KPMG

Quarterly Brief

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Dear reader

COVID-19 remains at the top of the world agenda and nearly every day we experience new, unexpected consequences. With the majority of the year behind us, we continue to lack certainty as to where this pandemic will lead us and how we will withstand its impact.

As the leading prospect for a light at the end of the tunnel hinges on the development of a vaccine, we are confident that you too are keenly tuned into the progress and emerging developments. Given the global scale of efforts, there are significant commercial and financial effects. We therefore focus this edition of the newsletter on insights into the value drivers of the healthcare sector, i.e. pharmaceutical and biotechnology companies, with a particular focus on vaccine developers.

We explore a range of questions, including:

- What are the sub-sectors within healthcare and can we make useful sense of observable market prices for vaccine developers?
- What factors drive the economics of a vaccine developer?
- What are common approaches to value pharmaceutical and biotechnology companies given their inherent uncertainties?
- Can other sectors learn from applied valuation approaches given the uncertainty we all face under COVID-19?

In addition, we share with you our summary of key capital market data such as index performance, sector multiples, risk free rates, country risk premiums and growth rates for selected markets. These can all be found in the final section of this Quarterly Brief.

We look forward to discussing your questions regarding valuation trends and practices during these unprecedented times. Stay safe and healthy.

Yours faithfully

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Isolating the intricacies of Healthcare

Discerning the economics of drug and vaccine development

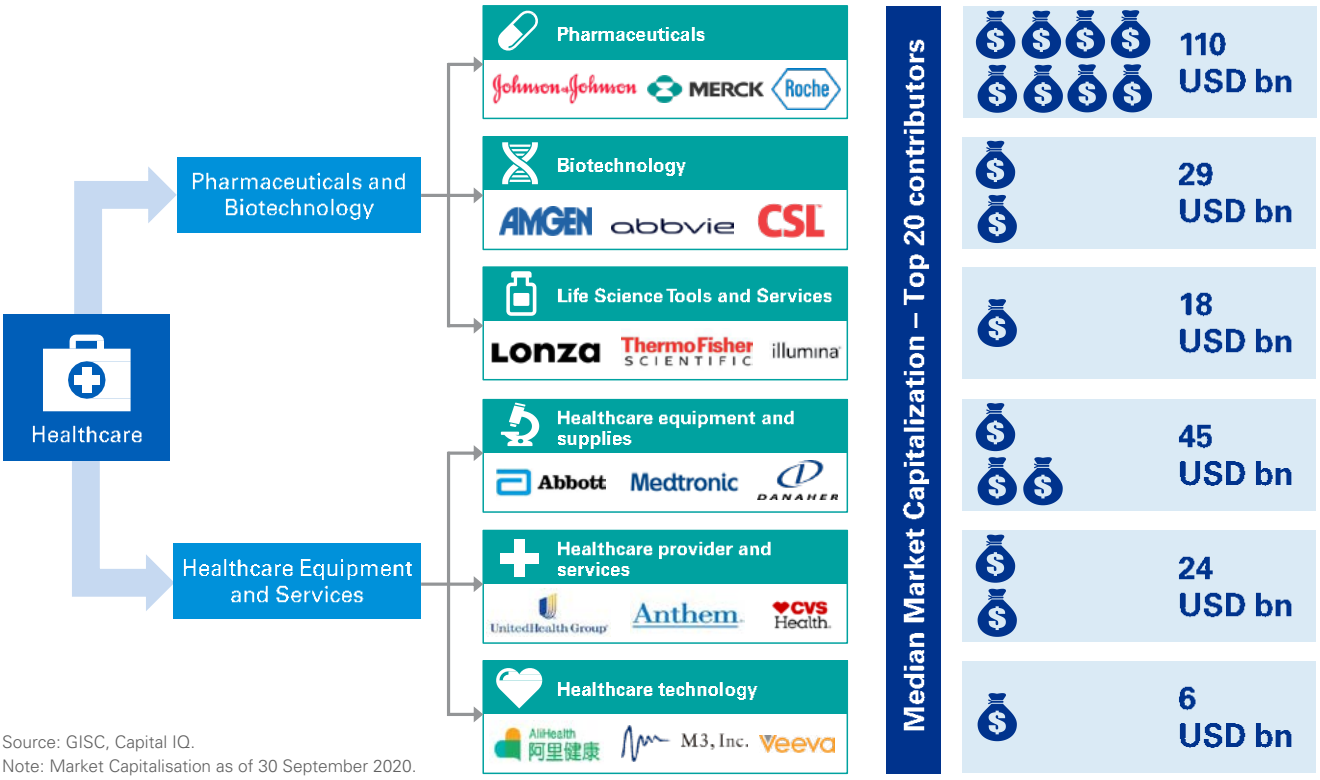
With the outbreak of COVID-19 at the beginning of 2020 and its subsequent progression throughout the year, extraordinary attention has been placed on the healthcare sector from governments, economies, investors and the general public from all around the world. For example, developments in diagnostic technology, such as rapid COVID-19 testing, have become a focal point.

Particular interest has been placed on the potential advancement of a COVID-19 vaccine, putting a spotlight on various companies. First, we will analyse the segmentation of the healthcare sector and review capital market developments during the unfolding of the COVID-19 pandemic. We then summarise our view of the key market forces that shape the long-term profitability of pharmaceutical and biotechnology companies, including vaccine developers, which lays the groundwork for valuation considerations.

Segmenting the healthcare sector

Throughout our analysis, we refer to the Global Industry Classification Standard ("GICS"), developed by Standard & Poors and MSCI. According to GICS, healthcare divides into two main groups, **Pharmaceuticals and Biotechnology and Healthcare Equipment and Services**. Each group can be further classed into three sub-groups as shown in the figure below.

- **Pharmaceutical companies** are engaged in the research, development, production and marketing of pharmaceuticals, including veterinary drugs. Additionally, in this group we find large multinational companies with very large market capitalisations such as Johnson & Johnson or Roche.
- **Biotechnology companies** are primarily engaged in the research, development, manufacturing and/or marketing of products based on genetic analysis and genetic engineering. In this narrow field, companies specialising in protein-based therapeutics to treat human diseases are included but companies manufacturing products using biotechnology without a healthcare application are not.
- The **Life Science Tools and Services** industry consists of companies that enable the drug discovery, development, and production continuum by providing analytical tools, instruments, clinical trial services, and contract research



Source: GISC, Capital IQ.
Note: Market Capitalisation as of 30 September 2020.

services. Firms which primarily service pharmaceutical and biotechnology are also included.

- **Healthcare Equipment and Supplies** includes manufacturers of medical instruments or devices, diagnostic equipment, hospital supplies among other healthcare supplies.
- **Healthcare Providers and Services** includes owners and operators of any kind of healthcare facilities, such as hospitals, rehabilitation centres or lab testing services as well as distributors and wholesalers of healthcare products.
- **Healthcare Technology** includes companies that provide information technology services, such as applications, software or internet-based tools primarily to doctors, hospitals and similar.

Do the specific characteristics of these sub-sectors lead to a varied share price development after the impact of the COVID-19 pandemic?

