PitchBook

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M&A Report

1Q 2019

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Introduction

Following a fervent 2018, the pace of M&A activity in North America and Europe slowed in 1Q 2019. However, with numerous multibillion-dollar deals announced, activity ought to remain healthy throughout the year. Following a steep decline in debt and equity markets in 4Q 2018, the first quarter in 2019 saw healthy rebounds on both sides of the pond, likely setting up a continuation of the current M&A cycle. Corporates continue to be active acquirers, using M&A to obtain new technologies or quickly grow scale. They are increasingly divesting companies as well, seeking to run leaner operations and attain higher valuation multiples.

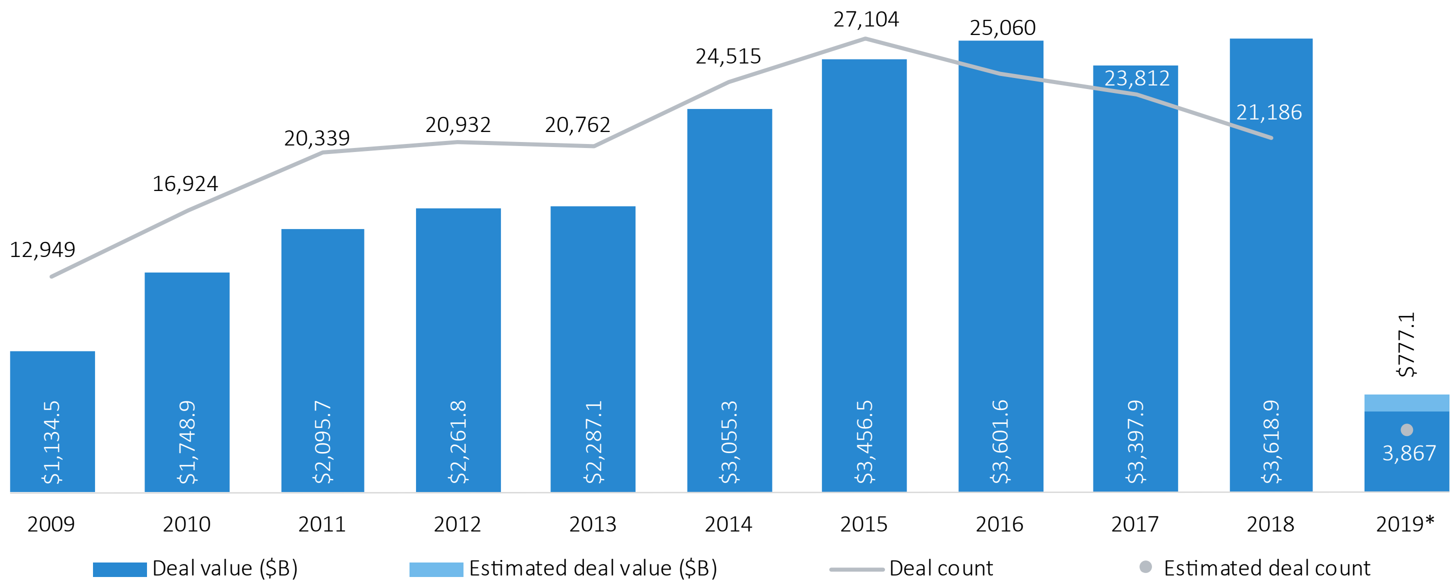
Multiples remain elevated as the economic expansion continues and competition for assets remains fierce. Gold mining and payments—two rather niche subsectors—have seen monumental deals in recent months that promise to reshape the industries. A pair of gold mining combinations, each valued above $10 billion, may cause a flurry of M&A activity as smaller players can no longer compete with the newly formed giants. Similarly, two payment processors inked expansionary deals that may alter the competitive landscape in a quickly changing industry.

The healthcare sector has also witnessed a flurry of M&A activity, driven by a few gargantuan oncology deals. Competitive forces, propelled by the explosion of growth in oncology spending, has narrowed the time between the launch of a drug and the launch of its competitor, forcing the hand of some incumbents. Additionally, with many more mega-deals ($1 billion+) announced or further down the pipeline, M&A activity in the healthcare sector ought to remain robust throughout the year.

Wylie Fernyhough
Senior Analyst, PE

Overview

M&A activity



Source: PitchBook | **Geography:** North America & Europe
*As of March 31, 2019

M&A activity slowed in 1Q 2019 following 2018's strong finish, with 3,867 deals totaling $777.1 billion closing in the quarter. Deal value fell 2.6% YoY while deal count was down 36.4% YoY as a few massive deals buoyed overall value. In today's business environment, companies must balance global tension and protectionism with near-record profit margins and technology that is changing how entire industries operate; many are turning to dealmaking to stay ahead of the curve. Corporates continue to make splashy entries into the M&A market with multibillion-dollar, empire-building acquisitions, such as BB&T's (NYSE: BBT) $66 billion acquisition of SunTrust Banks (NYSE: STI)—the largest banking deal since the Global Financial Crisis. Six deals above $10 billion closed in the quarter, the largest of which was The Walt Disney Company's (NYSE: DIS) $71.3 billion acquisition of Fox's (NASDAQ: FOX) entertainment assets.

While multiple $10 billion+ deals closed in the quarter, plenty more were announced, meaning M&A activity is likely to sustain its recent momentum. General Electric (NYSE: GE) announced one $10 billion+ deal during the quarter and closed another. In 1Q, GE closed on a $11.1 billion deal to combine its transportation business with Wabtec (NYSE: WAB). The transaction combines two rail equipment manufacturing companies offering complementary products. The structuring of the deal was unique, with GE receiving $2.9 billion in cash and shares in the combined entity that will total 50.1% ownership. In addition, GE announced it came to an agreement to sell its biopharma business to Danaher (NYSE: DHR) for $21.4 billion. Danaher is known for its use of the roll-up strategy by which it accomplishes most of its growth through acquisition, similar to the add-on strategy in PE. While the sale of the biopharma business represents the largest bet to turnaround the lagging company, GE will likely have to divest additional assets in the coming quarters.

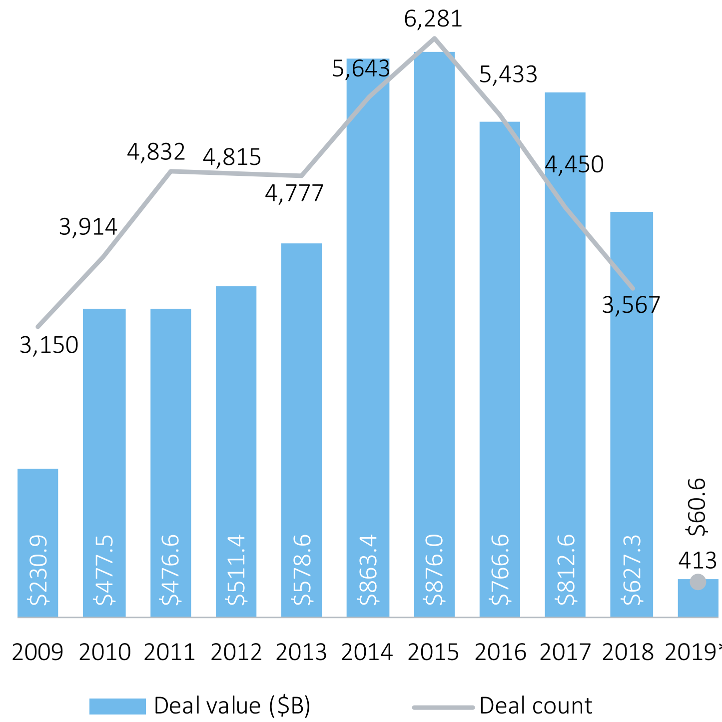
While GE has been active in shedding assets to pay down debt and quell investors' worries over inflated debt loads, sagging profits and poor share performance, others are also reviewing businesses more frequently and selling off units, rather than just attempting to grow the asset base. Though there is a clear link between company size and CEO pay providing incentive for acquisitive expansion,[1] activist investors are increasingly playing a role in pushing for profitability rather than growth at any cost. More than half of all business combinations create less-than-anticipated cost savings from synergies, according to the EY Global Capital Confidence Barometer.[2] These shareholders are vocal agitators and can often spur corporate divestitures or restructurings aimed at reducing the conglomerate discount. Recently, Third

