For professional investors

ROBECO
The Investment Engineers

When paying a high multiple makes sense

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Robeco Trends Investing

Contents

Intro

Many investors find it difficult to invest in the stocks of high-quality, high-growth companies because these companies usually trade at multiples that are - sometimes much - higher than the market's. Implicitly, these investors assume that markets are biased and tend to overvalue these companies.
In this white paper we document under which conditions high multiples are justified. In addition, we argue that, although markets may occasionally base valuations on inaccurate expectations, these expectations are seldomly biased. Therefore, high multiples are a reflection of strong fundamentals in the vast majority of cases.


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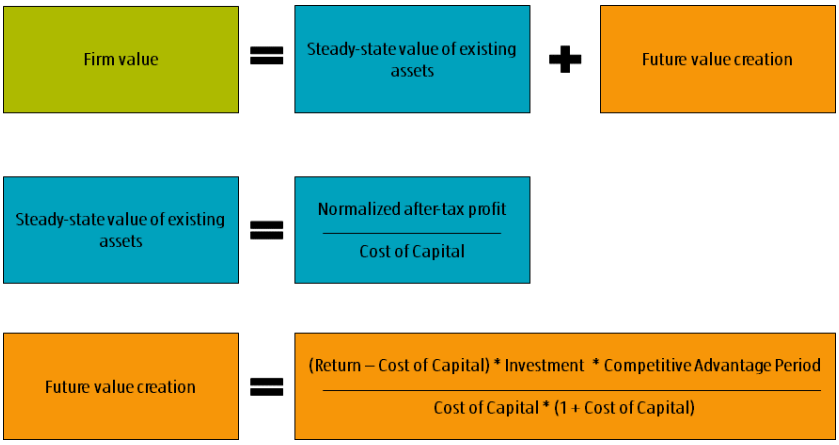
Executive Summary

Valuation multiples are a function of economic returns, the relative size of investment opportunities and the duration of competitive advantage. Careful consideration of each of these value drivers and the interaction between them is paramount to understanding when it is justified to pay a high valuation multiple and when it is not.

Growth stocks 'always' look expensive | A common reason for many investors *not* to invest in high-quality, high growth-companies is that the shares of these companies usually command high valuation multiples and, consequently, almost always look expensive. To see whether these ostensibly high multiples are justified or not, investors need to carefully consider the different underlying drivers of equity value that are obscured by the use of a simple multiple. In the vast majority of cases, we contend, high multiples are a fair reflection of strong underlying business fundamentals.

Two components of firm value | In a classic article, Miller and Modigliani [1961] showed that the value of a firm can be usefully thought of as comprising two components: 1) the steady-state value of existing assets and 2) future value creation.

Figure 1 | Firm value split into its components



Source: Miller and Modigliani [1961]; Robeco Trends Investing

The appropriate steady-state multiple is the reciprocal of the equity cost of capital | The steady-state value assumes that the current assets in place, properly maintained, produce a level of normalized profits indefinitely into the future. This steady stream of future profits can be valued as a perpetuity; i.e. normalized profit divided by the cost of capital. The appropriate multiple to pay for the steady state value of a business therefore is the reciprocal of the cost of capital.

Three fundamental factors drive future value creation | By construct, the steady state describes a situation where incremental investments earn the cost of capital and, consequently, do not create economic value. Higher multiples than this steady-state multiple can only be justified by future value creation, which is determined by three fundamental factors:

- investment returns that exceed the cost of capital ('earn a positive spread')
- the relative size of profitable investment opportunities
- the duration of competitive advantage

The table below summarizes the situations in which paying a high multiple is justified.

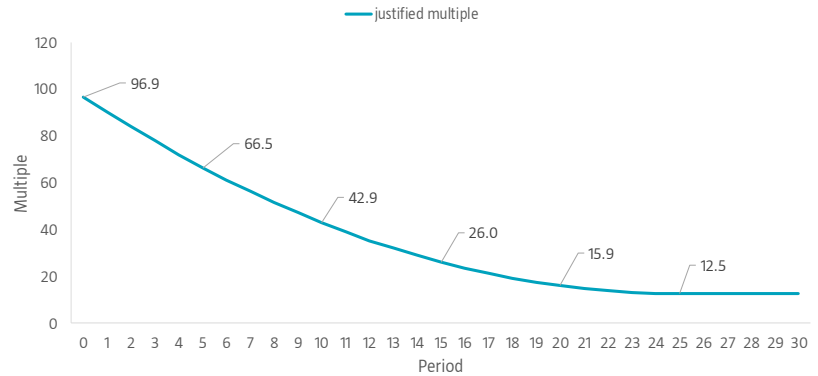
Figure 2 | Three drivers justifying high multiples

Three drivers of valuable growth opportunities justifying high multiples	Description
Returns on incremental investments exceed the cost of capital (necessary condition)	Multiples are a linear function of the spread between returns on incremental investments and the cost of capital; i.e. the higher the spread, the higher the justified multiple.
A set of investment opportunities that is significant in size relative to current invested capital	To have a significant effect on the justified multiple, the set of investment opportunities needs to be significant relative to the capital already invested in the business. Therefore, as a general rule, young businesses with large and growing addressable markets will trade at higher multiples than old businesses with limited addressable markets.
Extended competitive advantage period	The longer a company can earn a positive spread on new investments, the higher the justified multiple. The competitive advantage period is a function of 1) the nature of a company's competitive advantage, 2) industry characteristics and 3) the agility of management to create and capture strategic options for new growth initiatives. As a general rule, mature companies have more strategic options to extend their competitive advantage period than younger companies.

Source: Robeco Trends Investing

Getting a feel for what is a justified multiple | It is not always easy to put reasonable numbers on the various fundamental drivers, but investors can develop a 'feel' for what constitutes a justified multiple by playing around with the M&M framework. A very useful perspective, in our view, is to plot a company life cycle multiple trajectory as in the figure below.

Figure 3 | The multiple trajectory of a fictitious company through time



Source: Robeco Trends Investing

Figure 3 shows the theoretical multiple trajectory of a company that starts out with a positive spread of 25% over its 8% cost of capital, eroding with 1% each year its competitive advantage period lasts. Assuming perfect foresight, investors should be willing to pay a seemingly astronomical multiple of 96.9 at the start of this company's life. The high multiple is justified by the prospect of 25 years of profitable, value creating growth ahead. As the company moves through time and steadily consumes its growth opportunities the justified multiple slowly converges to the steady-state multiple of 12.5 (1/8% after 25 years) reflecting the shrinking prospects for profitable growth ahead.

It matters greatly where a company is in its life cycle | The life cycle example clearly shows that it makes perfect sense to pay an ostensibly high multiple for a company that has a long and bright future of value creation ahead of it. At the same time, the example shows that mature companies with few remaining opportunities for value creation should be valued at multiples much closer to the steady state.

