



# J.P. Morgan Working Capital Index

Helping companies benchmark for success



# Contents

1. Introduction	1
Calculation Methodology	1
2. Key Findings	3
Working Capital Index	3
Cash Index	4
3. Dissecting the Cash Conversion Cycle	6
4. Sector Insights	9
5. Industry Deep Dive	10
Airlines	11
Oil and Gas Downstream	12
Consumer Staples	13
Semiconductors	14
Pharmaceuticals	15
6. Industry Benchmarking	16
7. Conclusion	19
8. Authors	21

## 1. Introduction

Optimizing working capital continues to be a top priority for many companies. This is especially true in times of heightened business uncertainty when CFOs and treasurers need to ensure that sufficient cash is available to mitigate risks and support the firm's strategic decisions. An efficient working capital management strategy can release liquidity trapped within the organization and reduce reliance on external funding to improve capital returns.

Industry benchmarking is the first essential step for many companies looking to optimize their working capital. However, there are not many tools available today for organizations to effectively benchmark their working capital performance against peers, primarily because of the lack of accessible and reliable industry data.

To address this, J.P. Morgan is introducing the J.P. Morgan Working Capital Index that captures the working capital metrics of the S&P 1500 companies. When tracked over time, the Index can provide insights into working capital trends that help finance practitioners plan and track the progress of various working capital initiatives within their organizations.

In this report we will:

- Review the Working Capital Index
- Introduce the Cash Index which tracks cash levels
- Analyze the individual components of working capital, such as Days Payable Outstanding (DPO), Days Sales Outstanding (DSO) and Days Inventory Outstanding (DIO)
- Highlight key industry trends and compare performances
- Deep dive into select industry verticals

## Calculation Methodology

There are three sets of data points analyzed in this report that when combined, provide a holistic view of the working capital trends in the period between 2011 and 2018.

I. The Working Capital Index tracks the average net working capital/sales values across the S&P 1500 companies and is calculated as follows:

$$\text{Average Working Capital} = \frac{\sum_{k=1}^n \text{NWC}_k / \text{Sales}_k}{n}$$

II. Monitoring cash levels goes hand-in-hand with managing working capital, as treasury practitioners are required to provide strategic inputs on budget and cash flow. In this context, we have also developed the Cash Index that tracks the average cash/sales values across the S&P 1500 companies. This is calculated as follows:

$$\text{Average Cash} = \frac{\sum_{k=1}^n \text{Cash}_k / \text{Sales}_k}{n}$$

Where:

Net Working Capital (NWC) = Trade Receivables + Inventory - Trade Payables

n = total number of companies

k = index variable (takes the value between 1 to 900+)

For ease of tracking, we have established the base levels of 100 for both the Working Capital Index and the Cash Index, using 2011 as the base year.

III. In addition, we analyzed the Cash Conversion Cycles (CCC), or the number of days it takes to convert inventory purchases into cash flows from sales across the S&P 1500 companies. The CCC is a metric that helps quantify the working capital efficiency of a company and is essentially derived from three different components:

- Days Payable Outstanding (DPO) or the number of days from the time a company procures raw materials to payment to suppliers
- Days Inventory Outstanding (DIO) or the number of days the company holds its inventory before selling it
- Days Sales Outstanding (DSO) or the number of days taken to collect cash from customers



Companies can improve their working capital by effectively managing the individual components of their CCC via reducing inventory levels (decreasing DIO), extending payment terms with suppliers (increasing DPO) and speeding up collections from customers (shortening DSO). As a general rule, the lower the CCC, the better the working capital efficiency.