Sub-sector performance after the outbreak of COVID-19

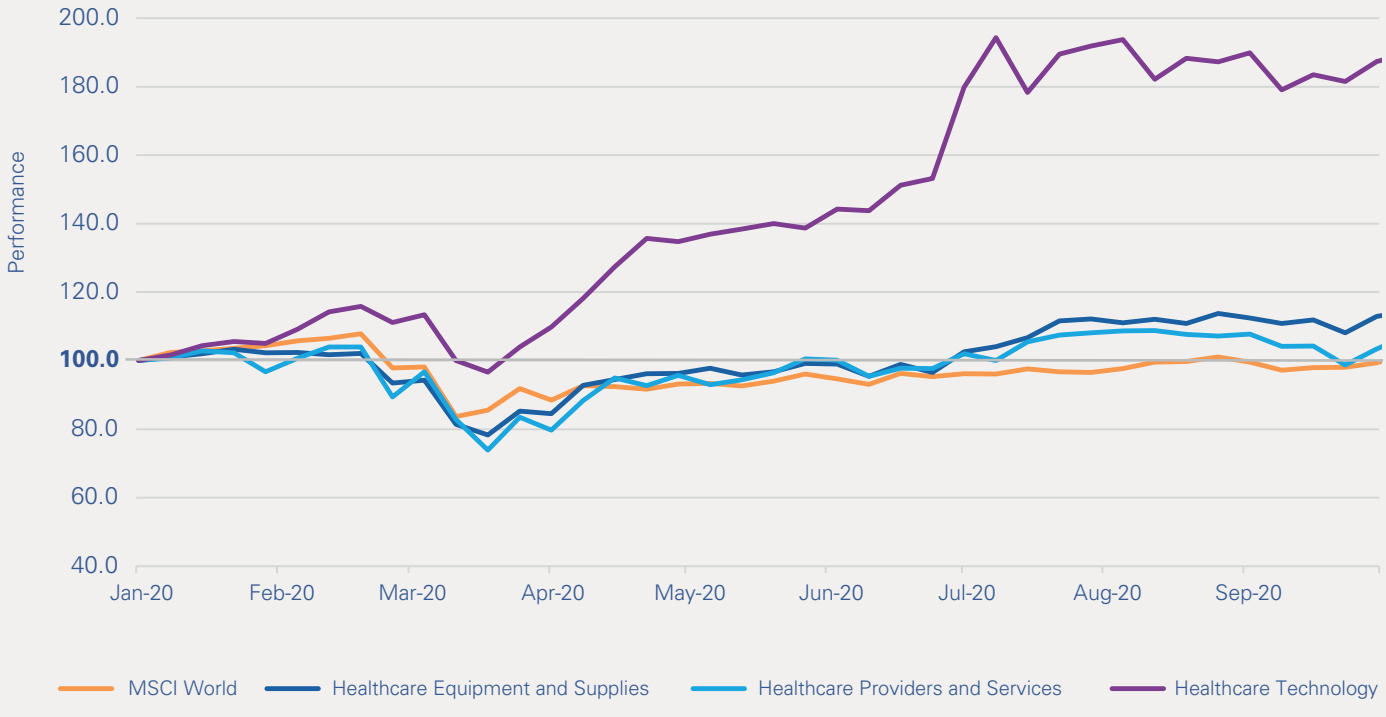
During the nine-month period between January and October 2020, we measured the performance of the 20 largest companies in each sub-sector against the MSCI World Index, weighted by their respective market capitalisations as of the end of June 2020 and indexed them to 100 as of 2 January 2020.

As shown in the following figure, the first significant market reaction can be observed towards the end of February 2020, during which the regional spread of the corona virus in Asia shifted to a global pandemic. Interestingly, compared to pharmaceuticals and biotechnology, the **Healthcare Equipment and Services** segment exhibited a slightly stronger decline in the first weeks and months of our observation period as revenues of many medical device providers suffered due the large number of hospital procedures being postponed during the lockdown.

Within the Healthcare Equipment and Services segment, Providers, Services, Equipment and Supplies do not appear to have attracted significant investor interest and, as such, outperform the MSCI World Index by a mere 4-13% by the end of September 2020. Given the strong global demand for medical treatment, this seems counterintuitive, but it may lend credibility to the theory that COVID-19 has reduced the demand for goods and services in other related sectors simultaneously.

During this period, **Healthcare Technology** appears to be the only sub-sector that significantly outperformed the MSCI World Index and other healthcare sub-sectors. Thanks to the shift from face to face patient interactions to telemedicine, information technology companies within healthcare emerged as an attractive business model for investors during the pandemic, as evidenced by the more than 80% gain in Healthcare

Share price development in the Healthcare Equipment and Services sector



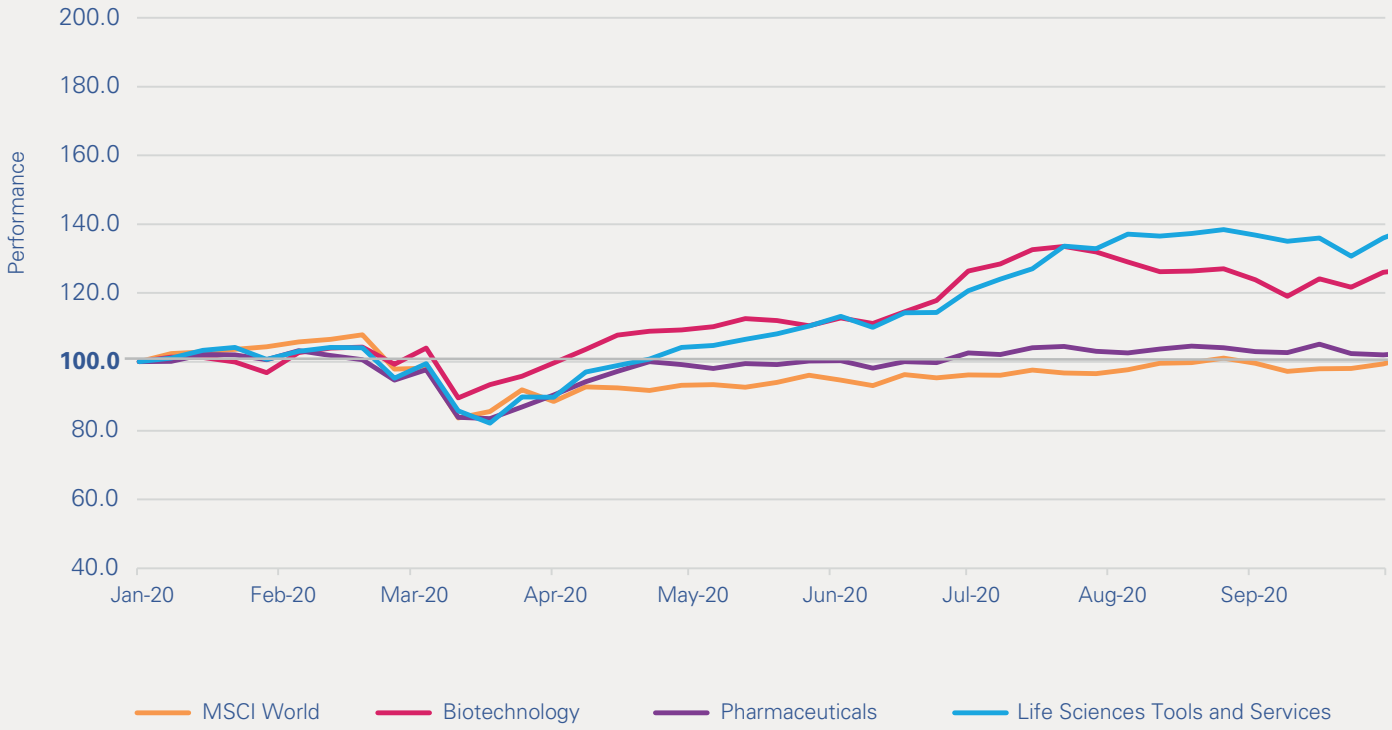
Source: S&P Capital IQ.
Note: Performance of each is based on share price development indexed to 100 as of 2 January 2020 for comparability reasons.