Two very common but dubious valuation practices using multiples | The life cycle perspective also exposes as dubious the very common practice of using average historical multiples for estimating what a reasonable multiple is. Given the normally downward-sloping shape of the justified multiple trajectory through time, it is obvious that extrapolating from historical averages can easily lead to upward bias in valuation.

Another ubiquitous practice is comparing the multiples of two companies without properly accounting for differences in underlying fundamentals. This usually involves comparing multiples and projected earnings growth rates without properly examining what is driving the earnings growth. Earnings growth is not always synonymous with value creation.

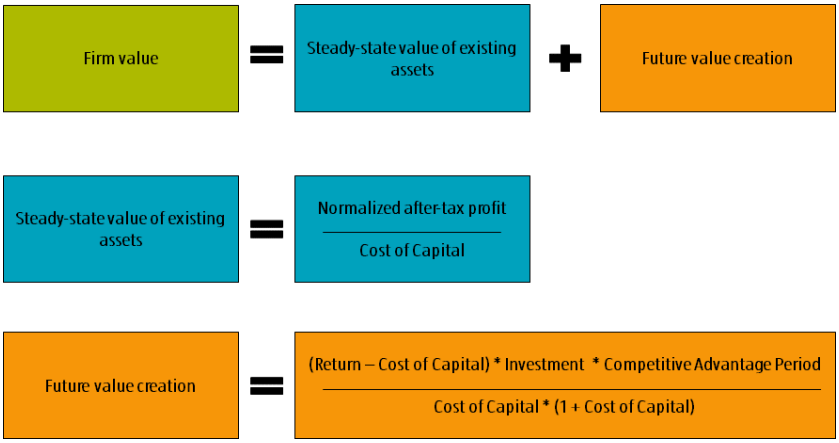
Market inefficiency is a relatively rare occurrence | Investors with a strong tendency to view high-multiple firms as overvalued are implicitly assuming that financial markets are *biased* most of the time, implying significant and frequent market inefficiency. While it is undoubtedly true that markets sometimes do get carried away and periodically price (groups of) assets inefficiently, it is a relatively rare occurrence, as strongly suggested by the difficulty of systematically beating the market. Of course, the expectations on which the underlying fundamentals are based can turn out to be inaccurate. However, *inaccurate* expectations are something different than *biased* expectations. If highly inaccurate expectations hit the mark on average, they are still unbiased and not indicative of inefficient pricing. In contrast, if expectations are consistently too high or low, they are biased, even if they are on average fairly accurate (i.e. close to the mark). We contend that market expectations may be inaccurate, sometimes highly so, but largely unbiased in their expectations of underlying fundamentals. This view implies that markets are pricing assets efficiently most of the time and that multiples reflect underlying fundamentals in the vast majority of cases.

Future growth and the steady state

When thinking about valuation multiples it is useful to make a distinction between the steady-state value of a business and the value of future growth opportunities.

Two components of firm value | In their classic article, Miller and Modigliani [1961] showed that the value of a firm can be usefully thought of as comprising two components: 1) the steady-state value of existing assets and 2) future value creation.

Figure 4 | Firm value split into its components



Source: Miller and Modigliani [1961]; Robeco Trends Investing

The value of existing assets, or steady-state value, assumes that normalized after-tax profit can be sustained indefinitely and can thus be valued as a perpetuity. Investment opportunities that create future value are dependent on how much a company invests, what excess return it can earn relative to the cost of capital and for how long the company can hold on to its competitive advantage.[1]

The model is defined at the firm level and therefore doesn't take into account a firm's financing structure, but with appropriate adjustments, the model can easily be reformulated in terms of equity or book value without affecting the underlying value drivers. In the rest of this paper we assume an all-equity financed business with no excess cash on its balance sheet. In this special case equity value boils down to the same two core components of steady-state value and future value creation, allowing us to focus on the underlying value drivers without being distracted by the effects of a company's financial leverage.[2]

Revealing features | In the words of Miller & Modigliani, this formulation of firm value "has a number of revealing features and deserves to be more widely used in discussions of valuation". From the model a few things become immediately apparent:

[1] In later-dated work Leibowitz and Kogelman [2004] developed the 'franchise model', which uses a similar distinction between 'tangible value' (the steady-state value of existing assets) and 'franchise value' (future value creation).

[2] We will use the generic terms 'multiple', 'cost of capital' and 'return' throughout this paper. Given the assumption of an all-equity financed firm, these terms can therefore be interpreted to mean 'Price-Earnings multiple', 'cost of equity capital' and 'return on equity'.

- The equation breaks down firm value into a 'commodity' component (the first term) and a franchise component (the second term). When applying a multiple to each component, this helps to understand how much you are paying for the company's normalized stream of earnings from existing operations and how much for its potential to create future value.
- The imperative of earning a return on investment that exceeds the cost of capital becomes immediately clear. If that return is equal to or lower than the cost of capital, the value of the equation's second term collapses to zero or even becomes negative.
- The formula thus clarifies that growth in and of itself does not necessarily add economic value; it is contingent on the incremental return relative to the cost of capital. Growth adds value for companies that earn a positive spread, but subtracts value for companies that earn a negative spread between the return on invested capital and cost of capital. To quote Miller & Modigliani again: "the essence of 'growth,' in short, is not expansion, but the existence of opportunities to invest significant quantities of funds at higher than 'normal' rates."[3]
- The equation provides a quick sense of the expectations built into a stock (see adjacent text box).

The appropriate steady-state multiple is the reciprocal of the equity cost of capital | The steady-state value assumes that the current assets in place, properly maintained, produce a level of normalized profits indefinitely into the future. This steady stream of future profits can be valued as a perpetuity; i.e. normalized profit divided by the cost of capital. The appropriate multiple to pay for the steady-state value of a business therefore is the reciprocal of the cost of capital. Estimating the steady-state multiple thus boils down to estimating the cost of capital.[4]

Only future value creation can justify higher multiples than the steady-state multiple | By construct, the steady state describes a situation where incremental investments earn the cost of capital and, consequently, do not create economic value. Higher multiples than this steady-state multiple can only be justified by future value creation, which is determined by three elements:

- investment returns that exceed the cost of capital ('earn a positive spread')
- the relative size of profitable investment opportunities
- the duration of competitive advantage

We will examine each of these three value drivers in more depth in subsequent chapters.

[3] The 'normal' rate referred to here is the cost of capital.

[4] In the case of an all-equity financed company the cost of (equity) capital equates to the sum of the risk-free rate and the equity risk premium.

Future growth opportunities historically account for roughly one-third of firm valuation

The Miller & Modigliani framework can be used to quickly gauge how much future growth investors are pricing in. By using current normalized earnings and dividing them by the cost of equity capital one gets an estimate of what the steady-state value is. Subtracting this steady-state value from the current market value gets one an estimate of what investors are apparently pricing in for future growth. Based on this method, Mauboussin and Callahan [2014] performed a historical analysis for the S&P500 index and found that since 1960, on average, future growth opportunities accounted for about one-third of the index' value.