1: "The Relationship Between Company Size and CEO Pay," World at Work, Kevin F. Hallock, February 2011
2: "US Dealmakers Focus on Integration and M&A Readiness," Ernst & Young, Bill Casey, October 8, 2018

Overview

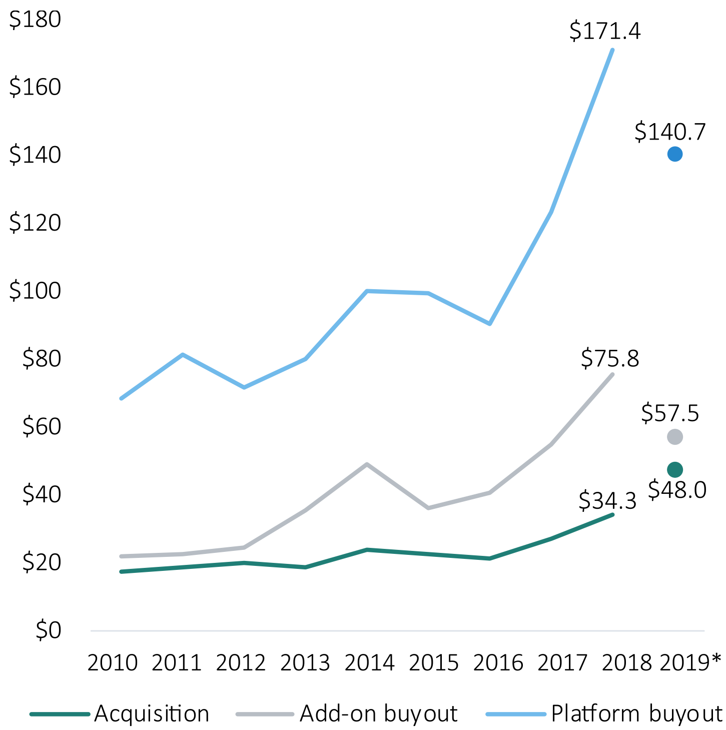
Point—an activist hedge fund—had launched a campaign against Campbell Soup Company (NYSE: CPB), attempting to replace the entire board and sell the entire company. The two parties eventually agreed to add two Third Point nominees to the board. Campbell's recently announced that it will be selling Bolthouse Farms for $510 million. Other divestitures may be on the way as Third Point works with Campbell's to turn around the business. Seeking to fend off activists before a campaign is launched, others in the industry have taken a proactive approach. One example of this came from Kellogg (NYSE: K) in 1Q, when the company agreed to sell its Keebler, Famous Amos and fruit snacks businesses to Ferrero for $1.3 billion. Others in the food industry are seeking to simplify their portfolios as well, with General Mills (NYSE: GIS) announcing plans to divest about 5% of its portfolio. The food industry is under fire due to changing consumer preferences, with new companies upending the old guard and forcing them to innovate and pursue M&A transactions. While it may produce short-term gains, these companies must constantly invest in new products or else face dramatic declines in sales, as we have seen at Kraft Heinz, for example.

Carveout activity



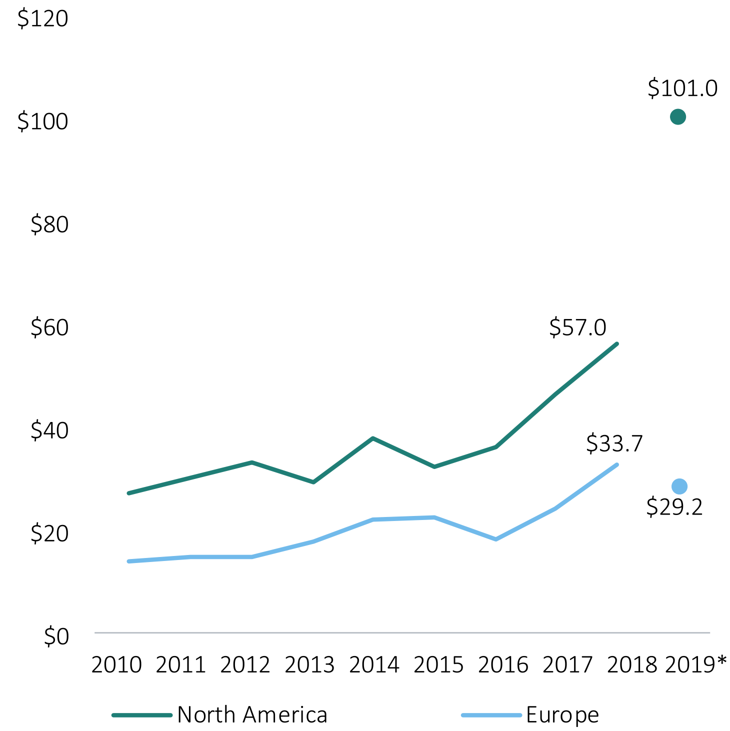
Source: PitchBook | **Geography:** North America & Europe
*As of March 31, 2019

Median M&A deal size ($M) by type



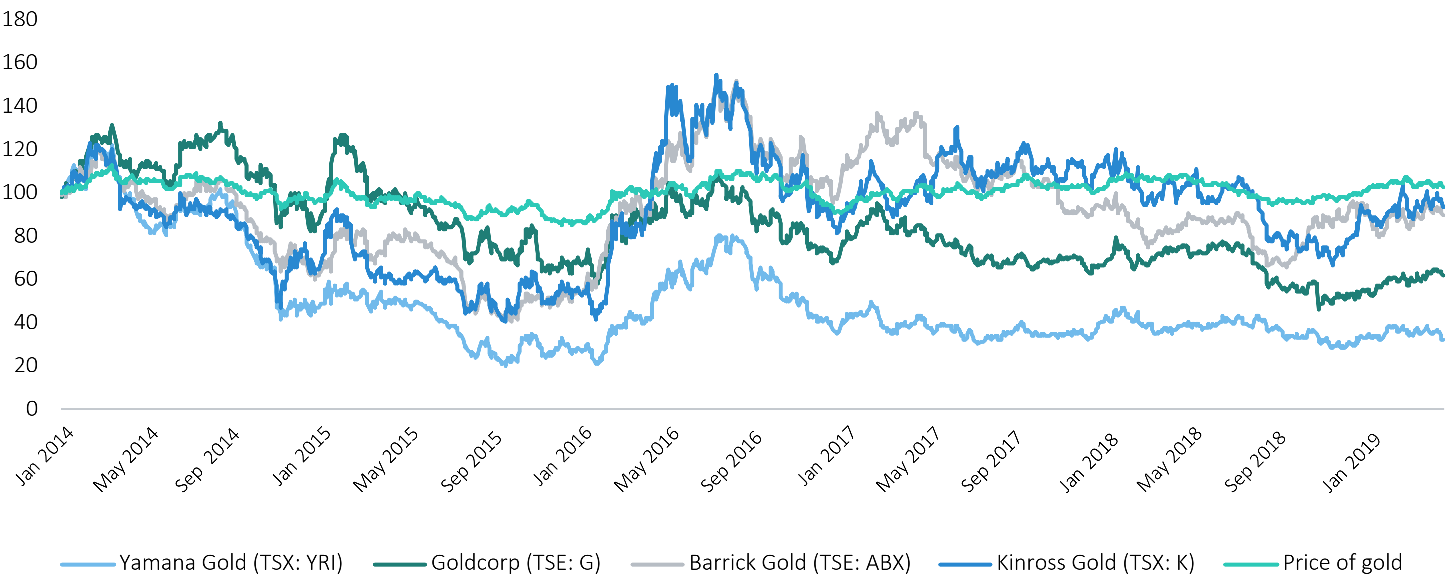
Source: PitchBook | **Geography:** North America & Europe
*As of March 31, 2019

