coming from the business strategy and the competitive environment of a company, independently from its financial structure.

R&D and marketing expenses, or giving additional discounts to customers) to avoid missing quarterly earnings expectations or targets.

¹⁴ The same suggestions have been proposed by Penman (2010).

¹⁵ The problem has been abundantly explored in the literature. Amongst others, see Bennet Stewart (1991), Damodaran (2007), Penman (2010), Koller et al. (2015, third part) and Holland and Matthews

(2017).

¹⁶ OEP can be expressed in another equivalent way by switching NIC for Sales, undoubtedly a more recognizable reference. In particular, it can be written as $OEP = Sales \times [ROS \times (1 - t) - c_u/T]$, where ROS = Operating Profit/Sales, and T = Sales/NIC.

OGW is the key number for estimating value. In the next paragraph a possible way to estimate it will be presented, using a company's strategic profile as a starting point.

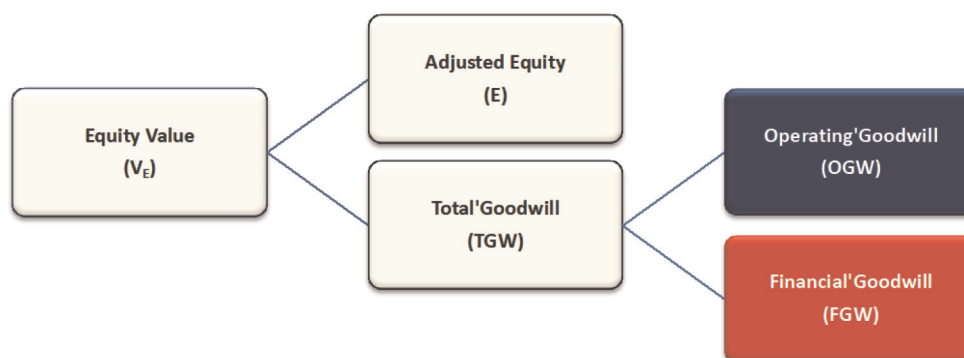
To quantify the value of equity (V_E), a final step is needed to compute the effects of the company's financial leverage. Specifically, to pass from UV_{NIC} to V_E two further items must be considered: the Net Financial Position (NFP) has to be subtracted; and Financial Goodwill (FGW) - as the value creation coming from the financial leverage can be called - has to be added (or subtracted, if negative).

To sum up, the company's economic value (V_E) can be expressed in two equivalent ways:

$$V_E = (NIC + OGW) - (NFP - FGW) = UV_{NIC} - V_{NFP} \text{ [4a], or}$$

$$V_E = (NIC - NFP) + (OGW + FGW) = E + (OGW + FGW) = E + TGW \text{ [4b].}$$

Figure 1 - Economic Value Structure



a) Measuring Operating Goodwill (OGW)

Assuming [3] above as the general formula for OGW, is it possible to transform it into a more manageable version? A possible suggestion is to return to the perpetuity, although in an adjusted version. Let us see how.

As it is well-known, according to the perpetuity scheme, [3] transforms as follows:

$$OGW = OEP_1 / (c_u - g) \text{ [5],}$$

where OEP_1 is the Operating Economic Profit of the first year to come, and g is the expected annual growth rate.

Previously, the perpetuity model was criticized for its

[4a] defines V_E as the economic value of the invested capital if the company were unlevered (UV_{NIC}) less the economic value of the net financial position or V_{NFP} , being $V_{NFP} = NFP - FGW$.

[4b] states the obvious, recalling that V_E corresponds to the Equity (E) increased by the Total Goodwill (TGW), but at the same time it specifies (which is less obvious) that the TGW can be segmented into two components, namely Operating Goodwill (OGW) and Financial Goodwill (FGW).

Ultimately, to estimate V_E , the two fundamental numbers that we need, after adjusting the accounts, are OGW and FGW. The former represents the value creation associated to the competitive profile of the company, and the latter to its financial structure (Figure 1).

implicit assumption of a competitive advantage persisting forever, in contradiction to strategy theory. The problem becomes even worse considering the necessity to identify a growth rate, g , also lasting forever, with the over-evaluation dangers noted before. However, the perpetuity model has a clear advantage in terms of its user-friendliness. So, can we find a ploy to resurrect it while at the same time bypassing its flaws?

According to the competitive advantage period concept, two consequences have to be accepted: first, at the end of that period the company cannot be expected to create further value (i.e. the spread between the rate of return and the cost of capital is supposed to equal zero)¹⁷; second, within the period the spread

¹⁷ It is worth noting that this assumption does not coincide with the one contained in the renowned work by Modigliani and Miller (1961), who were the first to conceive something similar to the competitive advantage period idea. Their model, followed by many authors, is based on two assumptions: first, that the company's capacity to invest in value-creating projects (i.e. with a positive spread between the rate

of return and the cost of capital) will stop in the future at year T ; second (and this is the questionable point), that the current activities, as well as the new investments until T , will continue to generate the actual rate of return forever. Conclusively, concerning the competitive advantage, the problem of perpetuity remains firmly in place.

itself will fade because of the decay of the competitive advantage. So, this raises two problems: the assessment of the competitive advantage period duration (this point will be discussed later, in paragraph 3.1); and the definition of a 'fade path' (for example, spread could be supposed to fade linearly or exponentially).

Regarding the 'fade path' problem, one possible solution could consist of changing the discount rate from $(c_u - g)$ to $(c_u - g + d)$, d being the average annual rate of decrease of the spread caused by the competitive advantage decay. Practically, assuming a competitive advantage period of n years, the rate of decay can be defined as $d = 1/n$.¹⁸

Based on this assumption, [3] can be transformed as follows:

$$OGW = OEP_1 / (c_u - g + d) \quad [6].$$

[6] keeps the perpetuity structure but involves a substantial change compared with [3], since the discount rate is burdened by the decay rate. Consequently, the estimate of value ends up being more conservative.