**Note:**

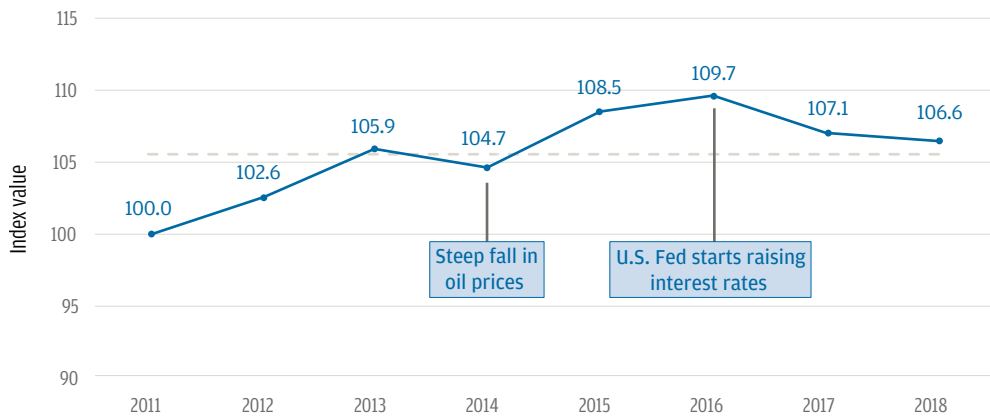
To avoid the distortion of data, financial services and real estate firms in the S&P 1500 were excluded from the calculations due to their distinct business models and unique working capital metrics in comparison to other industries. Companies with high volatility in working capital and those with incomplete data were also removed, bringing the total number of companies used for this analysis to over 900.

All numbered data have been gathered from CapitalIQ for the purpose of calculations.

The trends extracted from our analysis were validated against insights from J.P. Morgan's research team.

## 2. Key Findings

### Working Capital Index



Source: CapitalIQ

Working capital levels tend to increase in times of economic growth as companies hold more inventory to support higher anticipated sales and focus less on working capital efficiency. This trend was observed across the S&P 1500 companies where the overall working capital levels have risen since 2011, with the exception of dips in 2014, 2017 and 2018.

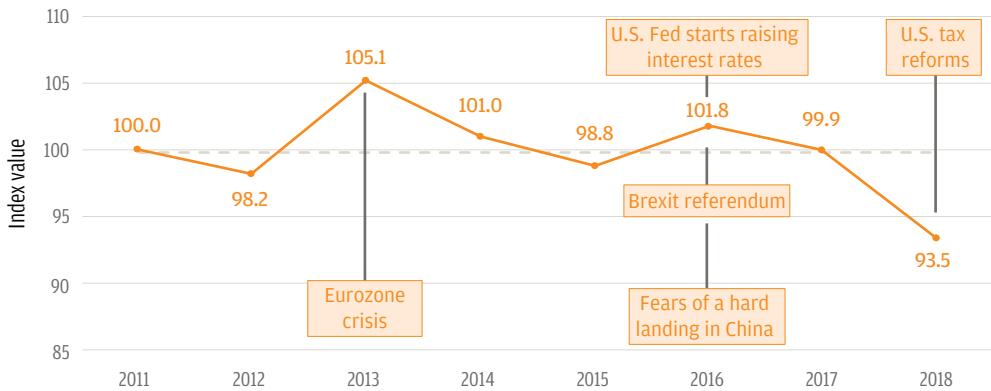
The decrease in 2014 was likely due to the steep decline in oil prices, leading to a fall in inventory valuations across a number of industries dependent on oil and its derivative products. The index also reversed from its peak of 109.7 reached in 2016, suggesting that companies were exploring internal sources of funding to mitigate the increased cost of borrowing externally, as the U.S. Federal Reserve ramped up the momentum of interest rate hikes.

The general upward trend of the Working Capital Index also suggested that there was liquidity trapped within the companies' working capital cycles, that if released could serve as an important source of funding amid heightened macroeconomic uncertainties around the U.S.-China trade tensions, slowing U.S. economic growth and Brexit.

#### Takeaway:

**With growing geopolitical and macroeconomic uncertainties, corporates will need to closely monitor their working capital for new efficiencies internally within their organizations.**

## Cash Index



Source: CapitalIQ

After reaching a peak of 105.1 in 2013, the Cash Index has since experienced an overall downward trend. The decline in cash levels can be attributed to the healthy growth and overall stabilization of the global economy, allowing companies to reduce cash buffers.