Median M&A deal size ($M) by region



Source: PitchBook | **Geography:** North America & Europe
*As of March 31, 2019

Gold industry price performance rebased to 100 in January 2014



Source: Morningstar | **Geography:** US & Canada
*As of March 31, 2019

While activist hedge funds have become increasingly effective in pushing for change in public companies, some research shows these changes do not have any long-term effects on shareholder value (positive or negative), calling the long-term impacts on returns "insignificantly different from zero."[3] In an evolution of the activist strategy, some are bundling activist funds with the ability to complete buyouts. One example of this is Elliott Management, which expanded its tech-focused, in-house PE group and named it Evergreen Coast Capital. The group has successfully negotiated several high-profile buyouts in recent months, including a $2.0 billion take-private leveraged buyout (LBO) of Travelport Worldwide and a $5.7 billion take-private of Athenahealth. Many peers will be scrutinizing Elliott and Evergreen Coast to see how these buyouts perform. In the future, we may see activist hedge funds not only push for a company to sell off assets, but also compete for the buyout with other bidders. We will be watching this closely in the coming years.

Another area to watch is the materials & resources sector, which made a sizable impact on M&A figures in 1Q with two deals priced at $10 billion or more. In the largest transaction, Barrick Gold (TSE: ABX) acquired Randgold Resources for $18.3 billion in stock. Original Barrick shareholders now control two-thirds of the new Barrick, while previous Randgold shareholders will own one-third. Additionally, Goldcorp (TSE: G) acquired Newmont Mining for $10 billion. To compete with this new breed of mega gold miners and combat lagging share prices due to stagnant gold prices and rising costs, we may see other Canadian gold companies use M&A to scale, including Yamana Gold (TSX: YRI) and Kinross Gold (TSX: K).

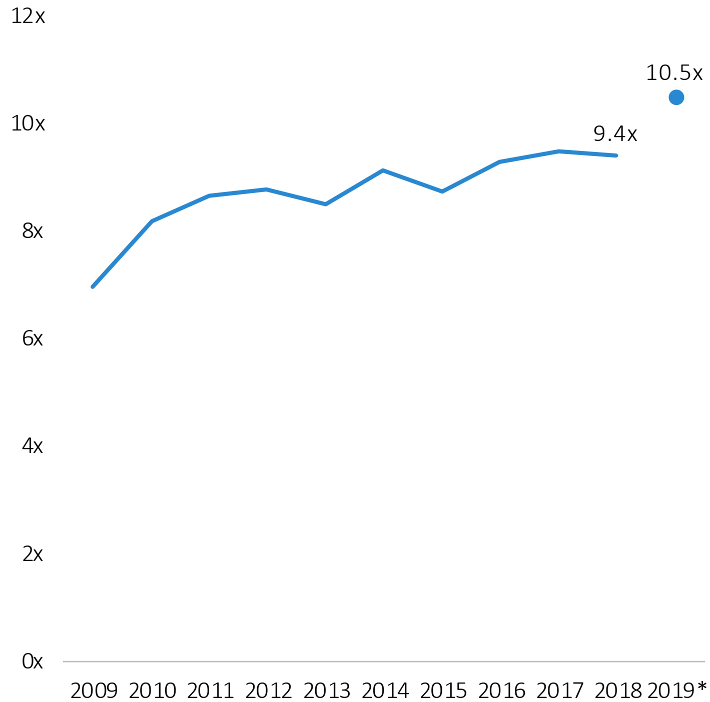
Looking more broadly, the M&A picture appears cloudy, and we are seeing mixed signals. On one hand, there have been numerous massive deals announced and acquirers are becoming proactive. Strategic and financial buyers are being aggressive, often submitting unsolicited offers. In 1Q, for example, SAP closed on its purchase of Qualtrics for $8.0 billion. Qualtrics was in its pre-IPO registration period, and the acquisition price was nearly twice the valuation at which the company was seeking to go public. Yet on the other hand, the US is seeing a prolonged slowdown in manufacturing output,[4] and the Federal Reserve Board has, for the time being, stopped raising interest rates.[5] These signs have sparked worry, and many industry prognosticators are moving forward their recession predictions.[6]

3: "Long-Term Economic Consequences of Hedge Fund Activist Interventions," Ed deHaan, David F. Larcker & Charles McClure, December 31, 2018
4: "Federal Reserve Statistical Release G.17," Federal Reserve, April 16, 2019
5: The slowdown in rates can be interpreted twofold: Traditionally, this has meant the Fed sees potential headwinds ahead for the economy and wants to cease raising the price of borrowing. On the other hand, this may lead to a prolonging of the current economic expansion.
6: "Forecasting the Next Recession," Guggenheim, Scott Minerd, Brian Smedley & Matt Bush, April 2019