Technology's 20 largest companies, such as Veeva Systems, Teladoc and Livogno. Since July 2020, however, such high outperformance has stagnated.

The **Pharmaceuticals, Biotechnology and Life Science Tools and Services** sub-sectors all outperformed the MSCI World Index during the observation period. The Pharmaceutical sub-sector gained a modest 3% since January 2020. While this is not particularly dramatic, we acknowledge the diversity among the very large Pharmaceutical companies in that sub-sector and, as mentioned, the increased focus on COVID-19 and related drugs and treatments, which reduced demand for other drugs.

Biotechnology and Life Science Tools and Services gained an impressive 25% and 37%, respectively. With a large number of biotechnology companies focusing on the research of COVID-19 vaccines, and with Life Science Tools and Services companies offering complementary services related to COVID-19, both sub-sectors posted respectable performance in the stock-market over the observation period.

Share price development in the Pharmaceuticals and Biotechnology sector



Source: S&P Capital IQ.
Note: Performance of each is based on share price development indexed to 100 as of 2 January 2020 for comparability reasons.

Pharmaceutical's profitability-shaping market forces

The Pharmaceutical sector is characterised by a unique product life cycle with three main phases. In the first, the discovery and development phase, companies invest billions to bring a novel medicine to market, a path that commonly exceeds 10 years (U.S. Food and Drug Administration, 2018) and sees only a small fraction of drug candidates reaching commercialisation. In the second phase, companies are able to recoup their investment with the protection of patents, typically lasting 20 years, and other exclusivity arrangements, typically lasting 3-7 years under FDA rules (U.S. Food and Drug Administration, 2015) and up to 11 years under the European Medicines Agency's 8+2+1 regime (European Commission, 2004), allowing pharmaceutical companies to experience a defined period of suppressed competition and, as such, elevated prices for their innovative products. In the third phase, and once such protection expires, generic substitutes are able to enter the market and prices transition to being driven by typical competitive market forces. In this period, brand name drugs instantly face competition with 80-85% discounted substitutes (U.S. Food and Drug Administration, 2018), driving down the long-term profitability of industry participants competing in generic drug markets.

The long-term profitability of the Pharmaceutical sector is further defined by the economic forces in the form of the power of buyers and their influence on price. At first glance, the end consumer of the drug has little to no influence on price. In fact, the potential nature of the product as lifesaving leads to extremely low price sensitivity, which traditionally would indicate the ability to charge higher prices. A closer look, though, reveals extreme price pressure on the industry. Pharmaceutical companies, in general, have a public trust deficit and face high reputational risk. In the court of public opinion, they are often accused of overpricing key life-saving products. In fact, GlaxoSmithKline, the leading vaccine supplier worldwide by revenue, has observed an annual average 4.0 percent decline in the price of their products across their whole portfolio in the US market (GlaxoSmithKline plc, 2019). There is significant ongoing public and political pressure to limit prices and, as such, companies face numerous cost containment measures imposed by governments including industry-wide price reductions and mandatory pricing systems. This price pressure erodes long-term industry profitability.

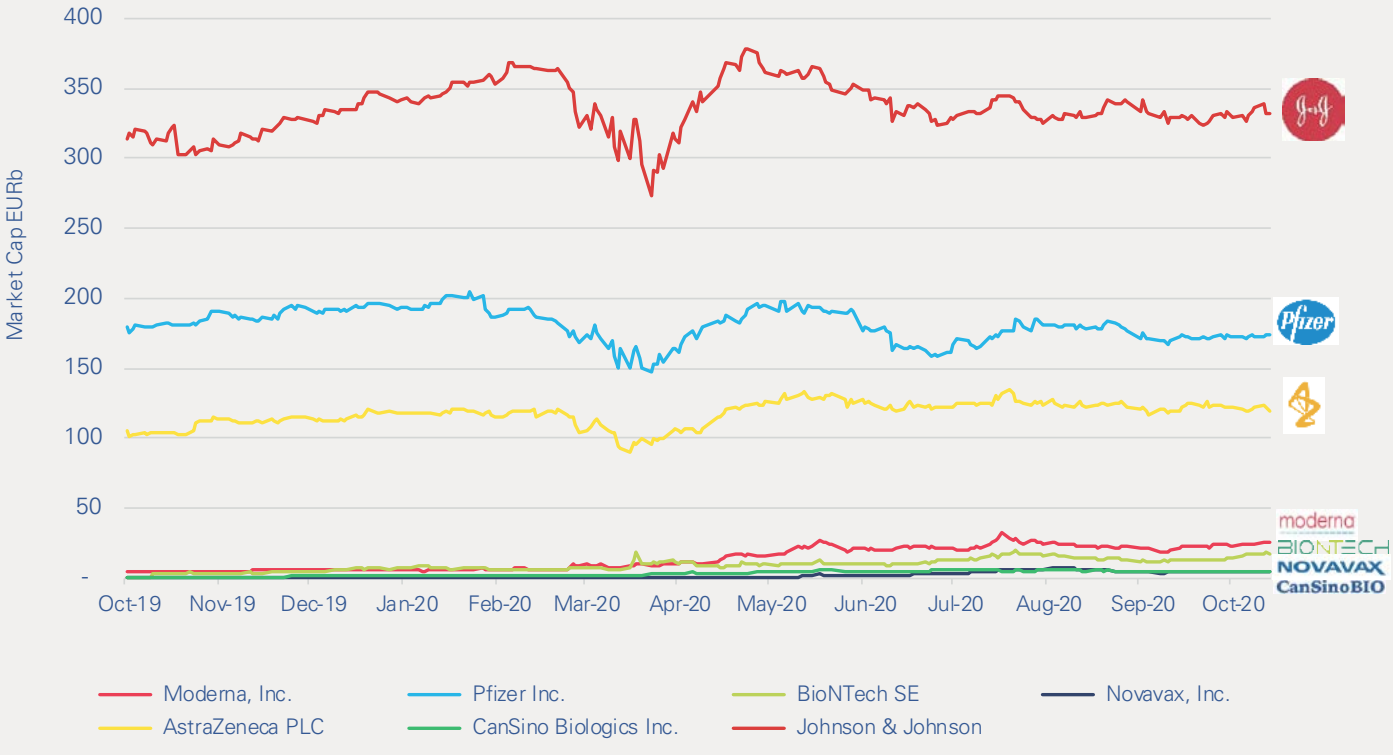
Vaccine market distinctions

The vaccine market is distinct from the broader Pharmaceutical sector in a few ways. First, due to the nature of vaccines as "preventative," vaccines have a higher price-elasticity of demand than products considered as "treatment," which is the bulk of products offered in the broader Pharmaceutical sector. Second, due to the higher probability of success (around 40% (Lo, A.W., 2020)) observed historically in the regulatory approval process, cash flows tend to be steadier and more predictable, thus leading to a lower risk profile than other pharmaceutical products. This leads to an implied average cost to develop a vaccine on the order of USD 0.5 billion to USD 1.2 billion, which is lower than the average cost for other drugs of USD 1.4 billion, on a risk-adjusted basis (Kis et. al, 2018). Third, with the need to cover large patient numbers, prices and margins for individual vaccine doses are generally lower than for therapeutics. In the end, the vaccine market is small relative to the overall pharmaceutical sector. In 2017, global sales of vaccines totalled USD 18.4 billion, representing slightly less than 2% of total pharmaceutical sales during the same period (World Health Organization, 2019).