Key takeaways

- The valuation multiple of a company can be broken down into: 1) a steady-state or commodity multiple and 2) a future-value-creation multiple.
- Depending on the value drivers, the second component can be either positive, neutral or negative.

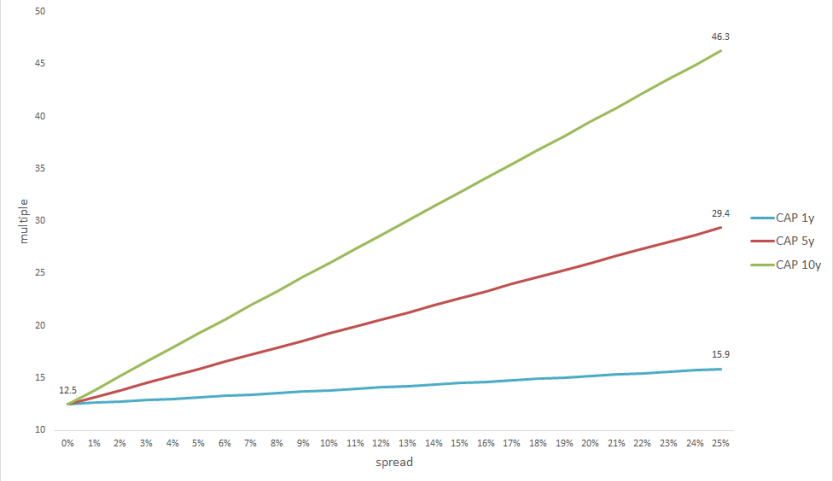
The imperative of earning a positive spread

Only businesses that earn higher returns on their investments than their cost of capital deserve a valuation multiple that is higher than a steady-state multiple. The higher the spread, the higher the justified multiple.

Earning a positive spread a necessary condition for high multiples | Value creation in an economic sense stands or falls with the ability to earn a return on investment that exceeds the cost of capital incurred in generating that return. The higher the spread, the higher the multiple a business should command, ceteris paribus. However, if a business just earns its cost of capital[5] no economic value is created and, consequently, the earnings that these investments generate only justify a steady-state multiple, *no matter how fast earnings grow.* For investors to be willing to pay a higher multiple than the steady-state multiple, the expectation of earning a positive spread is a *necessary* condition.

The higher the spread, the higher the justified multiple | As can be gleaned from the model, the justified multiple, ceteris paribus, is a linear function of the spread. Using an assumed cost of equity capital of 8%, which results in a steady-state multiple of 12.5, and hypothetical value creation periods (competitive advantage period or 'CAP') of 1, 5 and 10 years respectively, the graph below shows how these parameter combinations translate into justified multiples for various spread levels.

Figure 5 | The higher the spread, the higher the justified multiple



Source: Robeco Trends Investing

The importance of looking at return on *incremental* investments | It needs to be stressed that the relevant metric to look at when determining whether a business earns a positive spread or not is the return on *incremental* invested capital ('ROIIC'). The conventional measure of return on total capital invested ('ROIC') contains returns that are earned on both

[5] Of course, if returns are lower than the cost of capital economic value is destroyed and the justified multiple should be lower than the steady-state one. This situation is commonly encountered in older, usually capital-intensive, industries that face shrinking demand and persistent overcapacity.

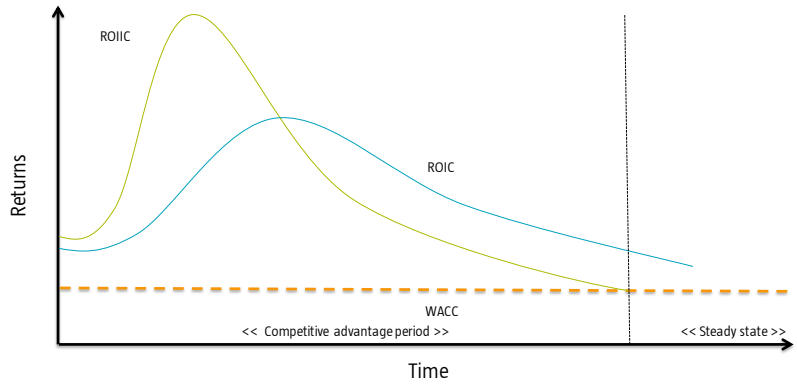
Why Apple is selling at a commodity multiple

By most measures Apple appears to be doing swell. It earns very high returns on invested capital, owns around three quarters of the still growing global smartphone profit pool, has ample access to the industry's brightest talent, owns the world's most valuable brand name and, to top it off, has oodles of cash lying around to finance new ventures. So, why is the company selling at a very cheapish looking P/E multiple of around 13 (based on its estimated current fiscal year earnings)? We strongly suspect that the main reason is that the market is worried that Apple will struggle to earn a positive spread on most of its incremental investments, even though some of the markets that it targets, such as connected home or self-driving cars, are large. Consequently, the value of future growth opportunities is small compared with the steady-state value of the business, which should be valued at the reciprocal of its cost of equity capital of around 8%. That roughly gets one to Apple's current multiple.

old and new assets. The steady-state construct presumes, however, that the investments in and returns on assets already in place are captured in the steady-state value. Leibowitz and Kogelman[6] define the 'current earnings' of the steady state not as accounting earnings but as hypothetical annuities comprised of the net cash flows that could be distributed in perpetuity from the current book of business. Through this theoretical construct the future returns or cash flows that are generated by the assets already in place are made visible and can be foreseen. If returns or cash flows can be foreseen they should theoretically already be reflected in the stock price. Consequently, they should be valued at the steady-state multiple.

The graph below illustrates how return on incremental invested capital and return on total capital can differ over time as ROIIC strictly measures the returns on new assets while ROIC reflects the returns on both old and new assets.

Figure 6 | Development of ROIIC and ROIC through time



Source: HCFC; Robeco Trends Investing

Key takeaways

- Earning a positive spread is a necessary condition for justifying high multiples
- Returns earned on existing assets are valued at the typically low steady-state multiple
- Returns on new or incremental investment are the relevant metric

[6] Martin L. Leibowitz; 'Franchise Value: A Modern Approach to Security Analysis'; John Wiley & Sons, 2004

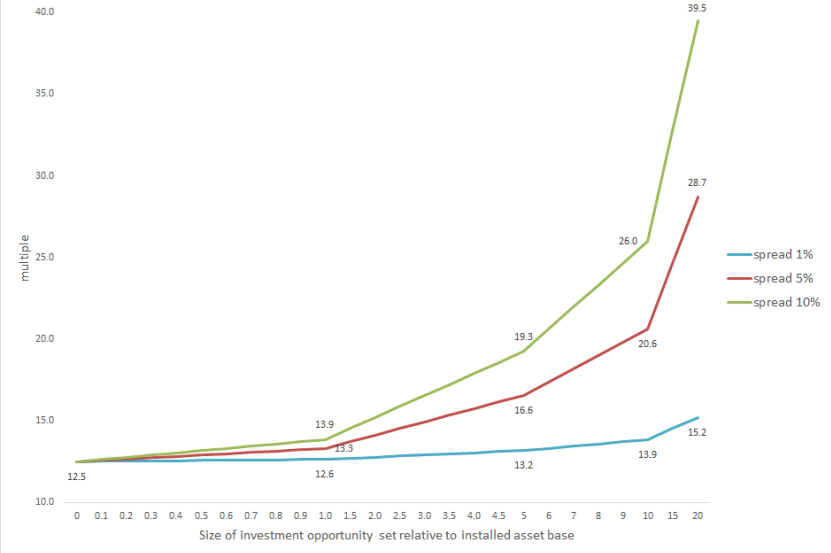
Size does matter!