Overview

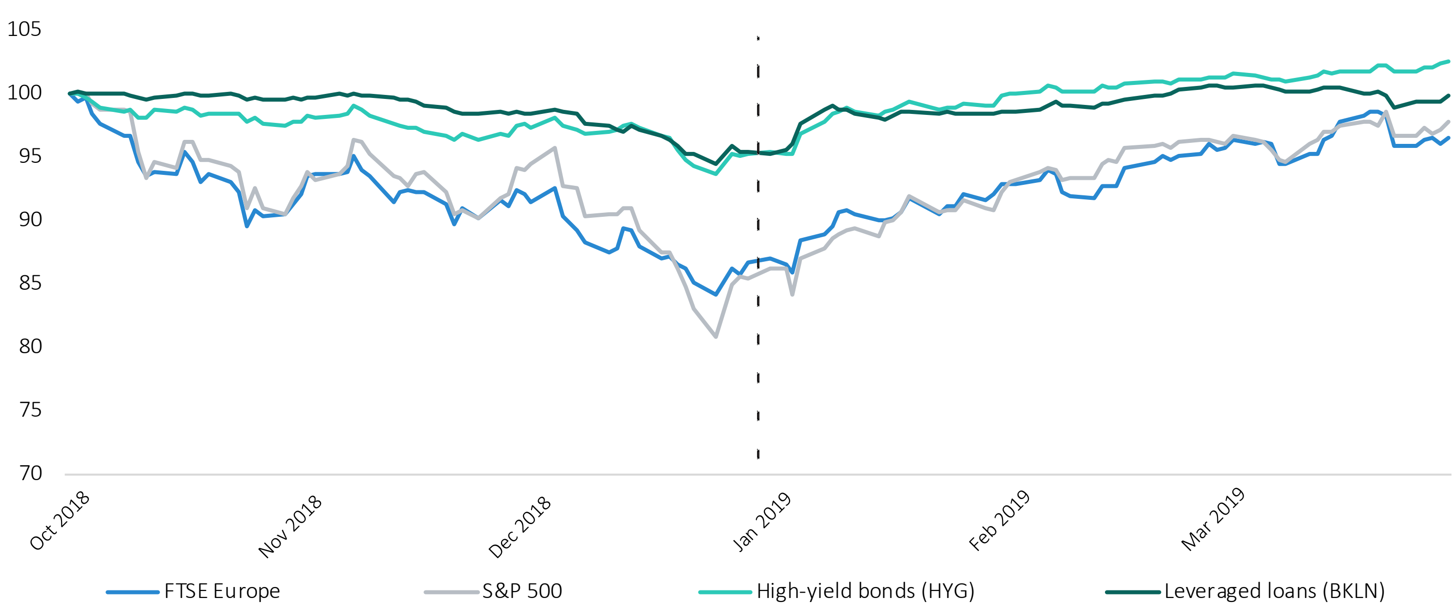
Despite deal value coming in relatively flat, the median EV/EBITDA multiple crested 10.0x in 1Q 2019. While this may appear elevated, the median has breached 10.0x in prior quarters before slipping back into single-digit territory by year end. Though this is just one quarter, many of the deals to close in the quarter were negotiated in 4Q 2018 or even earlier—when we would have expected M&A pricing to reflect the poor performance seen in most public indices during that time. However, 1Q 2019 saw a sustained market recovery, meaning transaction multiples ought to move higher as well. If the equity market recovery persists through 2019, the median EV/EBITDA multiple may see a record annual figure above 10.0x. The increase over 2018's median is mainly due to a jump in the North American median (10.9x), which came in 1.5x higher than its 2018 full-year figure (9.4x). Multiples in Europe came in exactly even with their previous amount (9.6x). This divergence is likely due to the dramatic rise in median deal size seen in North America while it dropped in Europe. The underlying transaction composition for North American deals saw a greater amount of sizable deals, which tend to close at higher multiples.

Median M&A EV/EBITDA multiples



Source: PitchBook | **Geography:** North America & Europe
*As of March 31, 2019

Price performance of select indices rebased to 100 in October 2018



Source: Morningstar | **Geography:** North America & Europe
*As of March 31, 2019

Ansarada: Q&A with Rob Levey

Rob Levey
VP of Americas Region

What key trends are you seeing that are newly emergent in the M&A landscape? What about cross-border shifts you're seeing in your business?

On both sides of the world, there seems to be a real sense of optimism toward M&A activity in 2019. This is exciting as it confirms that companies still view M&A as a viable growth strategy.

On the Australian side (we're headquartered in Sydney, after all), 93% of senior executives predicted an increase in M&A in 2019.[7] Many were hoping to push deals more assertively to boost market share and strengthen their businesses against a wave of uncertainty and disruption.

In the US, things are looking just as hopeful. 76% of M&A executives at US-headquartered companies and 87% of M&A leaders at domestic PE firms anticipate their organizations closing even more deals this year than in previous years.[8]

Regarding cross-border shifts, we're seeing significant US interest in the Australian fintech industry. According to our data, US investment accounts for 38% of the total offshore interest in the sector. 2018 was Australia's second-highest year for fintech transactions, recording a mammoth $600 million across 28 deals.[9] US investment looks to continue as a big player in Australia's fintech boom.

How has the current dealmaking environment transformed the typical transactional process, relative to, say, five years ago?

For a long time, the drive to acquire new technology was the key strategic impetus behind corporate and PE M&A activity. But technology is no longer the primary motivator in companies' M&A strategies.

With the price of technology on the rise, other factors are proving to be more influential on M&A activity. There's now an increased focus on buying a company in order to grow sales in existing markets, to expand into new ones, or to diversify or improve product or services offerings.[10] PE interest in M&A stems from a desire to improve revenue of portfolio companies, as well as acquire new growth strategies for said companies.

While tech may no longer dominate in the realm of M&A transactions, a diverse crop of strategic motivators bodes well for continued interest in dealmaking.

From Ansarada's perspective, when it comes to general M&A, what are the key hurdles companies are underestimating in the current dealmaking climate?

M&A transactions come in all shapes and sizes, and no two are alike. But there are certain pitfalls that tend to plague a good chunk of deals and can stop them dead in their tracks. Readiness to act has become a recurring theme. This comes in many forms, but being in a state of "always-on readiness" allows a buyer or seller to act at the most opportune moment for them.

"Deal fatigue" can affect both sides, and this speaks to readiness. The longer the Q&A, or gathering of pertinent information, the longer the deal lags, and this often breeds uncertainty, increasing the likelihood of either party walking away.

Many companies underestimate just how labor-intensive the M&A process is. It can take numerous employees away from their day job and ultimately have an impact on the business' bottom line. It's possible that a company can go under before they even reach the due diligence phase of a transaction.

When entering an M&A transaction, the ability to move data securely across multiple platforms (or repositories) and monitor who saw what and when and how that information was modified is paramount for companies. Both buyers and sellers often don't realize just how many

7: "Australia's Evolving Deals Landscape," KPMG, August 2018
8: "The State of the Deal: M&A Trends 2019," Deloitte, 2019
9: "The Pulse of Fintech 2018," KPMG, February 13, 2019
10: "The State of the Deal: M&A Trends 2019," Deloitte, 2019

deals become bogged down with information overload. This is where automation and artificial intelligence (AI) can pitch in. Buyers and sellers need to make sense of the data quickly and use predictive analytics to assess outcomes. New technologies exist to make this stuff easier. To win in the current dealmaking climate, buyers and sellers have to leverage cutting-edge tech and leave the busy work to AI.

How do those hurdles vary on a sector basis, if at all?

Across all industries, minimizing risk, time and money is essential to a successful M&A transaction. The hurdles addressed above are nearly universal. Readiness is imperative in all industries.

Where we see variation by sector is in different compliance and regulatory requirements. For example, tech companies are subject to data security regulations. The energy sector deals with tons of environmental regulations related to oil and gas. Healthcare has its own set of challenges with the FDA and other regulatory bodies.

But these differing regulatory requirements demonstrate perfectly the need for companies to have their house in order for any opportunity. If companies are not prepared, they risk tanking a deal because they didn't realize their security certifications were not up to date, or they have not completed necessary compliance documents.

What are the chief concerns that client companies are prioritizing in discussions with Ansarada?

Our clients need a truly modern solution for dealmaking. They want a platform that ensures they are ready to act when the opportunity for a strategic M&A transaction arises. We've heard time and time again that companies just weren't prepared when these opportunities sprung up, and it was a slow and arduous process to execute a transaction.

When companies enter the actual transactional phase of the process, data shared by and for both buyers and sellers has typically been collected and stored in thousands of spreadsheets, documents, images, etc. This data is then accessed by multiple parties, with all data requests fielded via email. Security, control and oversight have become real inhibitors for executing M&A transactions successfully.

We've also heard that for companies, the real work begins after a transaction is complete. The post-acquisition process presents a whole host of problems that a data room itself does not address. After all, the name of the game is ROI. Companies need to feel confident when they present to their boards on the value of an acquisition.