Without going into mathematical detail, it can be shown that [6] is roughly equivalent to the value that OGW would assume according to a spread fading to zero in n years at progressively increasing rates. This is a plausible guess, since the competitive advantage can reasonably be supposed to decay slowly in the first years, while accelerating towards the end of the period.¹⁹

As a further advantage, [6] gives the growth rate a more concrete reference, since g becomes the average rate of growth (regarding sales and net invested capital) that can be expected to occur along the competitive advantage period.²⁰

b) Measuring Financial Goodwill (FGW)

In computing the value of OGW, the unlevered cost of capital c_u has to be used. But finance theory states that to create value for the shareholders the net operating profitability (i.e. the ROI after taxes) has to be higher than the *weighted average cost of capital*, the so-called WACC. In fact, the WACC may be considered as the 'price' that the company has to pay for satisfying

both its capital lenders and its shareholders. Since the WACC depends on the mix between debts and equity, it is easy to understand why the financial leverage can create (or destroy) shareholder value: without debts (i.e. in the unlevered case) to create value the rate of return must be greater than c_u ; with debts (i.e. in the levered case) it has to be greater than the WACC. Consequently, financial leverage creates value if it lowers the 'price' to be paid by the invested capital, that is if $WACC < c_u$. Of course, FGW will be negative in the opposite case.

To estimate FGW, the easiest way is to obtain it indirectly, first computing the value of the Total Goodwill (TGW) and then deducting the amount of OGW from it. To measure the TGW, the most straightforward way consists of substituting the economic profit EP for the OEP and the cost of equity c_E for c_u in [3] or in [6] above, which will transform respectively as follows:

$$TGW = \sum EP_i / (1 + c_E)^i \quad [7]$$

$$TGW = EP_1 / (c_E + d - g) \quad [8]^{21}.$$

Of course, this procedure requires a preliminary assessment of the cost of equity capital, c_E . This point will be briefly discussed below (see paragraph 3.2).

3. Translating the words of strategy into the numbers of value

Having defined the algorithms (although with several questions remaining open to discussion), it is time for the key challenge: to identify a way to connect the strategists' words with the evaluators' formulas. Let us try!

3.1. The OGW drivers

As noted before, operating goodwill is at the core of the problem: first, because it depends totally on strategic variables; second, because generally it is the most important contributor to the total value creation. According to (6), the five drivers of OGW are:

- the ROI, namely the expected *normal* operating return on the invested capital;

¹⁸ The same solution has been proposed by Holland and Matthews (2017) and Holland (2018). Interestingly, these authors suggest to interpret the decay rate, d , as the probability that the competitive advantage abruptly disrupts. For example, a 20% decay rate (corresponding to a five years duration of the competitive advantage) would mean 20% probability that the spread jumps to zero in one year.

¹⁹ A second (more conservative) solution could be to calculate OGW as the total of a finite geometric progression of n terms with a reason equal to: $[(1 + g) \times (1 - d) / (1 + c_u)]$. In this case it will be: $OGW = OEP_1 \times [1 - [(1 + g - d)/(1 + c_u)]^n] / (c_u + d - g)$. Why not (third possible solution) average the two? The debate is open.

²⁰ As a strategist, this author has doubts about the *size premium* that current practice uses to increase the cost of capital for smaller companies. It could be a case of statistical misinterpretation, since a large size

(above all if measured in terms of market value) could be considered as a plausible indication of a longer competitive advantage period. However, there exist large companies that have an ephemeral competitive advantage, as well as small companies that enjoy a more resistant one. Consequently, it would seem more correct, from a strategic point of view, to burden the discount rate according to the competitive advantage period rather than to size.

²¹ Alternatively, it is possible to substitute the so-called Economic Value Added (EVA®) popularized by SternStewart for the OEP and the WACC for c_u in the same [3] and [6]. Recalling that $EVA = (NOPAT - WACC \times NIC)$, it will be respectively:

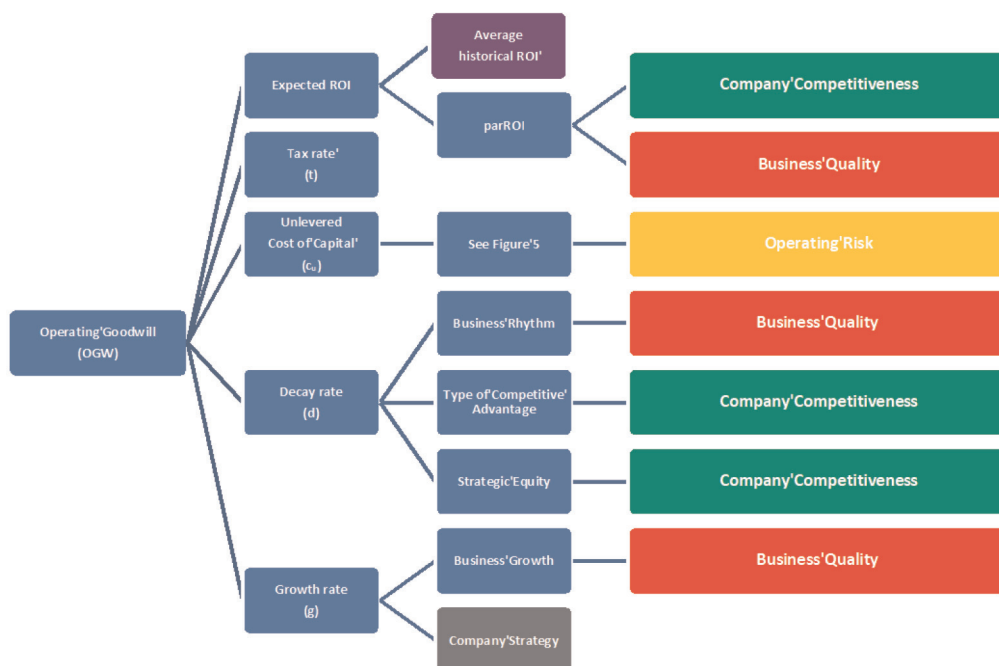
$TGW = \sum EVA_i / (1 + WACC)^i$, and $TGW = EVA_1 / (WACC + d - g)$.