Whereas earning a positive spread classifies as a necessary condition for commanding a higher-than-steady-state multiple, the size of valuable investment opportunities relative to the existing business can be deemed a sufficient condition. The larger the relative opportunity size, the higher the justified multiple.

How does growth factor in? | High-multiple companies are usually regarded as high-growth companies. Yet, as we have seen in the previous chapter, growth is only value-accretive if companies earn a positive spread on their new investments, while earnings growth emanating from older investments gets rewarded with a typically low steady-state multiple. Thus we are led to conclude that it is the earnings growth stemming from new investments that would justify high multiples, provided that returns exceed the cost of capital.

Total addressable market | One of the core inputs for assessing the growth opportunities a company can profitably invest in, is sizing up the market that a business could potentially address with its products or services. It is not always easy to estimate the total addressable market ('TAM'), which is the product of the total size of the relevant market and the market share a company could capture, especially when both the market and the technology are new.[7] Yet it is an important driver of firm value and, hence, the justified multiple one should be prepared to pay. Mauboussin and Callahan [2015] propose a process of triangulation to calibrate TAM.[8]

Figure 7 | The bigger the size, the higher the justified multiple



Source: Robeco Trends Investing

E-commerce businesses target a huge market

Many investors balk at the multiples that e-commerce businesses like Amazon or Alibaba trade at. These companies may look very expensive, but it is easy to overlook the huge market that they target. The size of the global retail market amounted to USD 22.6 trillion in 2015 (about 31% of global GDP) and is growing at a rate of 3.5% - 4%. E-commerce still represents just a minor slice of this pie (around 7% according to eMarketer) but is growing at a double digit rate and thus gaining market share rapidly. Future growth opportunities for successful e-commerce businesses look very bright indeed, justifying high multiples of current profitability.

Source: Overview & Evolution of the Global Retail Industry; researchandmarkets.com (2016)

[7] Mauboussin and Callahan [2015] cite an interesting debate between finance professor Aswath Damodaran and venture capitalist Bill Gurley on the TAM of Uber. Damodaran puts the TAM at USD 100 billion and thinks Uber could take a 10% market share, while Gurley thinks it is anywhere between USD 450 and 1,300 billion and Uber could capture 25% of that market.
[8] See Mauboussin and Callahan [2015] for details.

Only relative size matters! | Figure 7 shows the relationship between the size of the investment opportunities and the justified multiple for hypothetical spreads of 1%, 5% and 10% respectively. Clearly, the bigger the size of the investment opportunities, the higher the justified multiple. However, it should be noted that the size of new investment opportunities relative of to the size of the existing business is the relevant metric to look at in this context. If the set of new investment opportunities is large relative to the existing business, then obviously this has a marked effect on the multiple investors should be willing to pay. On the other hand, if the set of growth opportunities is tiny relative to the existing business, it won't move the needle much and the effect on the multiple should be hardly noticeable. Figure 7 clearly illustrates the point. The fact that only relative size matters when it comes to growth opportunities biases the impact of this value driver towards younger and smaller firms.

What about growth through M&A?

Growth opportunities can also be accessed through mergers and acquisitions. However, this is one of the areas for which investors have historically been very reluctant to pay high multiples. Not without reason, to be sure, since study after study finds that anywhere between 70% to 90% of all mergers and acquisitions can be considered a failure in the sense of not creating economic value. Overpaying for elusive synergies is the number one reason cited. Still, according to a 2011 HBR article, paying top dollar for an acquisition can be justified under certain conditions. Specifically, if the acquired company employs a disruptive new business model that can serve as a platform for growth rejuvenation, the authors argue that paying an ostensibly high multiple can be thoroughly justified. In fact, they argue, many of these reinvent-your-business-model-type acquisitions tend to be underpriced as growth can often be accelerated by investing acquirer resources into the acquired business.

Source: Clayton Christensen, Richard Alton, Curtis Rising and Andrew Waldeck; 'The New M&A Playbook'; Harvard Business Review, March 2011

Key takeaways

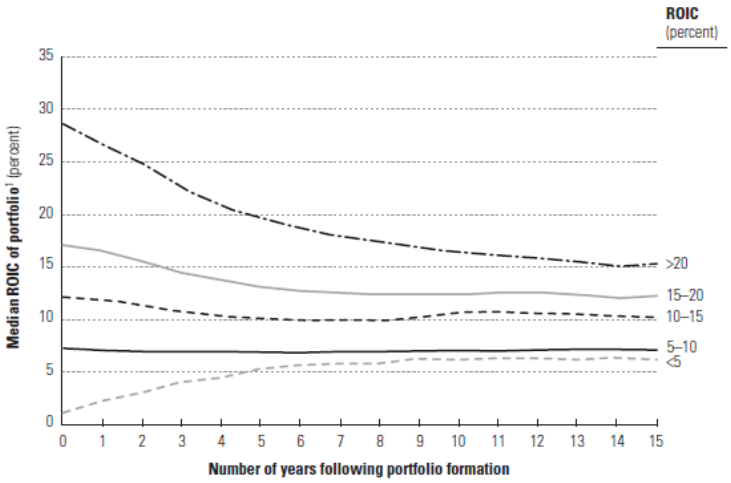
- Only growth from new investments counts in justifying a high multiple
- Determining TAM is a key input
- Growth opportunities should be judged relative to the size of the existing business; this skews the impact of this value driver towards younger and smaller businesses
- Growth through M&A is certainly possible but has proven difficult in practice

CAP – the overlooked value driver

The length of the competitive advantage period ('CAP') that a business enjoys is an important and often overlooked value driver. CAP is largely determined by the nature of competitive advantage, industry characteristics and agility of management to create and capture strategic options to grow the business.

The competitive advantage period is an important value driver | In a competitive economy every business advantage and the ability to earn a positive spread will be competed away sooner or later. This shows up most clearly in the returns on investment, which display a very strong tendency to mean-revert over time.

Figure 8 | ROIC decay over time (non-financial companies)



[1] At year 0, companies are grouped into one of five portfolios, based on ROIC.
Source: Compustat, McKinsey Corporate Performance Center analysis.