Nonetheless, several developments in recent years have impacted overall cash levels within companies. The euro zone crisis, fears of a hard landing in China and the Brexit referendum triggered spikes in cash levels in 2013 and 2016, respectively, as companies chose to hold more liquid assets during times of uncertainty.

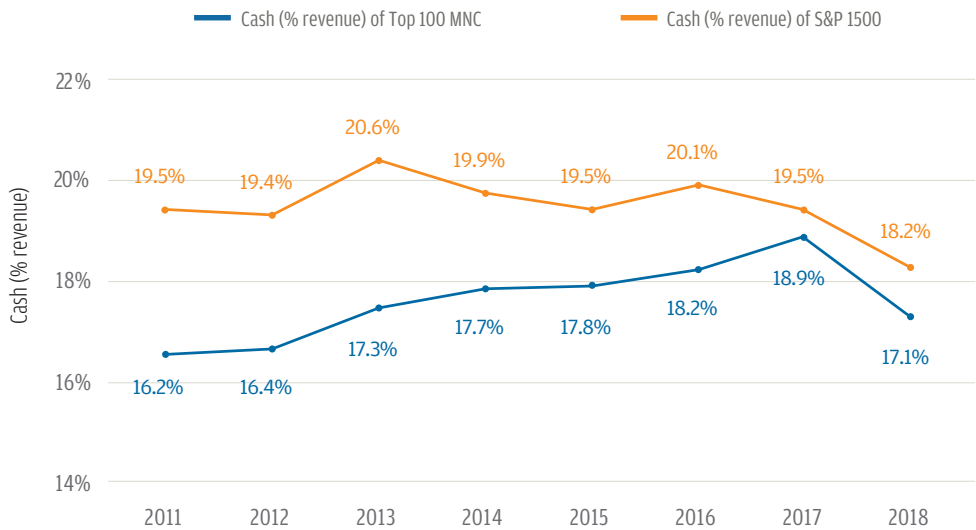
Following 2016, the overall cash levels declined as rising interest rates drove up the cost of holding excessive cash buffers. Cash levels took a more pronounced dip in 2018 due to the onset of the U.S. tax reforms, where an estimated \$500 billion\* was repatriated by U.S. companies to pay off debts and buy back shares.

\*Source: U.S. government current account data

### Narrowing gap between the top multinationals and rest of companies

Due to generally stronger credit ratings and easier access to capital, we observed that large companies held lower levels of cash, resulting in a gap in cash levels between the top 100 multinational companies in the S&P 1500 and the rest of the firms within the Index.

Cash Index comparison between the top 100 multinationals and S&P 1500 companies by revenue



Source: CapitalIQ

Interestingly, this gap has narrowed over the years. As the global economy gradually recovered from the financial crisis and tolerance to risk increased, smaller companies found it easier to borrow external capital and reduce their own cash buffers.

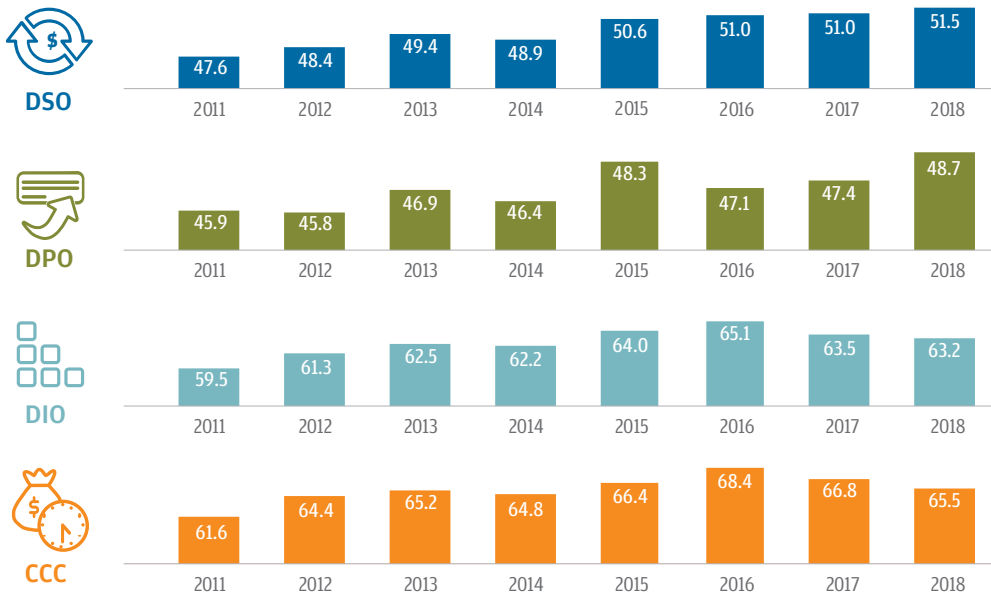
Up until 2017, cost of repatriation for the top 100 multinationals was high, leading to an increase in cash trapped in offshore markets. However, their cash levels dropped significantly in 2018 with the U.S. government’s introduction of tax cuts to encourage repatriation.