- the tax rate, t ;
- the unlevered cost of capital, c_u ;
- the decay rate, d , connected to the length of the competitive advantage period;
- the annual growth rate, g , expected over the duration of the competitive advantage period.

To connect these drivers to the main strategic factors, an approach is outlined below which has been fine-tuned by testing it in a number of real cases.²² It draws data and analytical tools from a wide array of managerial literature, but its nature remains strictly empirical. The underlying logic can be outlined as follows: first, identify the main strategic factors that influence each OGW driver; second,

evaluate each factor according to a conventional (but structured) scoring system; third, quantify each OGW driver according to the scores assigned to the different factors. The approach is founded on three basic pillars, respectively aimed at appreciating the *business quality*, *company competitiveness* and *operating risk*, of which the connections with each value creation driver are represented in Figure 2. These three pillars will be briefly analyzed to examine how they can help in identifying the value of the OGW drivers. After that, some observations will be made concerning the measure of the competitive advantage period, that has been rightly defined as “the neglected value driver” (Mauboussin, 1997).

Figure 2 - Drivers' of Operating Goodwill (OGW)



a) Business quality

To estimate OGW, it is important to consider the quality of the business in which a company operates, since it is the main driver of the size and duration of the value creation potential for all companies competing in that business. It can be usefully analyzed on the basis of two dimensions: Business Attractiveness and Business Rhythm.

Business Attractiveness can be appreciated according to three features: business growth prospects, competitive pressure intensity and the impact of potential disruption risks. Several well-known tools can help: for

example, the life cycle framework is basic for estimating business growth; the Five Forces model authored by Michael Porter²³ is quite effective for qualifying the competitive pressure intensity; PEST Analysis²⁴ is a quick way for identifying the most significant disruption risks. Beyond growth, which is obvious, business attractiveness will strongly influence both the expected ROI (as a rising tide lifts all boats, so a greater attractiveness pushes up the potential profitability for all competitors, while the opposite is true when the tide ebbs), and the c_u (other things being equal, a more attractive business is less risky, and vice-versa).

²² The approach outlined below has been copyrighted by the author with his colleague Marcello Bianchi under the label SCRYBA© - The Strategic Crystal Ball.

²³ The model identifies five main forces driving the intensity of competition in a business: rivalry among existing competitors, bargain-

ing power of buyers, bargaining power of suppliers, threats of new entrants, and threats of substitute products (Porter, 1985).

²⁴ The acronym stands for Political, Economic, Social and Technological. A more analytical variant of the PEST framework is PESTEL, which adds Environmental and Legal factors.

Business Rhythm analysis looks at the dynamism of the business, a critical factor to be considered for estimating the length of the competitive advantage period. In this regard, many authors have suggested making a distinction between slow-, standard- and fast-moving businesses according to elements such as the life cycle length of the products, price trends, innovation rate, entry and exit frequency, and volatility of competitive positions (Williams, 2000).

The practical suggestion is to synthesize the analysis of the two dimensions by assigning a 'Business Attractiveness Score' (BAS) and a 'Business Rhythm Score' (BRS).

b) Company competitiveness

Exploring the company's competitiveness is crucial for measuring value. It is a key reference for at least three value creation drivers: the expected ROI, since profitability can be quite different (even in the same business) according to the company's competitive strength; the cost of capital, c_w , since the stronger the competitive advantage, the lower the company's operating risk will be; and the decay rate, d , because the length of the competitive advantage period is related to the type of advantage and the company's competitive strength. An effective way to proceed is to match two kinds of information: first, a careful analysis of the operating return

actually achieved by the company in the past; second, a detailed investigation of the company's business model, as briefly outlined in Box B.²⁵

To be more precise, the expected ROI should emerge from comparing the average historical ROI (the one previously realized) with the company's *parROI*, a term borrowed from golf²⁶ to mean the ROI level that a company can reasonably be expected to achieve according to its competitiveness and business attractiveness.

To estimate the *parROI* (an exercise the author strongly recommends to make management more conscious about the company's strategic profile and its actual competitive strength), two steps are needed: first, to assign a 'Company Competitiveness Score' (CCS) according to the guidelines concisely illustrated in Box B; second, to transpose that score to a *parROI* format matching it with the Business Attractiveness Score defined above (an example is shortly presented in Box C and pictured in Figure 4).

If relatively close to *parROI*, the historical ROI can be assumed to be a reliable proxy for the future expected ROI.²⁷ If the two differ significantly, a deeper analysis is needed to understand if the misalignment is related to an abnormal past performance (e.g. because of some extraordinary conditions) or to an incorrect evaluation of the company's competitive strength.