The effect of COVID-19 on market forces

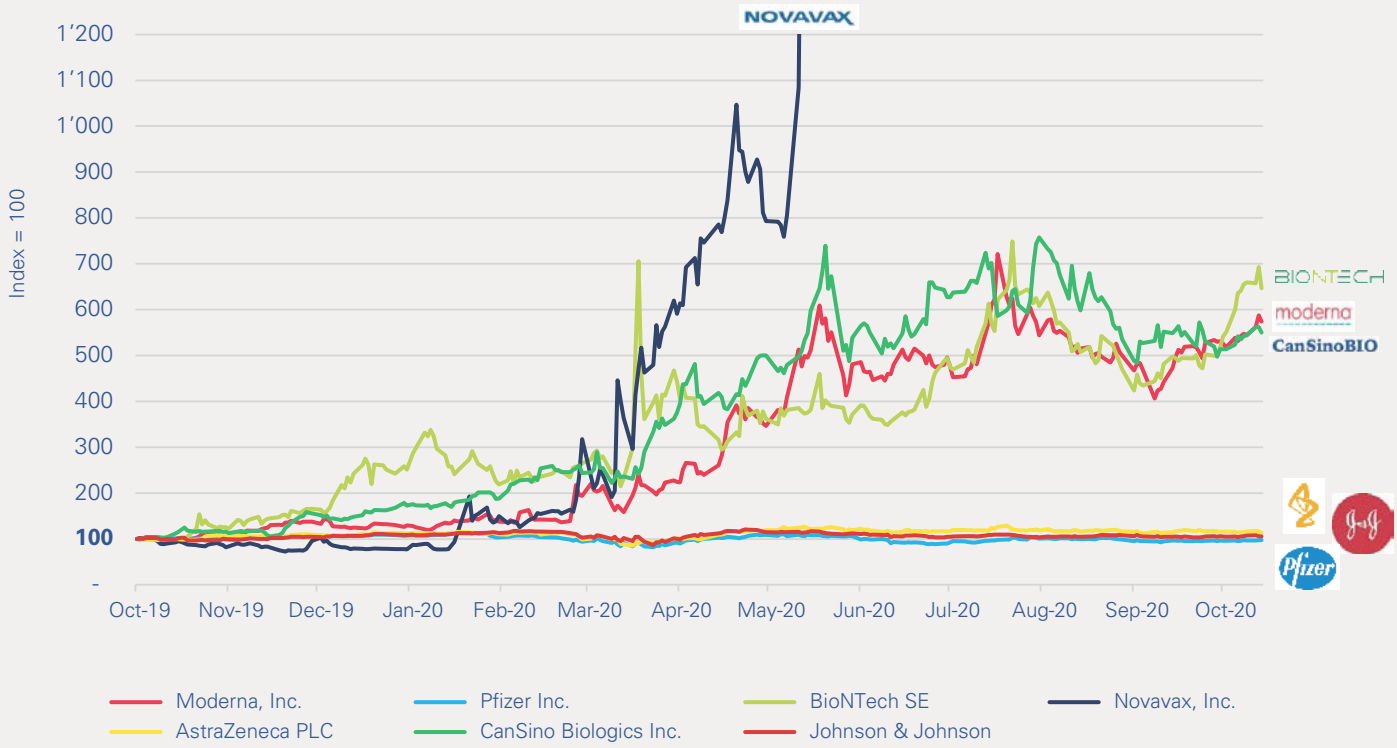
Under COVID-19, however, global attention has shifted industry competition. Governments and non-profit organisations have poured both general funding and funding to secure supply of vaccines in an attempt to speed up development and ensure

Phase 3 COVID-19 Vaccines-Market Capitalisation Development



Source: S&P Capital IQ.

Phase 3 COVID-19 Vaccines – Market Capitalisation Development (Index = 100)



Source: S&P Capital IQ.
Note: Novavax, Inc's market capitalisation growth, which exceeds 7,000%, has been limited graphically for presentation purposes.

supply to fight the virus. Many vaccine developers have pledged to supply vaccines at "zero profit" or "marginal profit" while others have upfront rejected this idea and will aim to capitalise as much as possible in providing a vaccine to fight against COVID-19 (Financial Times, 2020). At present, there are nine vaccine candidates in at least Phase 3 clinical research that promise a light at the end of the tunnel to the public. Below we examine how the market capitalisations of the companies in at least Phase 3 clinical research have developed over the past year, including: Johnson & Johnson, Pfizer (in partnership with BioNTech), Moderna, AstraZeneca (in partnership with Oxford University), Novavax, Inc. and CanSino Biologics, Inc. Other companies with Phase 3 candidates, such as Sinovac Biotech, have been excluded due to lack of available data. Analysis of the likely winners of the vaccine race is beyond the scope of this newsletter.

Two of the largest companies with COVID-19 vaccine candidates in Phase 3, Johnson & Johnson and AstraZeneca, have recovered to their market capitalisations of one year prior after experiencing a decline to a low-point towards the end of March 2020, followed by an average 17.3% recovery to mid-October 2020. Pfizer, who did not fully recover, showed a 2.3% decline in market capitalisation year over year with a similarly steep decline in March 2020.

Moderna (December 2018 IPO), BioNTech (October 2019 IPO) and CanSino Biologics (March 2019 IPO) experienced an average market capitalisation growth of 490% year over year. Novavax, Inc., who in October 2019 had the smallest market capitalisation of the group of EUR 100 million, experienced a 4,445% market capitalisation increase year over year to EUR 4.9 billion.

The investor public's consensus perception of the risk and return profile of a security, in general, steers the direction of its price. For example, when a Pharmaceutical company obtains successful clinical data and, as a result, obtains regulatory approval to market a new drug, the uncertainty (risk) surrounding the pending decision, and the corresponding uncertainty in achieving the projected cash flows, decreases and thus the price of the stock increases, *ceteris paribus*. As shown above, the largest companies' stock prices over the period were relatively unchanged since the outbreak of the COVID-19 pandemic, and significant increases above pre-pandemic levels appear unique to Moderna, BioNTech, CanSino Biologics and Novavax. One

could draw the conclusion that investors may not anticipate a significant cash flow impact, relative to the overall business, of the largest companies in the vaccine race over the course of their investment time horizons. A cause could be that many companies, including those above, have pledged to reap zero or marginal profits in the sale of vaccines related to COVID-19. Furthermore, pricing decisions and the ability to profit from investments in vaccine development are likely to be limited by the large amount of non-profit and government funding that has propelled development of COVID-19 vaccines by governments around the world. COVID-19 vaccine developers may be viewed, then, merely as winners of public trust and recognition, rather than able to benefit from meaningful overall cash flow increases.