**Takeaway:**  
**Companies should assess and maintain optimal cash levels to manage working capital fluctuations and mitigate risks arising from external uncertainties to better support business growth.**



### 3. Dissecting the Cash Conversion Cycle

Average working capital performance parameters across S&P 1500 companies 2011-2018  
(in average number of days)



Source: CapitalIQ

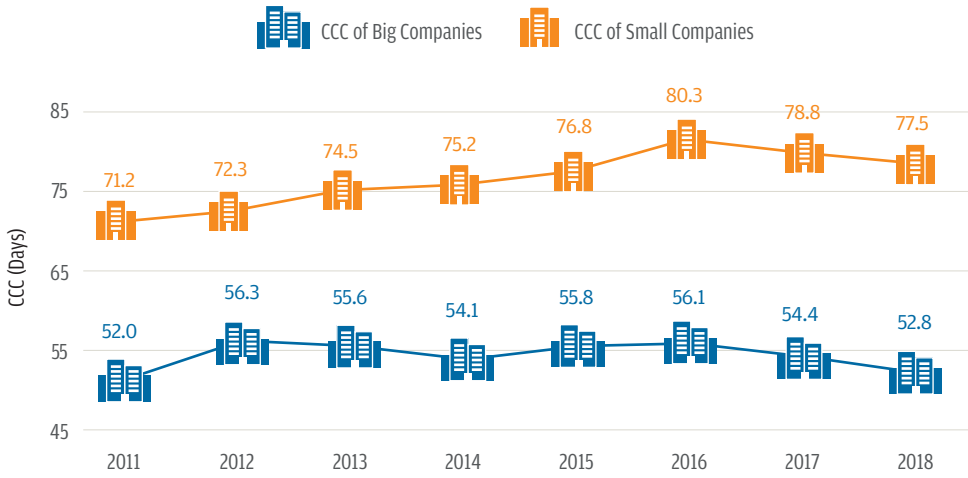
The average Cash Conversion Cycle (CCC) range of 61 to 68 days between 2011 and 2018 suggests that a typical S&P 1500 company required a little more than two months to convert its working capital into cash flow. While the average DSO deteriorated by four days over the years, the trend was partially offset by improvements in the DPO over the same period, potentially driven by better payment terms with suppliers through solutions, such as supply chain financing. Inventory levels (DIO) remained in the range of 59 to 65 days, driven by factors like oil prices, economic growth and geopolitical developments.

As we break down the data further, we observed differences in the working capital performances between large and small companies, as well as between companies within the same industry (*covered in section 6: Industry Benchmarking*).