So how do you help companies prepare for an opportunity and see that opportunity all the way through to the data room phase and ultimately to post-acquisition? You leverage AI & machine learning (ML) tools to help companies visualize just how ready they are for a transaction and guide them to that point. Then, you provide them with a secure data room that automates many of the standard M&A processes, thereby allowing ML to classify documents, create checklists for missing documentation or predict possible scenarios or outcomes. And finally, you integrate tools to help companies manage all assets after purchase.

This is the approach Ansarada has taken in a world where readiness is at a premium and M&A activity doesn't appear to be slowing down anytime soon. Companies are so much more than a single transaction. We help our clients become better faster, so they are always prepared for whatever is on the horizon.

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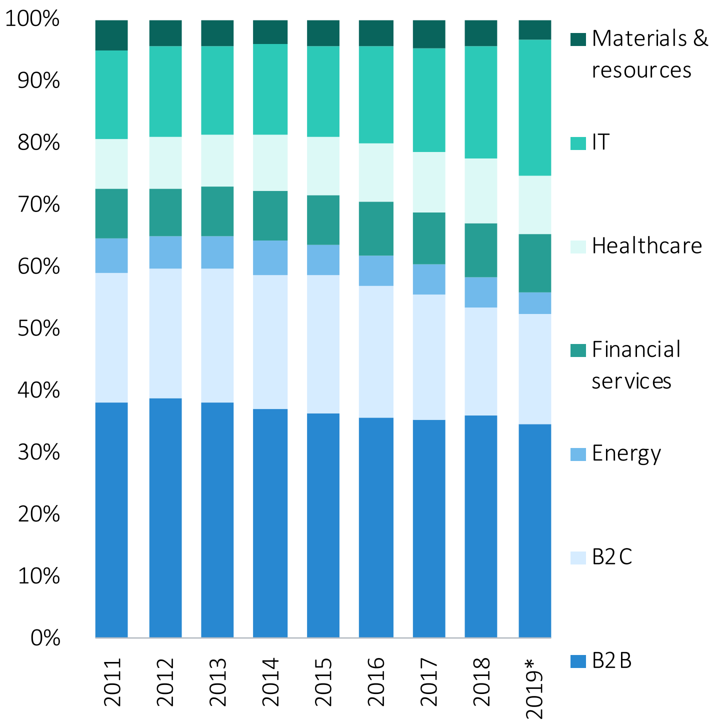
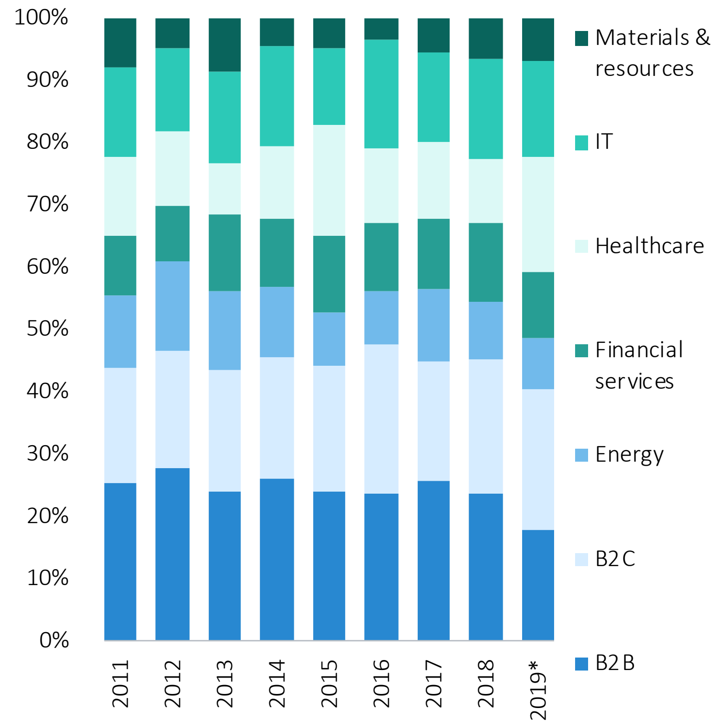
Deals by size and sector

M&A (#) by sector



Source: PitchBook | **Geography:** North America & Europe
*As of March 31, 2019

M&A ($) by sector



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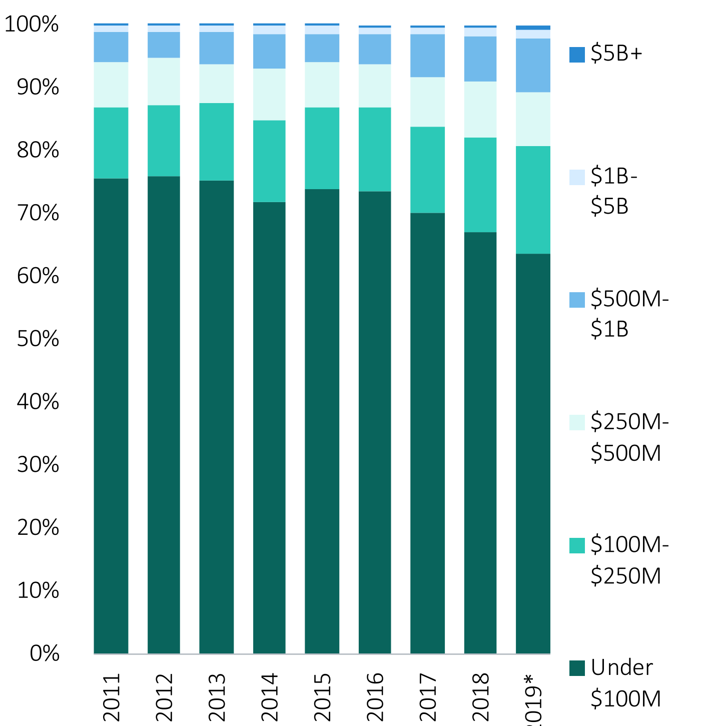
*As of March 31, 2019

M&A (#) by size



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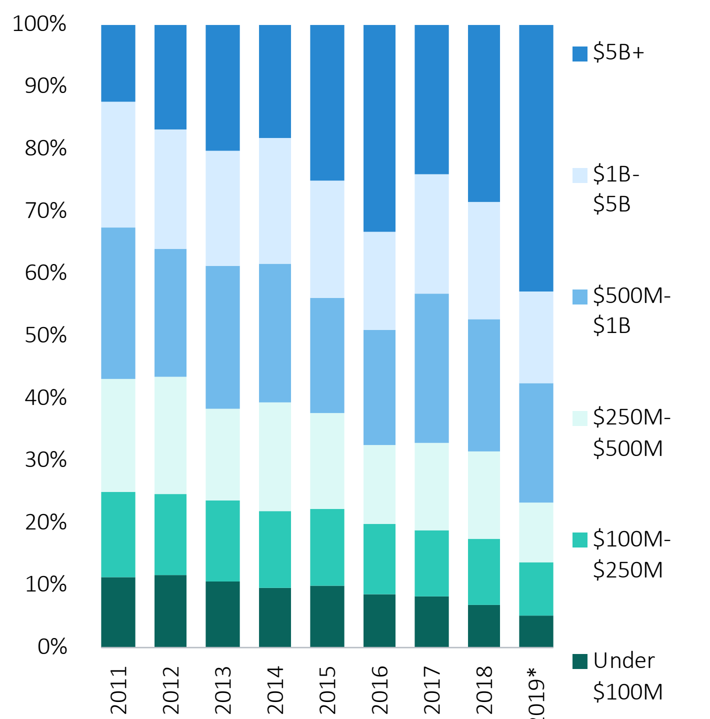
M&A ($) by size