Moderna, BioNTech, CanSino Biologics and Novavax, which have shown noticeably high returns over the period despite still being loss making, are relatively smaller and their ascendency in the vaccine race has likely been a contributor to their growing market capitalisations. As such, the ability to market a COVID-19 vaccine would likely have a much more significant impact relative to their overall businesses than it would on the other larger and more diversified vaccine developers and pharmaceutical companies. Even without significant profits, whether by choice or not, in marketing a COVID-19 vaccine, the recognition and corresponding public trust would likely be of greater significance to them and their investors.

Measuring in the maze

Putting together the Pharma and Biotech decision making puzzle

Valuation in the Pharmaceutical and Biotechnology sector

The unique aspects of the Pharmaceutical and Biotechnology sectors, such as the binary nature of the regulatory approval process, make it a challenge to produce supportable and robust valuation analyses, make sound investment decisions, and produce reliable estimates for financial reporting and tax purposes. Many valuation analysts have thus developed valuation methodologies, such as the probability weighted discounted cash flow method and the risk-adjusted net present value method, in an effort to minimize this inherent difficulty.

Valuation analysts rely on three generally accepted valuation approaches to estimate the value of an asset or business: the Income Approach, the Market Approach and the Cost Approach.

As discussed earlier in this newsletter, pharmaceutical companies are subject to various market forces that impact their performance and limit the usefulness of the traditional valuation approaches. For example, the Market Approach's usefulness is greatly limited by the dissimilarity of the risk profiles unique to each drug, which may not be reasonably measurable under this approach. For this reason, the Market Approach is generally not relied upon by valuation analysts within the Pharmaceutical sector. The Cost Approach is generally rejected in the valuation of income producing assets, such as an equity interest in a pharmaceutical company, as the benefits to the owner(s) can more reliably be estimated using other means, such as the Income Approach.

Income Approach
The Income Approach, which determines value based on projected future economic benefits to the asset's owner(s), is commonly used when the valuation practitioner is able to reasonably project the asset's performance over time, making assumptions regarding growth, margins and further investments to support the planned growth, among others. It is often the preferred valuation approach when quality data is available due to its greater transparency.

Market Approach
The Market Approach, which determines value based on the observed purchases of similar assets, most often in the form of quoted prices of similar publicly traded companies or transactions of private companies, is strongest when there is a reasonable number of recent transactions available upon which the value of the asset or business can be implied.

Cost Approach
The Cost Approach, which determines value based on estimates of the cost to reproduce or replace an asset or business, is strongest when such costs can be reasonably estimated, and when the performance of an asset or business is not expected to increase over time, such as increased future profitability. If the performance of the asset or business fluctuates over time and the benefit to the owner can be enhanced, it is likely the Income Approach would be a better alternative to the Cost Approach.

The performance and long-term profitability of a pharmaceutical company directly relate to the ability to maintain exclusivity in the drug markets in which it operates and the rate at which it can introduce newly approved and exclusive drugs from its pipeline. Achieving regulatory approval and obtaining exclusivity is "binary" in nature, either you achieve approval or not, and reasonably predicting the outcome is a challenge. This unique aspect of the industry makes it a burden to utilise the Income Approach in its traditional way. For example, using the traditional discounted cash flow ("DCF") analysis, a widely

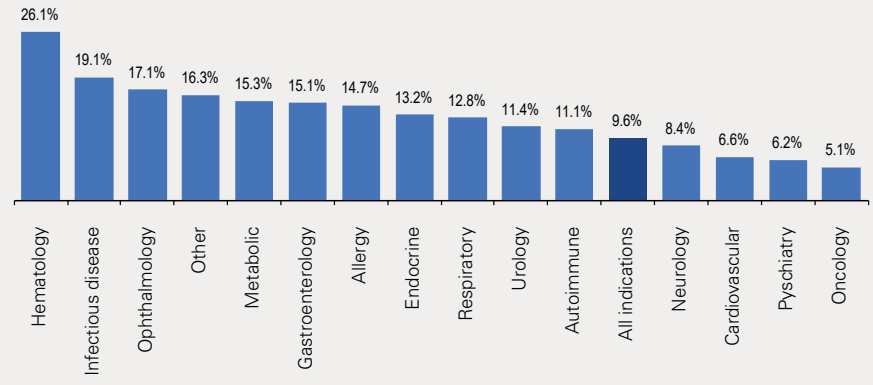
accepted valuation method under the Income Approach, limits the ability of the valuation analyst to capture the binary nature of the approval process as it generally relies on a single cash flow scenario. To alleviate this, variations of the DCF method have been developed, such as the probability weighted DCF ("PWDCF") method and the risk-adjusted net present value ("rNPV") method, to develop more supportable and transparent value indications enabling the valuation analyst to consider the industry's unique market forces.

Risk-adjusted Net Present Value

The traditional DCF method involves projecting the future economic benefits to the business' owner(s), in the form of cash flows, and discounting them to their Net Present Value ("NPV") at the business' estimated cost of capital. As the binary nature unique to the industry cannot reasonably be captured in the estimated cost of capital or discount rate, a modification can be made to the DCF by estimating and including an adjustment for the Probability of Success ("PoS"). The risk-adjusted net present value method thus gets its name as it considers the specific incremental uncertainty of the drug not achieving approval and reaching the market.

A significant portion of the risk inherent to the valuation of pharmaceutical companies is due to the product-specific risk or idiosyncratic risk (i.e. non-diversifiable risk). The Probability of Success, also referred to often as the Likelihood of Approval ("LoA") captures the risk that a certain drug will not achieve all necessary regulatory milestones and will fall short of commercialisation. Generally, each stage of the regulatory approval process has its own PoS, which adds further complexity and if a company is developing multiple drug candidates, which is often the case, there is even further complexity to consider and the overall company value should be estimated in a sum-of-the-parts manner, assessing each drug individually prior to aggregation.

Valuation analysts generally rely on industry studies that categorise various types of drugs and publish the historically observed success rates by drug type at each phase of the approval process. Pharmaceutical companies also make use of industry experts who dive into the details of regulatory filings and of the designs of studies and other sources to enhance their estimates. Occasionally, though, sufficient data may be unavailable, and companies must rely on their instincts and intuition, potentially provoking opposition in the transaction setting. Typically, the PoS depends on the respective macro-therapeutic area, drug classification, drug modalities, and the planned strategy for patient enrolment in clinical studies. Below is an example that shows various predicted PoS' based on various macro-therapeutic areas.



Source: Biotechnology Innovation Organisation, Biomed tracker, Amplion; Clinical Development Success Rates 2006-2015.