Source: Koller, Goedhart & Wessels, 'Valuation' [2010]

Some competitive advantages, however, are stickier than others. The stickier the competitive advantage, the longer companies can earn excess profits and the higher the multiple investors should be willing to pay. Mauboussin and Johnson[9] suggest that the assumed length of the competitive advantage period is perhaps the most underappreciated value driver of all and we agree. There is a widespread tendency among practitioners to assume a much faster fade to the mean than is observed in reality. Practitioners rarely make detailed forecasts beyond a ten-year period and rely on the terminal value to capture any value beyond that timeframe. Typically, this underestimates the value creation beyond ten years[10]. As can be seen in the above graph, although mean reversion over time is undeniable, there is a degree of persistence in returns as well: returns do not completely converge even after 15 periods. This tail-end value creation is rarely captured.

Warren Buffett on CAP

"The key to investing is...determining the competitive advantage of any given company and, above all, the durability of that advantage. The products or services that have wide, sustainable moats around them are the ones that deliver rewards to investors."

Fortune [1999]

[9] Mauboussin and Johnson [1997]

[10] Interestingly, Morningstar assigns a 'no moat' rating to companies with an estimated CAP of less than ten years, a 'narrow moat' rating to companies with an estimated CAP between ten and twenty years and a 'wide moat' rating to companies with an estimated CAP of twenty to thirty years.

The degree of competitive stickiness is largely determined by the nature of competitive advantage, industry characteristics and the agility of management to create and act upon strategic opportunities. We will briefly touch upon each of these three determinants.

The nature of competitive advantage as a determinant of CAP | Competitive advantage can take many forms. Morningstar[11], for instance, distinguishes between five sources of competitive advantage: 1) intangible assets (brands, patents, licenses), 2) cost advantages (manufacturing scale, efficient processes, access to a unique low cost resource), 3) switching costs (inconvenience costs, losing access to valued resources, penalty costs), 4) efficient scale (a limited market size that is being effectively served by one or a small handful of companies), 5) network effects (the more users, the more valuable the network).

Some of these sources of competitive advantage are known to be very durable, like strong brands[12], and in some cases, e.g. patents or licenses, it can even be determined exactly how long the competitive advantage period will last. In general, however, there is no direct way to link a source of competitive advantage to the length of CAP. It depends too much on the specifics of the business considered. What we can say, is that the more sources of competitive advantage support a business' overall competitive advantage, the more durable its CAP. In addition, high industry-relative returns usually are a good proxy for the relative strength of a company's overall competitive advantage and likely resilience of its CAP.

Industry characteristics as a determinant of CAP | Industry characteristics such as rate of technological change, sensitivity to the business cycle, degree of concentration and / or competitive behavior are an important determinant of CAP as well. It can be shown[13], for instance, that more volatile returns on invested capital lead to faster reversion to the mean, which tends to reduce the spread as well as CAP. Industries with a high rate of innovation and / or high sensitivity to the business cycle generally display much more volatile rates of return than industries where the rate of change moves at a slow pace. Consequently, high returns in a rapidly changing sector (e.g., technology) are unlikely to be valued as generously as high returns in a more prosaic industry (e.g., beverages)[14].

Similarly, a high degree of industry concentration is usually indicative of rational competitive behavior conducive to stable returns on invested capital and more resilient CAPs.

Using MICAP as an analytical tool

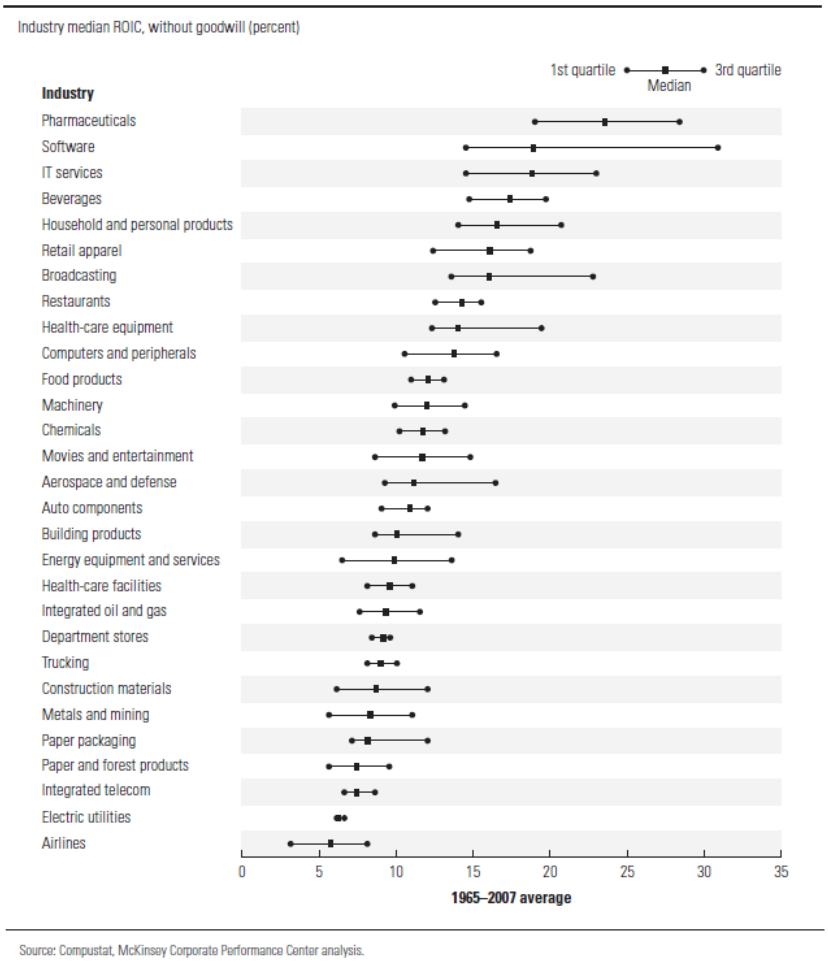
Gauging what the market is pricing in for a company's CAP (market-implied CAP or 'MICAP') can be a useful tool to cross-check CAP assumptions. Brett Olson computed MICAPs for 48 industries over the 1976 – 2007 period and found the longest mean MICAPS for Precious Metals (15.1 years), Pharmaceutical Products (13.2 years) and Medical Equipment (12.4 years). The shortest mean MICAPS were found in Textiles (3.7 years), Steel (4.4 years) and Construction (4.8 years). For the sample as a whole the mean MICAP was 7.8 years, but ranged from a low of 0.9 years to a high of 15.7 years. Interestingly, the mean MICAP across the sample period increased through time and became more volatile.