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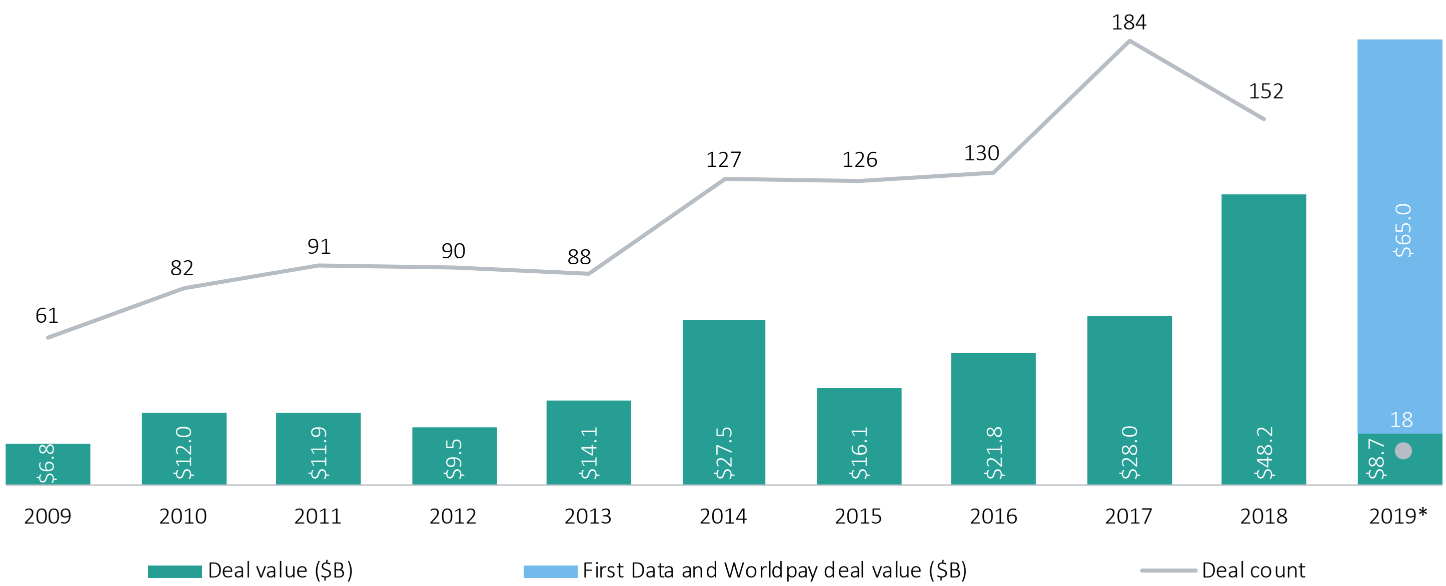
Spotlight: Payments

Payments M&A activity



Source: PitchBook | **Geography:** North America & Europe
*As of March 31, 2019

This section gleans much of its content from Payments Mega-Deals and the Dripping Disruption of Incumbents, written by Lead Emerging Technology Analyst, Paul Condra.

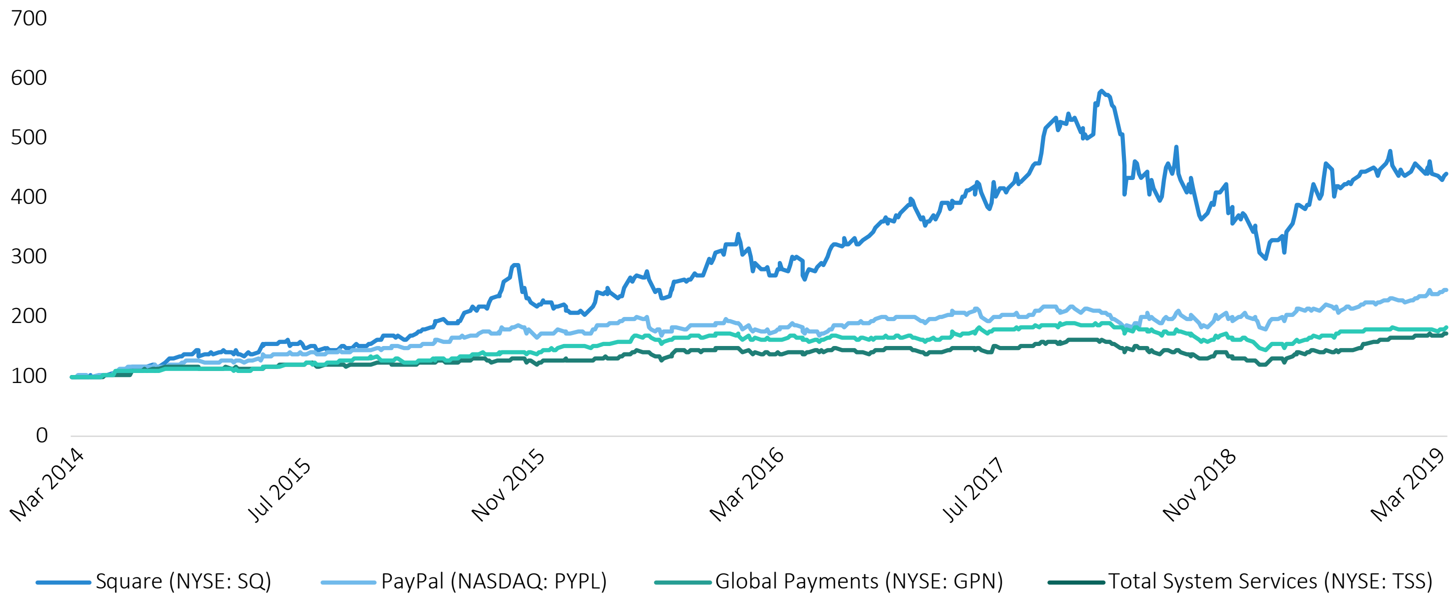
The global payments system is vast, processing tens of trillions of dollars in volume annually. Technological innovation is disrupting key pieces of the ecosystem, while other segments are becoming commoditized. The need for payments businesses to offer an omnichannel experience has driven some companies to innovate and offer necessary services while others are getting left behind. M&A is playing a pivotal role as incumbents scoop up newer companies to stay at the forefront, while others are merging to benefit from economies of scale.

The payments system can be simplified into three categories. Frontend providers enable payment acceptance at the physical business; back-end providers operate the payment networks that connect to the banks that issue payment cards; and the "middle-space" providers connect the front end to the back end. As the middle-space becomes more commoditized and revenue growth becomes just a factor of GDP growth—hovering in the mid-single digits—many companies are facing pressure to boost returns. The result has been consolidation with two mega-deals announced in recent months. Fiserv (NASDAQ: FISV) agreed to acquire First Data (NYSE: FDC) for $22 billion in January 2019 and Fidelity National Information Services (FIS; NYSE: FIS) decided to acquire Worldpay (NYSE: WP) for $43 billion in March 2019. (London-based Worldpay itself was acquired by Vantiv for £9.3 billion in January 2018, and Vantiv took on Worldpay's name.)

The consumer-facing arena is undergoing the most dramatic shift as incumbents were too slow to react to the quickly-changing omnichannel sales environment. While the legacy providers sought to target broader, mainstream opportunities, newcomers focus on niche areas. Adyen (AMS: ADYEN), for example, specializes in cross-border ecommerce, Square (NYSE: SQ) targets small businesses and micro-payments, and Stripe focuses on online payment processing. This leaves incumbents further away from merchants and allows for fewer cross-selling opportunities, including layering in data analytics—covering areas such as fraud prevention and customer data.