Box B - Analyzing and evaluating the business model[^]

Probably the most critical step of the whole process, the analysis and evaluation of the company's competitiveness requires a clear understanding and a rigorous examination of the so-called *business model*. In its essence, the business model is a description of how a company intends to create value for customers and shareholders, and it can be summarized in four main ingredients:

- the *customer value proposition*, namely the distinctive features of the company's offer (price, product, service and image) aimed at enticing customers;
 - the *type of competitive advantage* (cost, differentiation, scale) on which the company is focused, which establishes the relative weights of the different profit levers (efficiency, premium-price, market share);
 - the *distinctive competences* sustaining that advantage, that is the key processes in which the company has to excel to perform better than the competitors;
 - finally, the company's *strategic equity*, which means the quality and durability of key resources vis-à-vis its competitors. As depicted in Figure 3, to sustain its value creation capability (the roof of the temple) over time, a company needs a set of robust competences (the columns), which are rooted in a consistent wealth of strategic equity (the temple's foundations). The strategic equity can be classified into seven categories (the acronym PROFITS helps in memorizing them):
 - *Professional capital* (the quality and potential of the human resources in terms of experiences, attitudes, knowledge, etc.);
 - *Relational capital* (the robustness, depth and exclusivity of the company's relationships with its main stakeholders, such as customers, suppliers, strategic partners, regulators, local communities, etc.);
 - *Organizational capital* (consistency of organizational structure and culture, quality of procedures and management systems, database depth, etc.);
 - *Financial capital* (ease of access to capital markets, financial rating, etc.);
 - *Immaterial capital* (value of protectable assets like brands, patents, trade secrets, etc.);
 - *Tangible capital* (convenience of the company's locations, technological level of plant and laboratories, etc.);
 - *Social capital* (quality of externalities, such as public infrastructures, social context, and regulatory and bureaucratic norms).
- Assigning both a score and a weight to each strategic equity category allows a 'Company Competitiveness Score' (CCS) to be calculated as the weighted average of those scores.

[^] The content of the Box is adapted from Donna (2018).

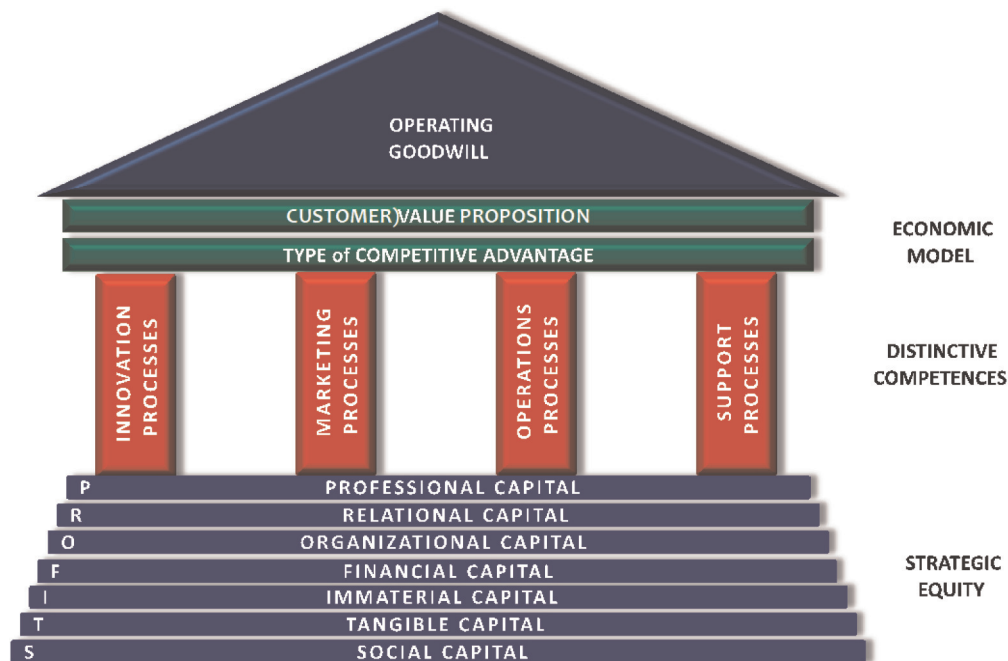
²⁵ According to Magretta (2002) and Teece (2010), "Business models are stories that explain how an enterprise works to deliver value to customers, entice customers to pay for value and convert those payments to profits".

²⁶ For a specific golfer, *par* is the number of shots that he or she should employ for a course round, given his or her handicap level (depending in turn

from his or her past performances) and the degree of difficulty of the course itself.

²⁷ Of course, to estimate the Terminal Value of OGW, *parROI* - defined according to the competitive position that the company is expected to achieve at the end of the business plan - has to be matched with the terminal ROI predicted in the plan itself.

Figure 3 - The Business Model Template



Box C - Estimating parROI: a simplified method

To estimate a company's parROI, beside the Business Attractiveness Score (BAS) and the Company's Competitiveness Score (CCS) mentioned in the text, a third element is needed, namely the mathematical function connecting parROI with the two. Here is a possible (simplified) method. Assuming a measurement of both BAS and CCS on a scale from 1 to 10, 6 being the average condition, the first task consists of defining the ROI that should correspond to a '6&6' situation (that is, average business attractiveness for BAS and competitive parity for CCS). To do that, you can refer to the available databases and choose the one you think is the most suitable for your company. The second step is to define how the ROI level can be expected to change according to increases (decreases) of BAS and CCS. To establish the function for a specific company, you can look at some statistics concerning the industry or the segment of your interest (or at specific companies' data), in order to identify a possible range of values that ROI has assumed. A possible relationship connecting BAS, CCS and parROI is pictured in Figure 4, where the parROI curve is plotted according to the two following functions:

$$\text{parROI} = 10\% \times \alpha + 5\% \times (\text{CCS} - 6)^2 \text{ if } \text{CCS} > 6$$

$$\text{parROI} = 10\% \times \alpha + 5\% \times (\text{CCS} - 6)^2 \text{ if } \text{CCS} < 6,$$

where 10% is assumed as a significant value for the average ROI in the long-term[^], and α is a coefficient associated to the BAS^{^^}. To make an example, assuming $\alpha = 1,4$ (corresponding to BAS = 7), and CCS = 7,5, it will be:

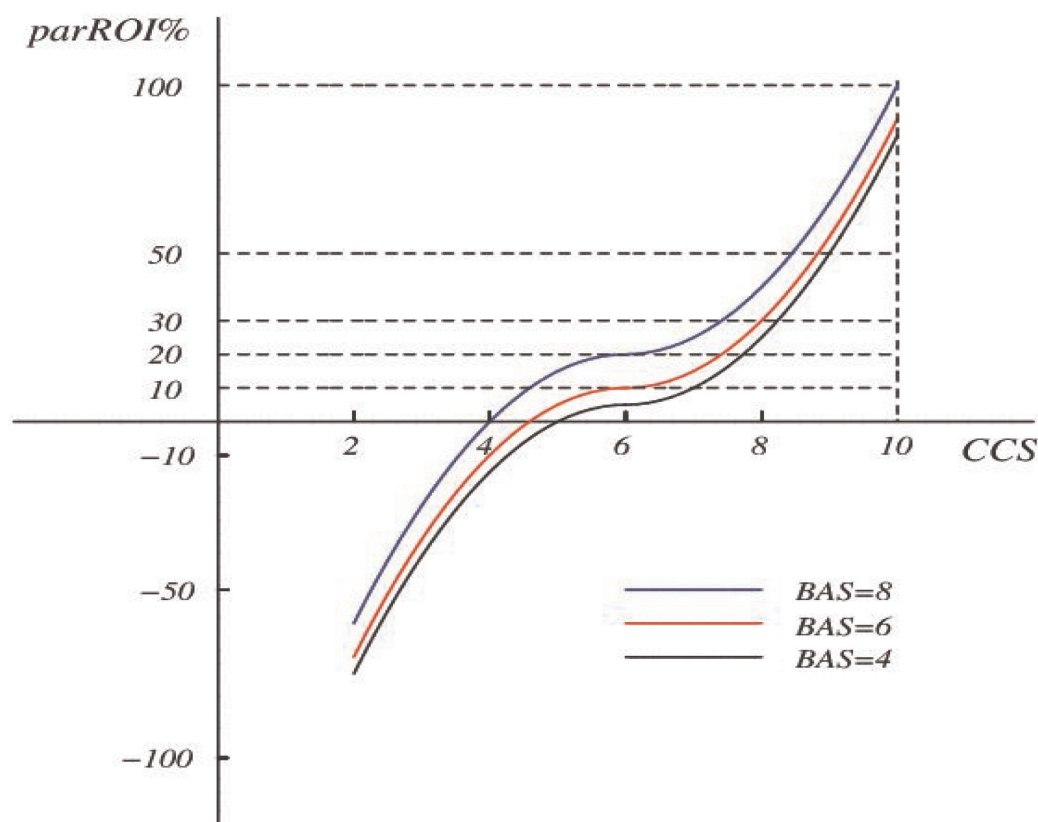
$$\text{parROI} = 10\% \times 1,4 + 5\% \times (7,5 - 6)^2 \cong 25\%.$$

[^] By the way, 10% is the average long-term ROI identified by a recent McKinsey's research (Bradley et al., 2018).

^{^^} For example, α can be supposed to extend from a minimum of 0,25 (in case of BAS = 2) to a maximum of 4 (if BAS = 10), 1 being its value for an average attractiveness (BAS = 6). According to these assumptions, the math function for α is:

$$\alpha = 2^{(\text{BAS} - 6)/2}.$$

Figure 4 - Relating parROI, Business Attractiveness (BAS) and Company Competitiveness (CCS): an example



c) Operating risk

Concerning the cost of capital, the contrast between the Market and the Fundamentalist Approaches has already been noted. The proposal here is not to choose one of the two and reject the other, but instead to consider both and compare them. The reason is simple: two eyes are better than one, as the old adage says. If the cost of capital computed according to the Market Approach²⁸ gives a similar value to the one calculated by the Fundamentalist model, the evaluator will be reassured. Otherwise, if the two measures diverge substantially, the evaluator will need to investigate why, and to revisit both of them to try to close the gap.

To support the estimate of the unlevered cost of capital, c_u , according to the Fundamentalist Approach (in the qualitative version), Figure 5 depicts a possible framework. It is aimed at calculating an *operating risk indicator* ρ based on strategically significant factors. Conceptually, ρ is the fundamental equivalent to the β unlevered (β_u) coefficient of the CAPM model. Referring to the most commonly used expression of the cost of capital, it will be $c_u = r_f + \rho \times p_{om}$, where r_f is the risk-free rate and p_{om} the *operating market risk premium*.²⁹

Like β_u , ρ is a measure of the company's relative degree of operating risk.³⁰ But, differently from β_u , it is assessed on the basis of the profiles of the business

²⁸ Regarding the choice of the model (CAPM, APT, F&F and so on), this author admits a preference for the market-implied cost of capital method (Bini, 2018).

²⁹ A slight difference must be noted from the traditional CAPM expression of cost of capital, which includes the financial risk connected to leverage both in the β coefficient and in the market premium p_m . Working on the unlevered case, as the text suggests, those references have to be modified appropriately. In particular, there are two equivalent options: a) to keep the ρ barycenter at 1, while deducting the financial risk component from the market risk premium; b) to keep the market risk premium as it is, while lowering the ρ barycenter to remove the financial risk component from it. Since finance authors