Probability weighted DCF method

An alternative methodology, also stemming from the DCF method, is the probability weighted DCF method, which instead of a single cash flow scenario, relies on multiple likely cash flow scenarios, weighted each by their respective probabilities of realisation. The multiple likely cash flow scenarios are often derived by developing various cases i.e. bull, bear, base cases, making various assumptions about the company's pipeline such as the portion of the current pipeline that will be approved, where for example, the bear case may assume only a small portion or a minimum possible amount of the drugs in the development pipeline actually achieve approval and commercialisation.

The valuation analyst must also consider the possible long-term prospects of the various drugs, which typically requires extending the projection period to capture possible patent and exclusivity cliffs, i.e. when the drug will begin to face generic competition. As discussed previously in this newsletter, patents can typically last up to 20 years, much of which may expire during the regulatory approval process, while market exclusivity typically lasts between 3-7 years under FDA rules or up to 11 years under EMA's 8+2+1 regime after approval. These timelines and possible extensions should be factored into the various cases developed by the valuation analyst.

The probabilities of the various cases are typically derived by deconstructing revenue streams into their various components at a more granular level, i.e. by breaking down into the various drugs and deciding how certain parameters may impact each of the cases' assumptions. Using a Score-Card Approach, the valuation analyst can assess factors such as the stability of the cash flows, barriers to entry, the market position of the company, the company's balance sheet, and the company or product lifecycle and derive meaningful indications of the likelihood of realisation of the various scenarios and aid in assigning probabilities.

High level of uncertainty in valuations: What can other industries learn from Pharmaceutical and Biotechnology during COVID-19?

Many of the valuation methodologies employed in the inherently uncertain Pharmaceutical and Biotechnology sectors can be helpful during other uncertain times, such as recessions or viral outbreaks where consumer behaviour shifts significantly. During the current period of particular adversity due to the COVID-19 outbreak, valuation analysts may find themselves unable to support the assumptions in their analyses. It can thus be fruitful for valuation analysts to remind themselves of the common methodologies in the Pharmaceutical sector and adapt them to their unique situation. Borrowing such methods, which have been successfully applied for many years, can be helpful to regain orientation and transparency and once more be able to make informed and wise decisions with a robust and defensible analysis, whether for investment, joint-ventures or alliances, financial reporting or tax purposes, or in dispute resolutions. Our 12th edition of the Quarterly Brief, published in Q3 2020, contains further discussion on adapting these various methods to the COVID-19 situation.

Capital market data

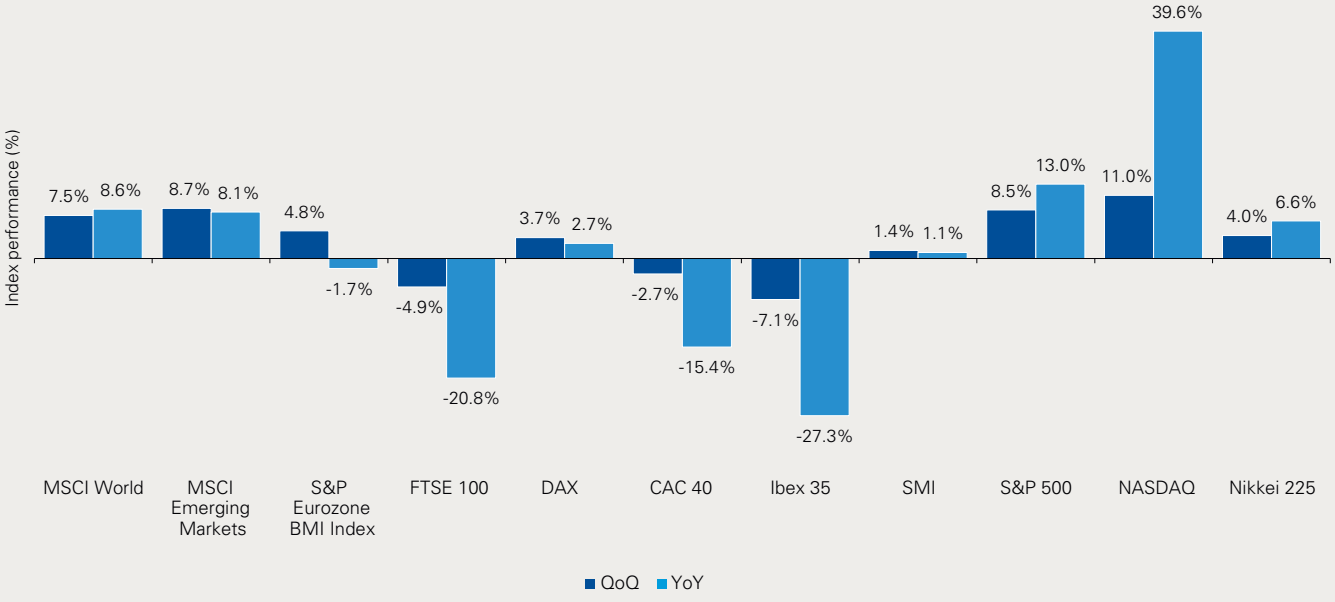
In this section, we provide a selection of key financial market data covering:

- Comparison of major stock market performance for the 12 months ending 30 September 2020
- S&P Eurozone BMI Index sector multiples
- Risk-free rates for major currencies
- Country risk premiums and inflation forecasts for the BRIC countries

Major stock market performance: Europe's stock markets strikingly underperform

While COVID-19 continues to be a dominating global topic, the effect on stock markets varies. US indices such as the S&P 500 (+13.0%) and the NASDAQ (+39.6%) and the Japanese Nikkei 225 (+6.6%) as well as international indices such as the MSCI world (+8.6%) and the MSCI Emerging Markets (+8.6%) all achieved positive returns year over year, despite the outbreak of the pandemic. In contrast, many European stock indices underperformed. In our sample, the Ibex 35 performed the worst year over year (-27.3%) followed by the FTSE 100 (-20.8%). While investors in the CAC and the S&P Eurozone faced negative returns (-15.4% and -1.7%, respectively), investors in the DAX and the SMI achieved slightly positive returns (+2.7% and 1.1%, respectively). Stock market performance over the next few months will likely be driven by the development of COVID-19 figures and their effect on the economy and will be driven as well by the upcoming United States presidential election.

Performance of leading indices
30 September 2019 – 30 September 2020



Source: Capital IQ, KPMG analysis.

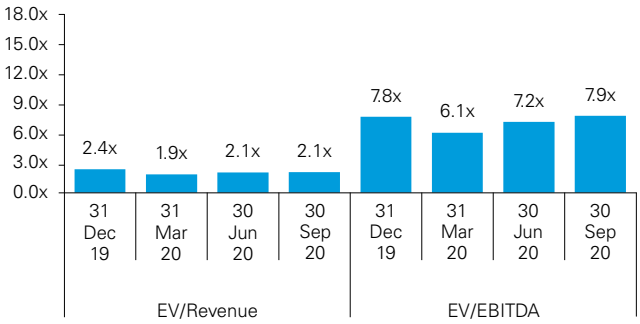
S&P Eurozone BMI Index sector multiples: Most sector multiples up

The enterprise value (EV) multiple states the market value of the business in relation to an appropriate base metric. Commonly used base metrics include revenue and EBITDA. The numerator (EV) and denominator (revenue, EBITDA) represent all investor's claims on the business.