While much of the innovation is occurring on the front-end, and VISA (NYSE: V) and Mastercard (NYSE: MA) are happy to sit back and enjoy their entrenched positions, middle-space providers are caught in a tough spot. Many of the companies in this space were spun out of banks; for example, Vantiv (which later went on to become Worldpay) was spun out of Fifth Third Bank Corp (NASDAQ: FITB) in 2012. And whereas some have spun out these operations, others, such as JPMorgan (NYSE: JPM) with Chase Paymentech (which was outbid in 2018 for

Select payments industry stock prices rebased to 100



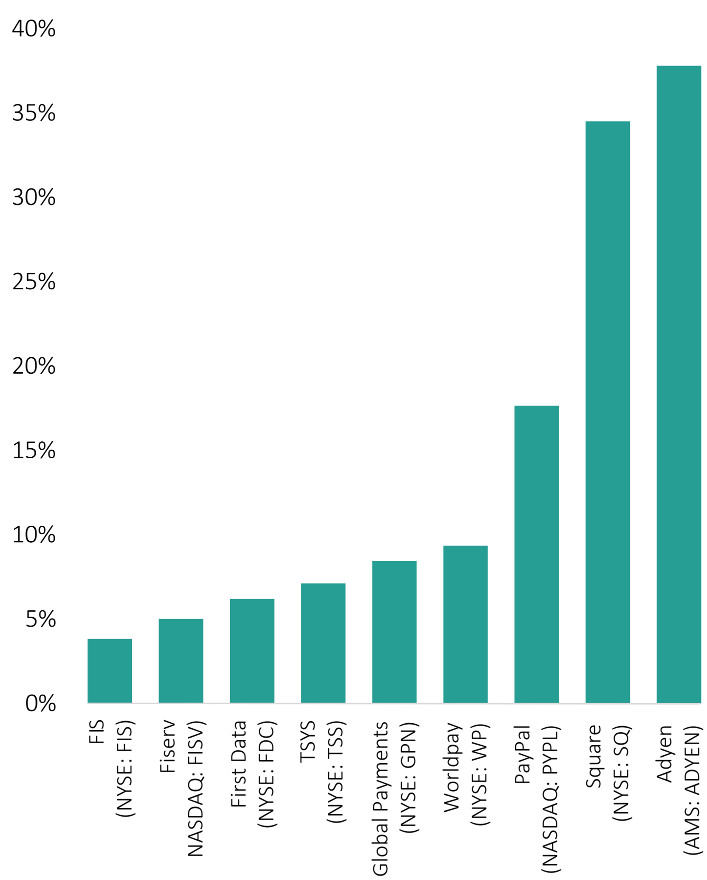
Source: Morningstar | **Geography:** North America & Europe
*As of March 31, 2019

Worldpay by Vantiv), have doubled down on these operations. The front-end innovators are choosing to use the current middlemen rather than expanding to compete with them because the growth and margins are not attractive enough, and acquiring a bank sponsorship (needed to compete in the space) is costly.

There will continue to be myriad acquisitions of high-growth companies under $1 billion by incumbents. However, a truly industry-altering acquisition—such as purchasing PayPal (NASDAQ: PYPL) or Stripe—remains unlikely. Going forward, we expect middle-space providers to continue to experience lower growth profiles and pursue scale combinations. Companies, such as Global Payments (NYSE: GPN), Total System Services (TSYS; NYSE: TSS) and Chase Paymentech will likely look to M&A to fend off slower growth and margin compression and better compete with the new Fiserv and FIS. We expect more scale combinations in this sector in the future. The newcomers, meanwhile, will continue to innovate and expand services and offerings, pushing the incumbents further down the value chain.

Looking even further, there are closed loop payment systems, such as blockchain-based cryptocurrencies or Chinese WeChat Pay (HK: 00700) and Alipay (NYSE: BABA), that could disrupt the entire network, including the most deep-rooted card network players. Though this threat will take decades to play out, the disruption to the payments ecosystem is just beginning and threatens to unseat even today's most entrenched players.

Average analyst estimate for one-year revenue growth



Source: Yahoo! Finance | **Geography:** North America & Europe
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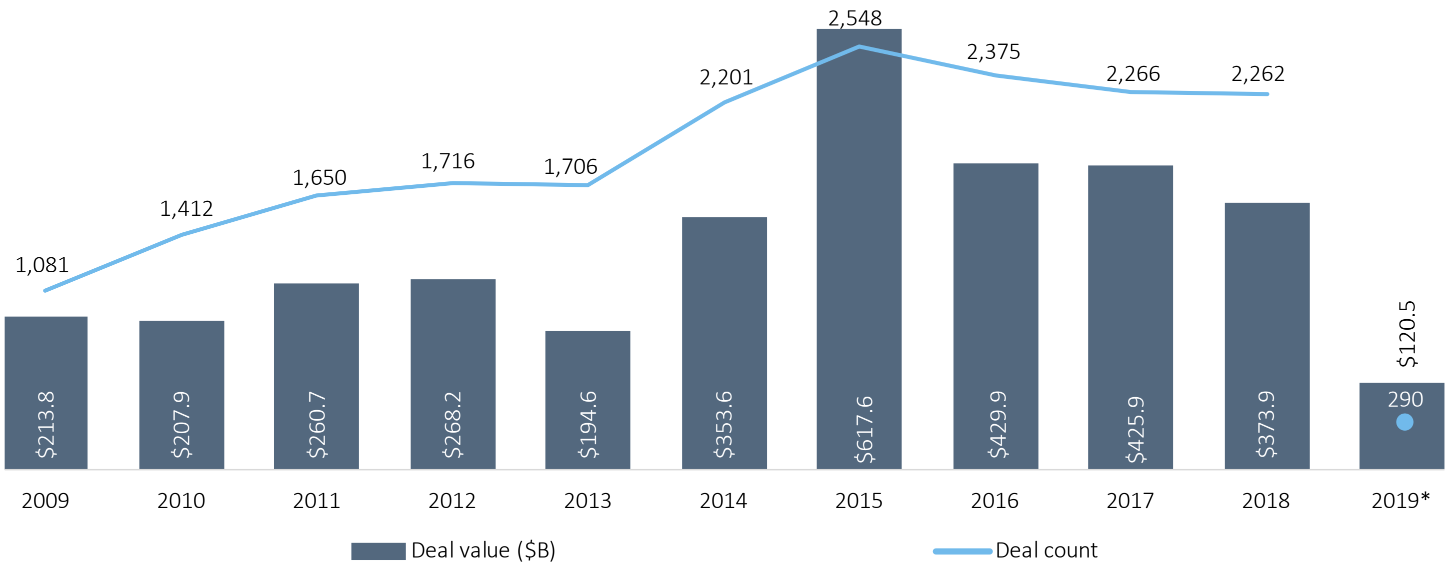
Spotlight: Healthcare

Healthcare M&A activity



Source: PitchBook | **Geography:** North America & Europe
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In 1Q 2019, healthcare M&A showed mixed results, but continued to account for an outsized proportion of M&A, with 290 deals completed totaling $120.5 billion—substantial decreases, but in line with those seen across other sectors. Overall, the number of healthcare deals has been steadily rising as a proportion of total M&A since 2011. Furthermore, the value of 1Q healthcare deals as a percentage of all deals is the second highest on record; this is largely due to Takeda's acquisition of biopharmaceutical company Shire as well as other sizable acquisitions within the oncology subsector.