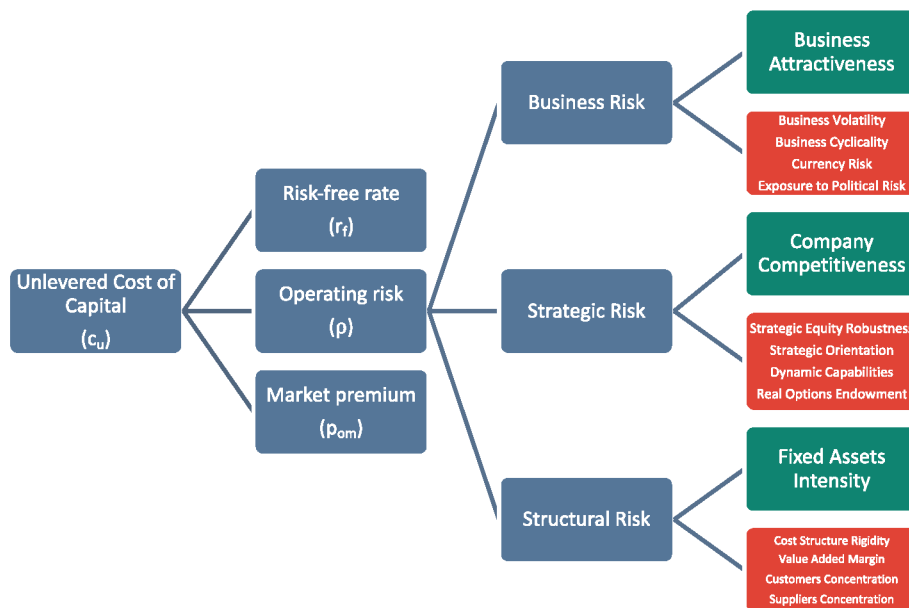
generally argue that the financial risk component may be estimated at 15-20% of the total market risk, one can choose alternatively: a) to establish 1 as the barycenter of the unlevered risk coefficient ρ , at the same time lowering the market risk premium by 15-20% to substitute it with its unlevered equivalent (the way suggested here); b) to keep the market premium unchanged, while reducing the ρ barycenter to 0,80-0,85 (by following this option, ρ would perfectly coincide with β unlevered, β_u , mentioned in any finance textbook).

³⁰ This means that ρ will be respectively greater than, equal to or lower than 1 if the company's operating risk is considered to be respectively greater than, equal to or lower than a sort of normal or average unlevered company.

and of the company. Three operating risk factors are identified: the *business* risk, related to the competitive environment; the *strategic* risk, connected to a company's strategy and competitive strength; and the *structural* risk, associated with the sensitivity of a company's results to a change of context. For each factor one main driver is identified (respectively the business attractiveness, the company's competitiveness and the capital intensity, highlighted in Figure 5 in the green boxes), which is complemented by four minor drivers

(listed in Figure 5 in the red boxes). To calculate ρ three steps are required: first, a risk score has to be assigned to each driver; second, an average risk score is computed for each of the three factors, firstly by averaging the risk scores of the minor drivers, and then furtherly averaging the resulting score with the one assigned to the main driver; third, ρ is quantified as the average of the resulting risk scores for each of the three factors.³¹

Figure 5 - Drivers of unlevered cost of capital



d) The Competitive Advantage Period (CAP)

As noted in the first paragraph, the competitive advantage period (CAP) is a tricky question in estimating value. A possible way to integrate it in the valuation algorithm has been proposed above (anyway, it is an open question, as it has been remarked³²), but the problem remains to identify some references to give it a reliable quantitative dimension. Once again, the state-of-the-art research and practice don't offer definitive answers, so one has to look for empirical solutions

founded on a coherent logic and the (limited) statistical evidence available.

A two-step procedure can be employed that starts with the assessment of an average CAP extension, based on statistics and general practices, and then calibrate it according to the factors that can be retained as the CAP main influencers.

The available data suggests that CAP can be averaged over a range between 7 and 10 years (in the author's opinion, 8 can be considered as a reasonable choice)³³.

³¹ A practical suggestion can be to identify five levels of risk for each driver, and to assign to each level the following scores: 0,25 to level 1 (low risk); 0,50 to level 2 (medium-low risk); 1 to level 3 (medium risk); 2 to level 4 (medium-high risk); and 4 to level 5 (high risk). According to this scale, the geometric average scheme is better than the arithmetic one for averaging the scores.

³² Among others, two relevant problems are neglected here. The first: has anything to be changed to measure value in case of a competitive disadvantage? The second: if value is calculated by adding a (discounted) terminal value to the value associated to a multi-year business

plan, which has to be the time reference for CAP? In other words, has CAP to be considered only in computing the terminal value, or must it contain even the horizon covered by the business plan?

³³ A significant research on the CAP extension is the one accomplished by Fritz (2008), given the richness of the database used, which has covered thousands of companies of all the major countries. Referring to two performance measures (ROA and Tobin's Q), the average CAP is identified as comprised between 7 and 8 years, with negligible differences among countries and industries, as well as between the two performance indicators.

To distance a specific company CAP from the average, at least three factors have to be considered:

i. the company's competitive strength (for example, one can refer to the Company Competitiveness Score noted above), since a stronger strategic equity is undoubtedly the best possible insurance against the competitive advantage decay;

ii. the type of competitive advantage the company is relying on, since the vulnerability of the different types looks quite different. In particular, as argued by Greenwald and Kahn (2005), the cost advantage is reputed to be the easiest to imitate and neutralize, while the scale advantage seems to be the most enduring, and the price or differentiation advantage stands in the middle position;³⁴

iii. the Business Rhythm mentioned above, since the CAP extension is affected by the speed of change characterizing a specific business.

According to these factors, CAP can be appropriately shortened (to zero) or expanded (up to thirty years).³⁵

Of course, CAP extension cannot exceed the useful life of specific assets that are considered as absolutely crucial sources of competitive advantage (e.g. expiry dates of specific patents or licenses, age of key-persons difficult to replace, etc.).