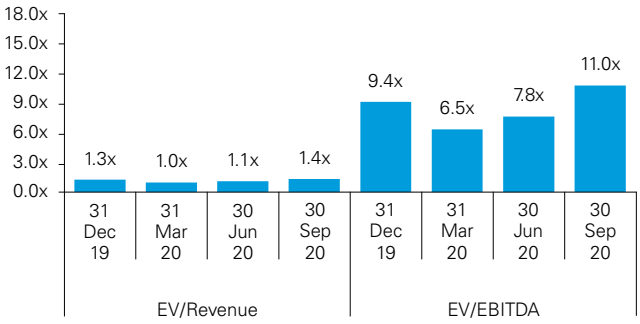
Out of the eleven sectors considered, nine showed increases in their EV/EBITDA multiples while the remaining two fell over the past quarter. Consumer Staples and Healthcare EV/EBITDA multiples declined by 0.5x and 0.7x on a quarterly basis and now amount to 9.6x and 15.4x, respectively. Consumer Discretionary and the Information Technology sector multiples gained the most over the last quarter by 2.3x and 3.2x, respectively.

It is essential to put these developments into broader context. The EBITDA of most companies was likely affected in a variety of ways over the last months due to the impact of COVID-19 and the various related measures that have been enforced around the world. As such, it is imperative to analyse each company in the context of its respective sector when using relative valuation methodologies such as when applying multiples.

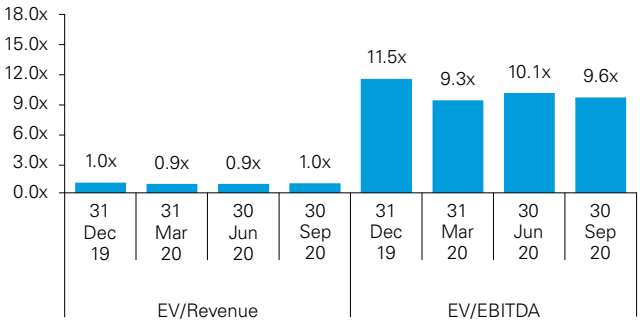
Communication Services Median



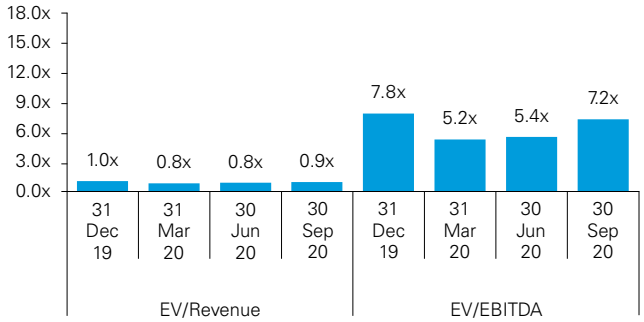
Consumer Discretionary Median



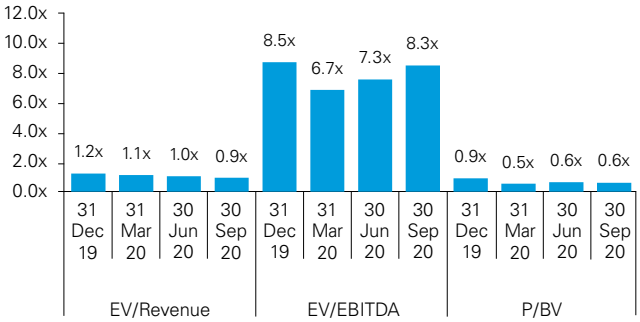
Consumer Staples Median



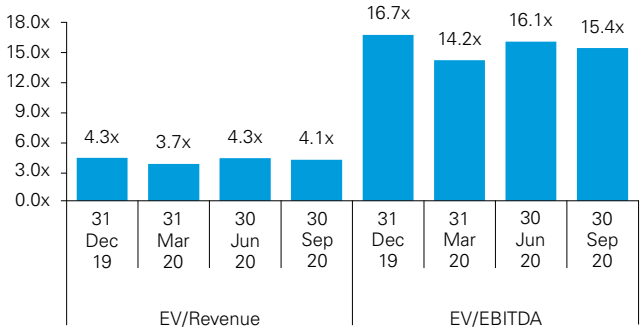
Energy (Oil and Gas) Median



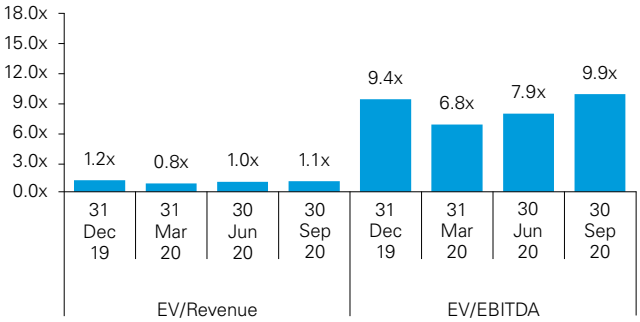
Financials Median[1]



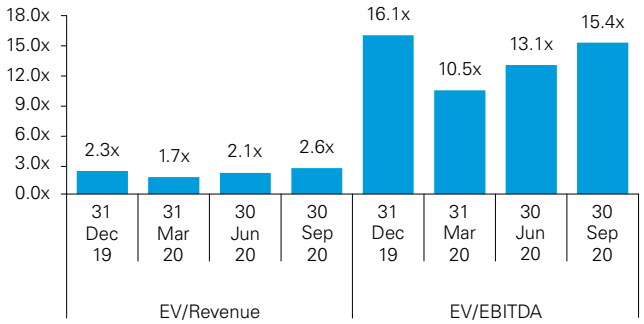
Healthcare Median



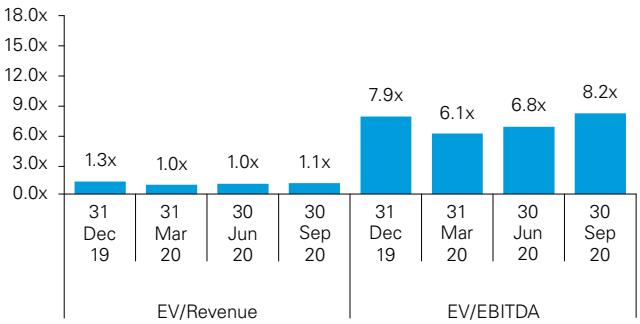
Industrials Median



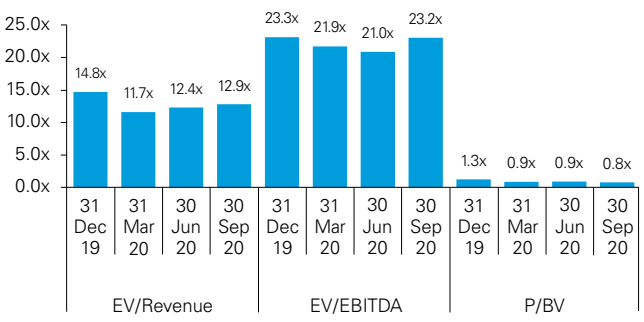
Information Technology Median



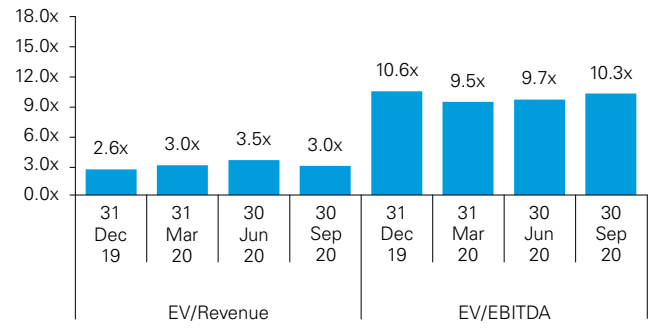
Materials Median



Real Estate Median



Utilities Median



Source: Capital IQ, KPMG analysis.