The largest healthcare deal during the quarter was Japan-based Takeda Pharmaceutical Company's (TKS) acquisition of Shire, in a $62.4 billion deal which was indicative of the lengths that companies within the pharmaceutical space will go to gain market share and compete in a rapidly changing environment. The acquisition, which was announced in 2Q 2018, allows Takeda to gain more exposure to the US market, given that a majority (about 65%) of Shire's revenues come from the US.[11] The initial negotiation process for the acquisition was arduous, with Takeda making five public bids for Shire, and a Takeda family member leading a group of shareholders opposed to the acquisition.

Moreover, Moody's cut Takeda's credit rating three notches, from A2 to Baa2, mainly due to the amount of debt Takeda took on to purchase Shire (Takeda's net debt to EBITDA after the Shire acquisition rose to 4.8x). In another interesting twist, during the process of the negotiations, Shire sold its oncology unit to France-based company Servier for $2.4 billion. Analysts were torn as to whether the asset sale would make Shire more or less attractive to Takeda. While the sale made Shire slightly cheaper, Takeda also lost the ability to create synergies for their oncology business as it had purchased ARIAD Pharmaceuticals (NASDAQ: ARIA) in 1Q 2017. Another large healthcare deal announced in early January is the acquisition of Celgene (NASDAQ: CELG), a biopharmaceutical company, by Bristol-Myers Squibb (NYSE: BMY), for $79.3 billion, lending credence to speculation that healthcare M&A may have a better showing than 1Q decreases indicate.

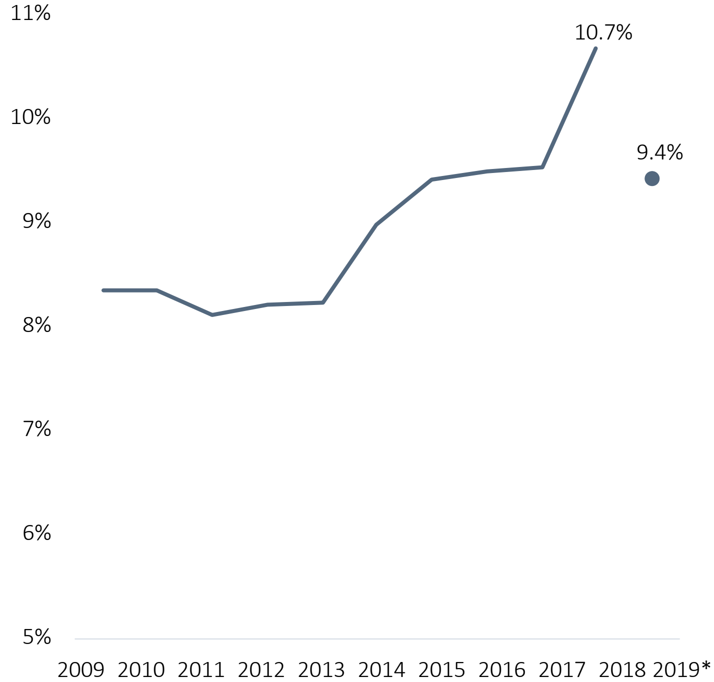
Within the healthcare industry, the pharmaceutical/biotech subsector is a space amenable to M&A for a few reasons. Notably, pharmaceutical companies always have the threat of a patent cliff looming over them.[12] Generic drugs have made significant inroads, growing at an 8% CAGR between 2010 and 2017[13] and accounting for over 88% of drugs

11: "Half-yearly Report," Shire, August 1, 2018
12: A patent cliff refers to (mainly) a pharmaceutical company's decline in revenues ("falling off a cliff") once a patent reaches its expiry date and these now "off-patent" drugs can be replicated and sold for cheaper prices (i.e. generic drugs).
13: "Generic Drugs Market: Global Industry Trends, Manufacturing Process, Share, Size, Growth, Opportunity and Forecast 2018-2023," IMARC Group, June 2018

prescribed in 2018 (whereas in the early 1980s it was less than 20%).[14] Furthermore, drug development costs have also been increasing drastically, with the average cost to bring a new drug to market reaching $2.6 billion in 2017, up from $1.2 billion in 2010.[15] There has also been a large decrease in return profile, with pharmaceutical R&D returns sinking to 3.2% in 2017, down from 10.1% in 2010. These trends have led to corporations becoming more acquisitive as a defense mechanism to mitigate market share loss and clinical trial losses while increasing cost savings. In many cases, they also allow the acquiring company to become more innovative by gaining the R&D capabilities of the acquired company.

In 1Q 2019, four healthcare company transactions were priced above $5 billion: Shire, Loxo Oncology, Auris and Tesaro. Of these four, only Shire did not focus on oncology; moreover, all four deals can be viewed as roll-up acquisitions, whereby corporates buy smaller healthcare companies to build scale in a specific area. Cancer treatment continues to be an important part of the healthcare M&A industry for many reasons. Global cancer drug spending has steadily been increasing, from $96 billion in 2013 to $133 billion in 2017.[16] Moreover, oncology constitutes a large portion of growth within the pharmaceutical subsector, expected to account for 25% of revenue and 30% of the product pipeline by 2020.[17] Additionally, innovations from novel drugs have been generating a growing portion of revenue.[18] Previous research showing that shares of revenues from innovations outside of Big Pharma have grown from around 25% in 2001 to around 50% in 2016.[19] New drug development is a costly investment which often does not pay off, leading to VC firms and smaller companies leading the way in terms of funding innovation, with larger established pharmaceutical companies entering the picture once research is more advanced. Also, because R&D is focused on a small selection of targets within the oncology space,[20] competitive intensity has increased, which has led to the shortened period between the launch of a drug and the launch of its competitor.[21] In the near term, we see further M&A activity in the pharmaceutical space, as companies continue to consolidate in order to grow and regain market share in the face of various headwinds. Taking a longer-term view, we anticipate industry disruption in the forms of digital-age technology becoming more prominent, as well as new players, such as Amazon, Berkshire Hathaway and JP Morgan Chase (ABJ), entering the industry.

Healthcare as proportion of total M&A (#)



Source: PitchBook | **Geography:** North America & Europe
*As of March 31, 2019

14: "Implications of Consolidation in the Pharma & Biotech Sector," Sustain Analytics, Anna Bonomi & Oana Pop, December 12, 2018
15: Ibid.
16: "Global Oncology Trends 2018," IQVIA Institute, May 24, 2018
17: "McKinsey Cancer Center: The Next Wave of Innovation in Oncology," McKinsey & Company, Björn Albrecht, Philippe Menu, Jeff Tsao & Kevin Webster, September 2016
18: Per the FDA, "Novel drugs are often innovative products that serve previously unmet medical needs or otherwise significantly help to advance patient care and public health. NMEs have chemical structures that have never been approved before. However, in some cases an NME may have actions similar to earlier drugs and may not necessarily offer unique clinical advantages over existing therapies."
19: "What's Behind the Pharmaceutical Sector's M&A Push," McKinsey & Company, Roerich Bansal, Ruth De Backer & Vikram Ranade, October 2018
20: Per ScienceDirect, "A drug target is a molecule in the body, usually a protein, that is intrinsically associated with a particular disease process and that could be addressed by a drug to produce a desired therapeutic effect."
21: "McKinsey Cancer Center: The Next Wave of Innovation in Oncology," McKinsey & Company, Björn Albrecht, Philippe Menu, Jeff Tsao & Kevin Webster, September 2016