Brett Olson; 'Firms and the Competitive Advantage Period' [2013]

[11] See Heather Brilliant; 'What Makes a Moat?'; [2012/2013]
[12] See, for instance, Jack Neele and Steef Bergakker; 'Strong Brands – Ticket to Strong Performance'; [2016]
[13] See Michael Mauboussin, Dan Callahan, Bryant Matthews and David Holland; 'How to Model Reversion to the Mean'; [2013].
[14] Mauboussin and Johnson [1997]

The following graph shows how returns on invested capital have varied across and within sectors.

Figure 9 | ROIC variations across and within industries



Source: Koller, Goedhart & Wessels, 'Valuation' [2010]

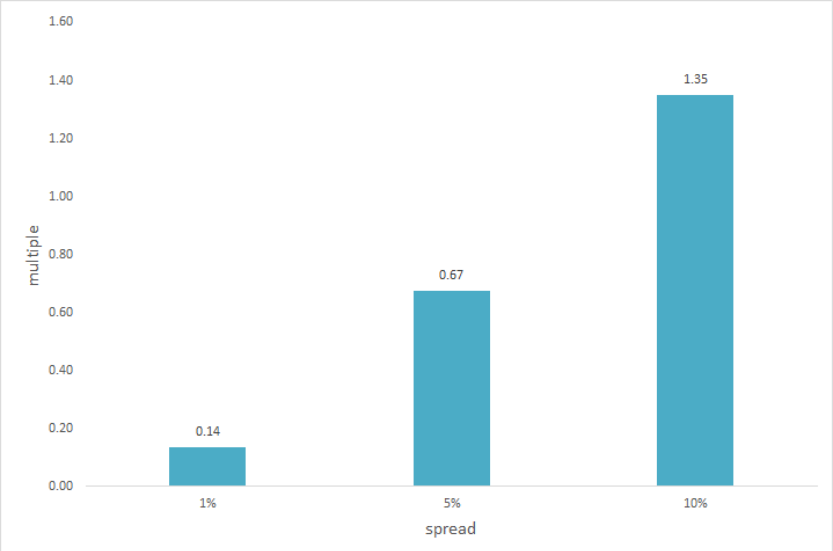
Investors should take both the level (higher level justifies higher multiple) and variation (lower variation justifies higher multiple) of industry returns into account when determining what multiples are reasonable to pay.

Management agility as a determinant of CAP | The *ceteris paribus* state of CAP is a shrinking one: as businesses move through time they steadily consume the competitive advantage that was once created until it is gone and the company enters a steady state. However, businesses can create new or augment existing competitive advantages as strategic opportunities present themselves and thus delay the inevitable or even enter a new growth

phase. CAPs are dynamic in nature and management agility in creating and capturing strategic options is an important, albeit difficult to quantify, determinant of CAP durability.

CAP – under-appreciated value driver, especially for more mature and larger companies | Mathematically, CAP has the same amplifying effect on the value of future growth as the size of new investment opportunities discussed in the previous chapter. In contrast, while the set of investment opportunities has a value impact bias towards younger and smaller companies, CAP has a value impact bias towards more mature and larger companies. After all, it normally takes years of investment to build out a set of competitive advantages and hone operational processes to perfection. Once built, these competitive advantages need relatively little investment to be maintained for years. In addition, the proceeds from enjoying a (set of) competitive advantage(s) can be reinvested in building new competitive advantages. Once a cost advantage through manufacturing scale has been built, for example, part of the proceeds from that advantage may be invested in building a brand or designing higher quality products. In other words, strategic options multiply as investment resources increase. The larger the business and the set of competitive advantages, the easier it becomes to extend CAP; in a relative sense of course.

Figure 10 | Multiple uplift of CAP expansion with one year for various spread levels



Source: Robeco Trends Investing

The figure above shows the effect on the justified multiple when CAP is extended by one year for hypothetical spreads of 1%, 5% and 10% respectively.

Key takeaways

- CAP is an important and often overlooked value driver; especially for more mature and larger businesses
- Cap is a dynamic entity determined by the interplay of

1. The nature of the set of competitive advantages enjoyed by a business; the more sources of competitive advantage, the higher the justified multiple
2. Industry characteristics; more stable returns justify higher multiples
3. Management agility; the more strategic options captured, the higher the justified multiple

When paying a high multiple makes sense

Determining under- or overvaluation based on a superficial examination of multiples runs a serious risk of oversimplification and generally gives too little credit to market efficiency. High relative multiples tend to reflect strong relative business fundamentals in most cases. It pays to carefully look at the fundamental factors that drive value.

When high multiples are justified | The table below summarizes the situations in which paying a high multiple is justified[15].

Figure 11 | Three drivers justifying high multiples

Three drivers of valuable growth opportunities justifying high multiples	Description
Returns on incremental investments exceed the cost of capital (necessary condition)	Multiples are a linear function of the spread between returns on incremental investments and the cost of capital; i.e. the higher the spread, the higher the justified multiple.
A set of investment opportunities that is significant in size relative to current invested capital	To have a significant effect on the justified multiple, the set of investment opportunities needs to be significant relative to the capital already invested in the business. Therefore, as a general rule, young businesses with large and growing addressable markets will trade at higher multiples than old businesses with limited addressable markets.
Extended competitive advantage period	The longer a company can earn a positive spread on new investments, the higher the justified multiple. The competitive advantage period is a function of 1) the nature of a company's competitive advantage, 2) industry characteristics and 3) the agility of management to create and capture strategic options for new growth initiatives. As a general rule, mature companies have more strategic options to extend their competitive advantage period than younger companies.

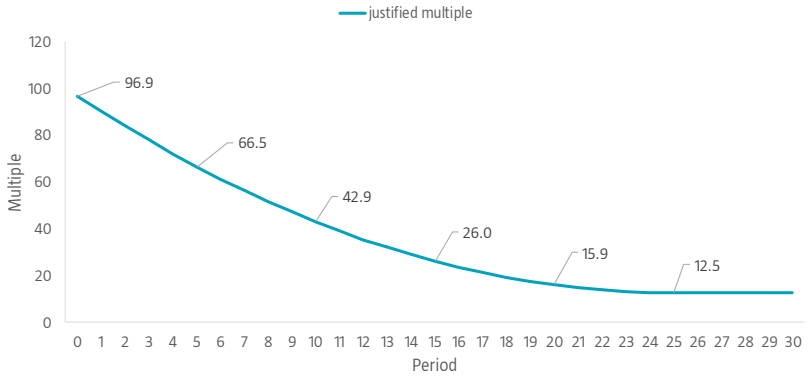
Source: Robeco Trends Investing

Not easy to put theory into practice! | The above table outlines the theory and only provides a qualitative reference framework. Putting reasonable numbers on the various drivers requires a lot of expertise, hard work and finely calibrated judgment. Moreover, multiples will usually be determined by a combination and often changing mix of all three drivers. While this complicates the interpretation of what a certain multiple signifies, it focuses attention on answering the right valuation questions. Too often valuation discussions gloss over the underlying fundamental determinants that drive multiples and run a serious risk of oversimplifying the valuation process. Valuation is an intrinsically complex process and using the shorthand of multiples does nothing to alleviate that.