3.2. The FGW drivers

Switching to Financial Goodwill (FGW), usually a minor contributor to Total Goodwill, one more driver has to be considered: the company's financial risk. As finance theory teaches, the substitution of equity capital with financial debts is a double-edged sword: on one side, debt is a cheaper resource than equity; on the

other, debt pushes up both the cost of interest and the cost of equity because of the higher risk burden carried by both moneylenders and shareholders. Ultimately, the financial strategic challenge consists of finding the debt/equity mix able to minimize the weighted average cost of capital.³⁶

According to these premises, an algorithm is needed to identify the premium to be added to the unlevered cost, c_u , to compensate the shareholders for the risk associated with the company's financial leverage. Without raking over the coals of an argument that has been covered exhaustively in finance literature, the suggestion here is to appreciate the financial risk premium p_F (added to c_u to obtain c_E) as follows:

$$p_F = (c_u - r_f) \times L,$$

where L is financial leverage (after taxes), measured as $L = \text{NFP} \times (1 - t) / V_E$.

This means assuming that, for $L = 0$, the total risk premium is the same as the operating risk (as it is obvious), while it doubles for $L = 1$ (i.e. if the amount of financial debts after taxes equals the economic value of equity).

As theorists and practitioners know, an iterative process has to be put in place to compute c_E and V_E . The reason is the following: to compute the financial risk premium, a preliminary estimate of V_E is needed; at the same time, to compute V_E , a preliminary estimate of c_E is required. Practice proves that, accepting minimal round-off margins, the process is quite short and easy.

The story is at its end, but it may be worthwhile to briefly recap. To do so concretely, a real case is summarized in Box D.

³⁴ This is one of the reasons why this author suggests to identify scale as a distinct kind of advantage, differently from the Porter's model, which considers scale just as one of the drivers of the cost advantage. (Donna, 2018).

³⁵ Two examples of CAP estimate models are worthy to be recalled. The Morningstar's 'moat model' classifies the companies owning a significant competitive advantage into three categories, to which it assigns a CAP of 10, 20 or 30 years according to factors such as intangible assets (brands, patents and regulatory licenses), economies of scale, switching costs, network effects and entry barriers (Brilliant and Collins, 2014, chapters 2 and 3). The HOLT approach of Credit Suisse defines the fade rate for a listed company by estimating the Market-

Implied-Competitive-Advantage-Period (MICAP), that is the CAP extension implied in the share price. Relatively to the American listed companies, MICAP extension goes from 0 to 20 years (very few companies overcome this horizon), 10 years being the average (Holland and Matthews, 2017).

³⁶ As it is well known, the WACC is the weighted average between the cost of debt after taxes and the cost of equity. It is important to remember that the weights have to be computed according to the economic value of both debts and equity, differently from the common but incorrect habit of basing them on their financial or accounting evidence.

Box D - A real case[^]

XY is an Italian privately owned company, working in the textile industry. A medium-sized company (sales around €130m), it enjoys a differentiation advantage, and its main profit lever consists of a significant premium price. The net invested capital (€84m) is covered by equity for €62m and by financial debts for €22m. The average ROI realized in the last years and parROI (based on a Business Attractiveness Score equal to 6,25, and a Company Competitiveness Score estimated at 7) converge around 15,5%, which justifies an expected ROI after taxes of 11.5%. This means a spread of 5% over the unlevered cost of capital, estimated at 6.5%.^{^^}

The competitive advantage period is established as 12 years (the business is considered to be relatively slow moving), corresponding to a decay rate of $1/12 = 8.3\%$. Finally, 4% is the expected growth rate for the competitive advantage period horizon.

According to [6] and to these inputs, the Operating Goodwill and the Unlevered Value of net invested capital will be as follows:

$$OGW = 84 \times (11.5\% - 6.5\%) / (6.5\% + 8.33\% - 4\%) = 4.2 / 10.83\% = 38.8 \text{ m}$$

$$UV_{NIC} = 84 + 38.8 = 122.8 \text{ m.}$$

Taking into account the company's financial leverage, the cost of equity is estimated as 7.19%, corresponding to a financial risk premium of 0.69%.^{^^^}

Assuming a net interest cost rate of 2%, the Net Profit and Economic Profit can be derived as follows:

$$NP = 11.5\% \times 84 - 2\% \times 22 = 9.66 - 0.44 = 9.22 \text{ m}$$

$$EP = 9.22 - 7.19\% \times 62 = 9.22 - 4.46 = 4.76 \text{ m.}$$

Consequently, the Total Goodwill and Financial Goodwill will be:

$$TGW = 4.76 / (7.19\% + 8.33\% - 4\%) = 41.3 \text{ m}$$

$$FGW = 41.3 - 38.8 = 2.5 \text{ m.}$$

Ultimately, the company's economic value V_E amounts to $(62 + 41.3) = 103.3 \text{ m}$, consisting of:

- adjusted Equity (the shareholders' invested capital) for €62 m;

- Operating Goodwill (the value creation resulting from the company's strategic profile) for €38.8 m;

- Financial Goodwill (the value creation associated with the company's financial leverage) for €2.5 m.

These values can be translated into some of the usual multiples as follows:

- M/B (Market/Book value) = $103.3 / 62 = 1.67$;

- P/E (Price/Earnings) = $103.3 / 9.22 = 11.2$;

- EV/NOP (Enterprise Value/Net Operating Profit) = $(84 + 41.3) / (84 \times 11.5\%) = 13$.

Now, but only now, it is worthwhile comparing the company's multiples with some standards based on stock exchange statistics.

[^] The analysis is based on data and information collected from outside the company.

^{^^} The unlevered cost of capital has been computed by assuming a 2% risk-free rate, a 5% unlevered market risk premium (defined by subtracting 1% from the total market risk premium, assumed to be 6%) and an operating risk ρ equal to 0.9 (meaning an operating risk slightly below average, justified by mid-level business risk, medium-low strategic risk, and mid-level structural risk). According to these assumptions, it is: $c_u = 2\% + 0.9 \times 5\% = 6.5\%$.