Notes: Multiples are analysed based on the latest information available as of the assessment date for the respective edition of the Quarterly Brief. Changes of index composition, revised financial information and newly available information as of the respective assessment date may cause multiples to change.

[1] Financial services companies differ from many other companies in how they operate. Debt acts more as 'raw material' than operational capital for financial services companies. A common valuation metric used by analysts evaluating such firms is the price to book (P/B) ratio.

Risk-free rates: Different directions across the globe

The risk-free rate (or base rate) can generally be broken down into two key components that seek to compensate the investor: the first for expected inflation and the second for deferred consumption. The base rate is considered to be free of risk except for risks embedded in the underlying currency and risks related to investments in the particular country. As no investment is truly risk free, the risk-free rate is typically approximated by referencing the yield on long-term debt instruments issued by presumably financially healthy governments. The historical risk-free rates for the Eurozone, Germany, the US, the UK and Switzerland are shown below.

Compared to Q2 2020, risk-free rates in the Eurozone, Germany, and Switzerland have further declined. The risk-free rate in Switzerland is the lowest of our sample and amounts to -0.32%. The risk-free rate in the US remained relatively stable at 1.61% as of 30 September 2020. In the UK, however, interest rates increased from 0.56% in Q2 2020 to 0.72%. Similar to other macroeconomic indicators, the development of the risk-free rate is highly dependent on the trajectory of the COVID-19 pandemic and measures taken by central banks to counter its effects.

Risk-free rates

	EUR	EUR	GBP	CHF	USD
31/3/2016	1.03%	0.90%	2.39%	0.25%	2.81%
30/6/2016	0.46%	0.49%	1.85%	(0.03)%	2.50%
30/9/2016	0.53%	0.47%	1.61%	(0.06)%	2.48%
31/12/2016	0.97%	0.95%	2.03%	0.35%	3.06%
31/03/2017	1.25%	1.24%	1.88%	0.32%	3.27%
30/06/2017	1.39%	1.33%	2.02%	0.39%	3.04%
30/09/2017	1.40%	1.38%	2.05%	0.45%	3.04%
31/12/2017	1.34%	1.34%	1.89%	0.36%	2.89%
31/03/2018	1.25%	1.24%	1.79%	0.56%	3.08%
30/06/2018	1.09%	1.12%	1.83%	0.51%	3.00%
30/09/2018	1.13%	1.15%	1.87%	0.61%	3.10%
31/12/2018	0.90%	0.94%	1.91%	0.37%	3.17%
31/03/2019	0.67%	0.65%	1.65%	0.17%	2.96%
30/06/2019	0.35%	0.33%	1.56%	0.02%	2.71%
30/09/2019	(0.03)%	(0.03)%	0.88%	(0.36)%	2.25%
31/12/2019	0.37%	0.34%	1.25%	(0.16)%	2.46%
31/03/2020	0.06%	0.01%	0.68%	(0.20)%	1.54%
30/06/2020	0.01%	(0.02)%	0.56%	(0.29)%	1.60%
30/09/2020	(0.08)%	(0.11)%	0.72%	(0.32)%	1.61%

Source: KPMG analysis.
Approach: Determination of a present value-equivalent uniform interest rate based on the yield curve of the respective central bank.

Country risk premium: Relatively stable compared to Q2 2020

The country risk premium is a measure of risk that accounts for incremental political, economic, legal, liquidity and other risks that businesses face in less developed capital markets. Recently, country risk has become increasingly more relevant to investors, due to the many changes experienced by the global economy. Restrictive trade policies, in particular, have made investment performance in previously stable countries less predictable. KPMG's Valuation practice has been analysing and measuring country risk for 15 years and covers more than 150 sovereign states in a proprietary KPMG model.

Compared to Q2 2020, Brazil's country risk premium increased slightly to 3.1%, following the trend over the last four quarters. Since 31 December 2019, Brazil's country risk premium has increased by 0.4 percentage points, the highest increase of our sample. Over the last four quarters, India and China's country risk premiums rose by 0.2 percentage points to 2.0% and 0.7% respectively. Russia's country risk premium remained relatively stable over the last twelve months and increased by only 0.1 percentage points in Q3 2020 to 2.0%.

Country risk premium

	31 Dec 19	31 Mar 20	30 Jun 20	30 Sep 20
	2.7%	2.8%	3.0%	3.1%
	1.9%	1.9%	1.9%	2.0%
	1.8%	1.9%	2.0%	2.0%
	0.5%	0.5%	0.6%	0.7%

Based on two-year analysis.
Source: KPMG CRP study.

Growth rates: Long-term growth expectations for Russia and India have increased

Growth rates are a major component of the terminal value calculation for the discounted cash flow method. Inflation forecasts are one of the typical indicators that can be used to assess the long-term growth rate. The inflation rates for Brazil, Russia, India and China are based on the Economist Intelligence Unit's ("EIU") inflation forecast for the years 2020 to 2024. The expected inflation can be measured through several parameters. For our presentation, we consider the Consumer Price Index ("CPI") and the GDP deflator. The CPI is a measure that examines the weighted average of prices of a basket of consumer goods and services, while the GDP deflator, calculated as the difference between nominal and real GDP, measures the change in prices for all of the goods and services produced in an economy.

Compared to the prior quarter, EIU revised its inflation expectations for 2020 upwards for all countries, which is most likely related to the development of COVID-19. The highest long-term growth is expected for India with CPI and GDP deflator both amounting to 4.4% in 2024. Russia is expected to show the second highest growth with a CPI of 3.5% and a GDP Deflator of 4.0% in 2024. Lower long-term growth rates are expected for Brazil and China with an expected GDP deflator of 3.0% and 1.8% respectively in 2024.

Inflation forecast

Country		2020	2021	2022	2023	2024
	CPI	2.8%	2.8%	3.5%	3.4%	3.2%
	GDP Deflator	3.9%	2.5%	2.9%	2.6%	3.0%
	CPI	3.4%	3.9%	3.6%	3.7%	3.5%
	GDP Deflator	1.0%	3.9%	5.7%	5.3%	4.0%
	CPI	5.2%	4.0%	4.6%	4.2%	4.4%
	GDP Deflator	7.4%	3.4%	3.6%	3.9%	4.4%
	CPI	3.5%	3.1%	3.0%	2.9%	2.7%
	GDP Deflator	(1.0)%	0.8%	2.2%	1.8%	1.8%

Source: EIU.

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