Getting a 'feel' for reasonable multiple levels | While it is often difficult to have high conviction on the numbers that one puts into the model, it does help to play around with different input values to develop a feel for the sensitivity of the model's output to changes in parameter values and which multiple levels are reasonable for which parameter configuration. The appendix contains a cross table of various combinations of input parameters and the multiples they produce according to the Miller & Modigliani model.
As an example, the graph below shows the theoretical multiple trajectory of a company that starts out with a positive spread of 25% over its 8% cost of capital eroding with 1% each year its competitive advantage period lasts.

[15] We abstract from a discussion of the justified level of the broad market's multiple, which is a function of prevailing interest rates and the equity risk premium, and restrict ourselves to relative multiples; i.e. multiples relative to the broad market, other industries and other companies.

Figure 12 | The multiple trajectory of a fictitious company through time



Source: Robeco Trends Investing

Assuming perfect foresight, investors should be willing to pay a seemingly astronomical multiple of 96.9 at the start of this company's life. The high multiple is justified by the prospect of 25 years of profitable, value creating growth ahead. As the company moves through time and steadily consumes its growth opportunities, the justified multiple slowly converges to the steady-state multiple of 12.5 (1/8% after 25 years) reflecting the shrinking prospects for profitable growth ahead.

It matters greatly where a company is in its life cycle | The example clearly shows that it makes perfect sense to pay an ostensibly high multiple for a company that has a long and bright future of value creation ahead of it. At the same time, the example shows that mature companies with few remaining opportunities for value creation should be valued at multiples much closer to the steady state. In short, it matters greatly where a company is in its life cycle.

Two very common but dubious valuation practices using multiples | A very common practice among analysts / investors is to use average historical multiples for estimating what a reasonable current or future multiple is or should be. The life-cycle perspective of what constitutes a justified multiple illustrates the inherent danger of relying on average historical multiples as a yardstick for valuation. Given the normally downward-sloping shape of the justified multiple trajectory through time, it is obvious that extrapolating from historical averages can easily lead to upward bias in valuation.

Another ubiquitous practice is comparing the multiples of two companies without properly accounting for differences in underlying fundamentals. As an example, suppose that company A trades at a P/E multiple of 20 and grows its earnings at 8%, while company B

The gravitational pull of the steady-state multiple

The longer a business exists, the more of its assets become mature and the less likely it is that these assets will be able to produce the economic returns that they once generated. Slowly but surely its competitive edge is being eroded. It also becomes increasingly difficult to find new growth opportunities of sufficient size to counterbalance the drag that the steadily growing base of maturing assets exerts. The business is steadily burning through its opportunities to grow profitably in an economic sense. Over time, its multiple will therefore inexorably gravitate towards the steady-state multiple.

grows its earnings at 10% yet trades at a multiple of 'only' 15. In our experience, most analysts / investors would argue that company B is undervalued relative to company A. However, without examining the underlying value drivers, we cannot say. Perhaps company B has to invest inordinately more resources to achieve its higher earnings growth[16] or is much closer to its steady state than company A. The point is that one cannot afford to leave questions like these unanswered without running the risk of being led astray by superficially persuasive arguments based on multiples. Multiples provide a shorthand to valuation, not a shortcut.

Market inefficiency is a relatively rare occurrence | A final point we make is that investors with a strong tendency to view high-multiple firms as overvalued are implicitly assuming that financial markets are *biased* most of the time, implying significant and frequent market inefficiency.[17] While it is undoubtedly true that markets sometimes do get carried away and periodically price (groups of) assets inefficiently, it is a relatively rare occurrence as strongly suggested by the difficulty of systematically beating the market.

Of course, the expectations on which the underlying fundamentals are based can turn out to be inaccurate. However, *inaccurate* expectations are something different than *biased* expectations. If highly inaccurate expectations hit the mark on average, they are still unbiased and not indicative of inefficient pricing. In contrast, if expectations are consistently too high or low, they are biased, even if they are on average fairly accurate (i.e. close to the mark). We contend that market expectations may be inaccurate, sometimes highly so, but largely unbiased in their expectations of underlying fundamentals. This view implies that markets are pricing assets efficiently most of the time and that multiples reflect underlying fundamentals in the vast majority of cases.

Key takeaways

- High multiples are thoroughly justified for companies that have a long and bright future of value creation ahead of them
- Mature companies with relatively few opportunities to create additional value should trade at multiples close to the steady-state multiple
- The life-cycle perspective of what constitutes a justified multiple cautions against the use of historical multiples as a yardstick for valuation
- Always examine the underlying value drivers when comparing the multiples of two companies
- Persistent over- or undervaluation is a relatively rare occurrence; high or low multiples reflect underlying fundamentals in the vast majority of cases

[16] Implicitly meaning that company B is earning a much lower return / spread on its incremental investments than company A.

[17] We suspect that many investors with this disposition are influenced by widely published academic findings that 'value' or low multiple stocks over (very) long time periods have tended to outperform 'growth' or high multiple stocks. One should note, however, that discoveries of financial market anomalies typically arise from empirical tests that rely on a *joint null hypothesis* that security markets are informationally efficient *and* returns behave according to a pre-specified equilibrium model (usually the CAPM model). If the joint hypothesis is rejected, one cannot attribute the rejection to either branch of the hypothesis. Thus, even though anomalies are often interpreted as evidence of market inefficiency, such a conclusion is inappropriate because the rejection may be due to an incorrect equilibrium model. In our view, the low-multiple-stocks-outperform-high-multiple stocks anomaly is more likely reflective of a miss-specified equilibrium model than supportive of the view that markets are informationally inefficient or biased. Based on practitioner's experience, we find the notion of pervasive arbitrage in financial markets much more persuasive than the notion that markets consistently are too optimistic about high multiple and too pessimistic about low multiple stocks.