^{^^^} To compute the financial risk premium, p_F , one has to multiply the operating market risk premium, p_{om} , by the leverage (after taxes). Since leverage is $L = [NFP \times (1 - t) / V_E]$, in this case it will be $L = [22 \times (1 - 0.28) / 103.3] = 0.153$. Thus, conclusively, $p_F = (4.5\% \times 0.153) = 0.69\%$.

4. Concluding remarks

Before concluding, three messages are worthy of being underlined. They concern the basic question of how to connect judgment and numbers, a new habit to be strongly recommended, and, lastly, the key role CFOs should play to promote an 'economic value culture'.

a) Supporting judgment with numbers, supporting numbers with judgment

As business appraisers know quite well, estimating economic value is firstly a question of judgment.

Even the market value of listed companies can be said to be just conjecture. For instance, it is strongly influenced by external factors and speculative behaviors that make it very volatile and can push it very far, at least temporarily, from its fair value.

In the same way as a figure-skating judge gives a subjective score for artistic merit, measuring a company's economic value is above all an exercise of logic, experience and wisdom.

However, subjectivity does not mean arbitrary discretion. Just as the figure-skating judge has to follow specific guidelines and criteria established to make their assessment as accountable as possible, in estimating value it is fundamental to rely on a framework able to keep the process on a consistent path. To be up to the job, such a framework needs to be tightly connected to the paradigms of strategy, because the company's strategy and the competitive dynamics are the main drivers that will generate its economic performance in the future. Regarding this, some ideas have been identified to help in performing the task and in mitigating some weaknesses of current practices.

The basic problem, as the article argues, consists of promoting a reliable link between the narratives of strategy and the numbers of value. This is the real goal of the indicators (such as parROI or ρ) and of the tools (e.g. check-lists and scoring systems) that have been suggested above. Although they cannot provide objective measures, they are still useful references to check the numbers that the value exercise requires, from the expected ROI and growth rate promised by a business plan to the cost of capital generated by questionable statistics.

b) Taking a periodical 'value selfie'

A strong recommendation concerns adopting a practice of taking a periodical 'value selfie', that is an internal assessment of the company's value. Usually, the measurement of value involves professional experts coming from outside, on the implicit assumption that the task requires some expertise that a company does not have internally. Presumably this is a legacy of the past, when a value estimate was a figure required only in exceptional circumstances (e.g. in dealing with rare matters like mergers, acquisitions, IPOs and so on),

with the involvement of professional intermediaries and/or independent appraisers.

Unquestionably, being faced with an occasional situation, it is better to hire a specialized professional than equipping the company with the same competences and tools internally.

However, the situation has changed substantially: first, because once extraordinary events are now much more frequent; second, because value is needed to substantially improve the quality of the strategic planning process; third, because value should enter explicitly in the performance evaluation metrics, as Box E concisely shows, possibly helping to contrast the dangerously myopic attitude pushed by measures based on short-term results (e.g. ROI, ROE, EVA, etc.).

The conclusion is that companies must learn to self-evaluate in a systematic way, developing specific competences internally and tailoring the general evaluation models to fit their strategic profiles. If you think about it, it is obvious: assuming that a deep understanding of the strategy and of its risks is a necessary requirement to measure a company's value, who is more suited to accomplish this task than someone who knows the company as an insider?

Box E - Measuring economic performance according to value

Finance theory, as well as the economic common sense, postulates that the most significant measure of a company's economic performance can be identified in the total shareholder income (TSI), usually expressed as the total of dividends received by the shareholders and the increase (decrease) of the shareholder equity value, that is:

$$TSI = (DIV + \Delta V_E) \text{ (a)}$$

This way to define TSI is financially correct but poor from an economic point of view, since neither dividends nor the change of equity value constitute meaningful signals about the value creation that the company has realized.

But another way to break down TSI exists (even if forgotten by finance texts) and is worth consideration. Let's see it.

By definition, the dividends are the part of the Net Profit (NP) which the company has not retained, so that:

$$DIV = NP - \Delta E \text{ (b)}$$

Since the value of equity is the total of Equity and Total Goodwill (i.e. $V_E = E + TGW$), its change in a year (ΔV_E) will equal the change in the equity ΔE increased by the change in the total goodwill ΔTGW , that is

$$\Delta V_E = \Delta E + \Delta TGW \text{ (c)}$$

Now, by substituting (b) and (c) into (a), we can find that

$$TSI = (NP - \Delta E) + (\Delta E + \Delta TGW) = NP + \Delta TGW.$$

Split in this way, TSI comes to be the sum of two economic measures: the first, NP, enables to appreciate how the company has performed in managing its current activities; the second, ΔTGW , how it has worked for the future.

c) CFOs as economic value tutors

In promoting the value selfie practice, a crucial role needs to be played by CFOs, who should evolve from 'income and asset guardians' into 'economic value tutors'. For listed companies in particular, this change in attitude will greatly improve the dialogue with the financial market, by providing financial investors with the strategic information they need (and complain they are not currently getting).³⁷ For private companies it would also be an important development, as currently the operating managers are not used to perceiving value as a concrete and measurable reference.

In both cases, the CFO's role in building and diffusing an 'economic value culture' within a company is essential. As it has been underlined, a common understanding of the connections between the narratives of strategy and the numbers of value is a vital ingredient of this new culture.

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³⁷ The necessity of a common framework for CFOs and strategists to establish a more effective dialogue with the financial market was firstly underlined by Rappaport (1992). A recent survey from McKinsey shows that "the intrinsic investors just need to be helped to understand the business and the strategy. They want to know what a company's

competitive advantages are and how its strategy builds on those advantages. They want to know what external and competitive forces a company faces. And they want to know what concrete actions the company is taking to realize its aspirations, including efforts to ensure it has the talent to succeed." (Darr and Koller 2017, p. 1).

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