Appendix – cross table

Competitive Advantage Period (CAP) / size of growth opportunities																										
ROIIC	spread	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
8%	0%	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5
9%	1%	12,5	12,6	12,8	12,9	13,0	13,2	13,3	13,4	13,6	13,7	13,9	14,0	14,1	14,3	14,4	14,5	14,7	14,8	14,9	15,1	15,2	15,3	15,5	15,6	15,7	15,9
10%	2%	12,5	12,8	13,0	13,3	13,6	13,9	14,1	14,4	14,7	15,0	15,2	15,5	15,7	16,0	16,3	16,6	16,8	17,1	17,4	17,6	17,9	18,2	18,4	18,7	19,0	19,3
11%	3%	12,5	12,9	13,3	13,7	14,1	14,5	14,9	15,3	15,7	16,1	16,6	17,0	17,4	17,8	18,2	18,6	19,0	19,4	19,8	20,2	20,6	21,0	21,4	21,8	22,2	22,6
12%	4%	12,5	13,0	13,6	14,1	14,7	15,2	15,7	16,3	16,8	17,4	17,9	18,4	19,0	19,5	20,1	20,6	21,1	21,7	22,2	22,8	23,3	23,8	24,4	24,9	25,3	26,0
13%	5%	12,5	13,2	13,9	14,5	15,2	15,9	16,6	17,2	17,9	18,6	19,3	19,8	20,6	21,2	21,7	22,3	23,3	24,0	24,7	25,3	26,0	26,7	27,4	28,0	28,7	29,4
14%	6%	12,5	13,3	14,1	14,9	15,7	16,6	17,4	18,2	19,0	19,8	20,6	21,4	22,2	22,9	23,8	24,7	25,5	26,3	27,1	27,9	28,7	29,5	30,3	31,1	31,9	32,8
15%	7%	12,5	13,4	14,4	15,3	16,3	17,2	18,2	19,1	20,1	21,0	22,0	22,9	23,8	24,7	25,7	26,7	27,6	28,6	29,5	30,5	31,4	32,3	33,2	34,2	35,2	36,1
16%	8%	12,5	13,6	14,7	15,7	16,8	17,9	19,0	20,1	21,1	22,2	23,3	24,4	25,5	26,5	27,6	28,7	29,8	30,9	31,9	33,0	34,1	35,2	36,3	37,3	38,4	39,5
17%	9%	12,5	13,7	14,9	16,1	17,4	18,6	19,8	21,0	22,2	23,4	24,7	25,9	27,1	28,3	29,5	30,7	31,9	33,2	34,4	35,6	36,8	38,0	39,2	40,4	41,7	42,9
18%	10%	12,5	13,9	15,2	16,6	17,9	19,3	20,6	22,0	23,3	24,7	26,0	27,4	28,7	30,1	31,4	32,8	34,1	35,5	36,8	38,2	39,5	40,9	42,2	43,6	44,9	46,3
19%	11%	12,5	14,0	15,5	17,0	18,4	19,9	21,4	22,9	24,4	25,9	27,4	28,8	30,3	31,8	33,3	34,8	36,3	37,7	39,2	40,7	42,2	43,7	45,2	46,7	48,1	49,6
20%	12%	12,5	14,1	15,7	17,4	19,0	20,6	22,2	23,8	25,5	27,1	28,7	30,3	31,9	33,6	35,2	36,8	38,4	40,0	41,7	43,3	44,9	46,5	48,1	49,8	51,4	53,0
21%	13%	12,5	14,3	16,0	17,8	19,5	21,3	23,0	24,8	26,5	28,3	30,1	31,8	33,6	35,3	37,1	38,8	40,6	42,3	44,1	45,8	47,6	49,4	51,1	52,9	54,6	56,4
22%	14%	12,5	14,4	16,3	18,2	20,1	22,0	23,8	25,7	27,6	29,5	31,4	33,3	35,2	37,1	39,0	40,9	42,7	44,6	46,5	48,4	50,3	52,2	54,1	56,0	57,9	59,8
23%	15%	12,5	14,5	16,6	18,6	20,6	22,6	24,7	26,7	28,7	30,7	32,8	34,8	36,8	38,8	40,9	42,9	44,9	46,9	49,0	51,0	53,0	55,0	57,1	59,1	61,1	63,1
24%	16%	12,5	14,7	16,8	19,0	21,1	23,3	25,5	27,6	29,8	31,9	34,1	36,3	38,4	40,6	42,7	44,9	47,1	49,2	51,4	53,5	55,7	57,9	60,0	62,2	64,3	66,5
25%	17%	12,5	14,8	17,1	19,4	21,7	24,0	26,3	28,6	30,9	33,2	35,5	37,7	40,0	42,3	44,6	46,9	49,2	51,5	53,8	56,1	58,4	60,7	63,0	65,3	67,6	69,9
26%	18%	12,5	14,9	17,4	19,8	22,2	24,7	27,1	29,5	31,9	34,4	36,8	39,2	41,7	44,1	46,5	49,0	51,4	53,8	56,2	58,7	61,1	63,5	66,0	68,4	70,8	73,3
27%	19%	12,5	15,1	17,6	20,2	22,8	25,3	27,9	30,5	33,0	35,6	38,2	40,7	43,3	45,8	48,4	51,0	53,5	56,1	58,7	61,2	63,8	66,4	68,9	71,5	74,1	76,6
28%	20%	12,5	15,2	17,9	20,6	23,3	26,0	28,7	31,4	34,1	36,8	39,5	42,2	44,9	47,6	50,3	53,0	55,7	58,4	61,1	63,8	66,5	69,2	71,9	74,6	77,3	80,0
29%	21%	12,5	15,3	18,2	21,0	23,8	26,7	29,5	32,3	35,2	38,0	40,9	43,7	46,5	49,4	52,2	55,0	57,9	60,7	63,5	66,4	69,2	72,0	74,9	77,7	80,5	83,4
30%	22%	12,5	15,5	18,4	21,4	24,4	27,4	30,3	33,3	36,3	39,2	42,2	45,2	48,1	51,1	54,1	57,1	60,0	63,0	66,0	68,9	71,9	74,9	77,8	80,8	83,8	86,8
31%	23%	12,5	15,6	18,7	21,8	24,9	28,0	31,1	34,2	37,3	40,4	43,6	46,7	49,8	52,9	56,0	59,1	62,2	65,3	68,4	71,5	74,6	77,7	80,8	83,9	87,0	90,1
32%	24%	12,5	15,7	19,0	22,2	25,5	28,7	31,9	35,2	38,4	41,7	44,9	48,1	51,4	54,6	57,9	61,1	64,3	67,6	70,8	74,1	77,3	80,5	83,8	87,0	90,3	93,5
33%	25%	12,5	15,9	19,3	22,6	26,0	29,4	32,8	36,1	39,5	42,9	46,3	49,6	53,0	56,4	59,8	63,1	66,5	69,9	73,3	76,6	80,0	83,4	86,8	90,1	93,5	96,9

Multiple cross table

The adjacent cross table shows various combinations of input parameters and the multiples they produce according to the Miller & Modigliani model. The cost of equity capital is assumed to be 8%; in line with the latest estimate of Aswath Damodaran* for developed markets. The rows can be interpreted as the combined value of the Competitive Advantage Period (CAP) expressed in number of periods and the size of growth opportunities (SGO) expressed as a ratio relative to the size of existing assets. The number 12 could, for instance, either be the result of a CAP of 6 periods times a SGO of 2, a CAP of 24 times a SGO of 0.5 or any other product of CAP and SGO resulting in 12. The columns show the spread; the difference between the cost of capital and the return on incremental invested capital.

At the intersection of row and column the appropriate multiple is shown. For a ROIIC of 19% (spread of 11%) and a CAP/SGO of 12 the appropriate multiple is 28.8 according to this Miller & Modigliani model.

**Source: Damodaran [2017]*

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