#### Takeaway:

**Working capital optimization is a balancing act between financial benefits and business relationships with buyers and suppliers. Companies need to understand the underlying drivers impacting their CCC and formulate a strategic action plan.**

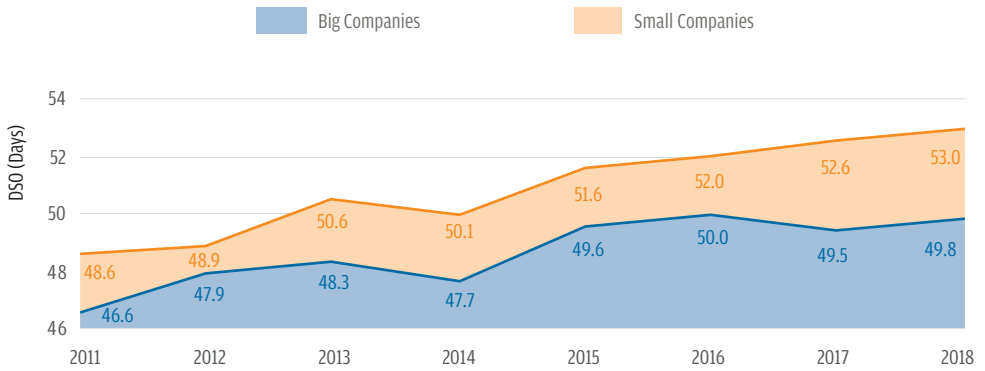
Comparison of working capital performance parameters between big and small companies 2011-2018



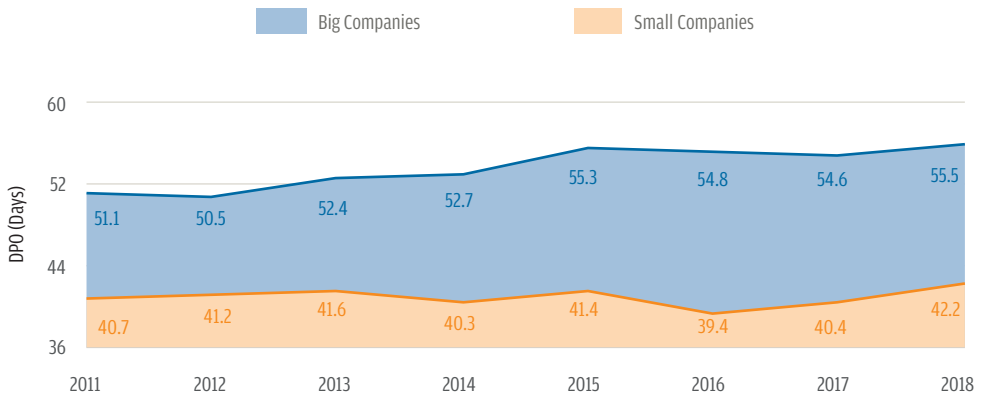
Source: CapitalIQ

Note: Values for big companies are derived by calculating the averages across the top 50 percent of companies (by revenue) of every industry. For small companies, the value is calculated using the averages of the bottom 50 percent of companies (by revenue) across each industry.

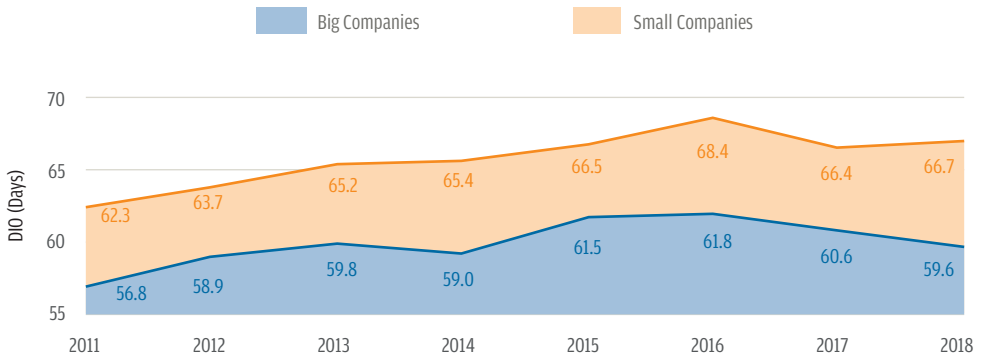
Days sales outstanding



Days payable outstanding



## Days inventory outstanding



Source: CapitalIQ

Large companies have historically performed better when it comes to working capital management as they are able to collect payments about three days faster than their smaller counterparts.

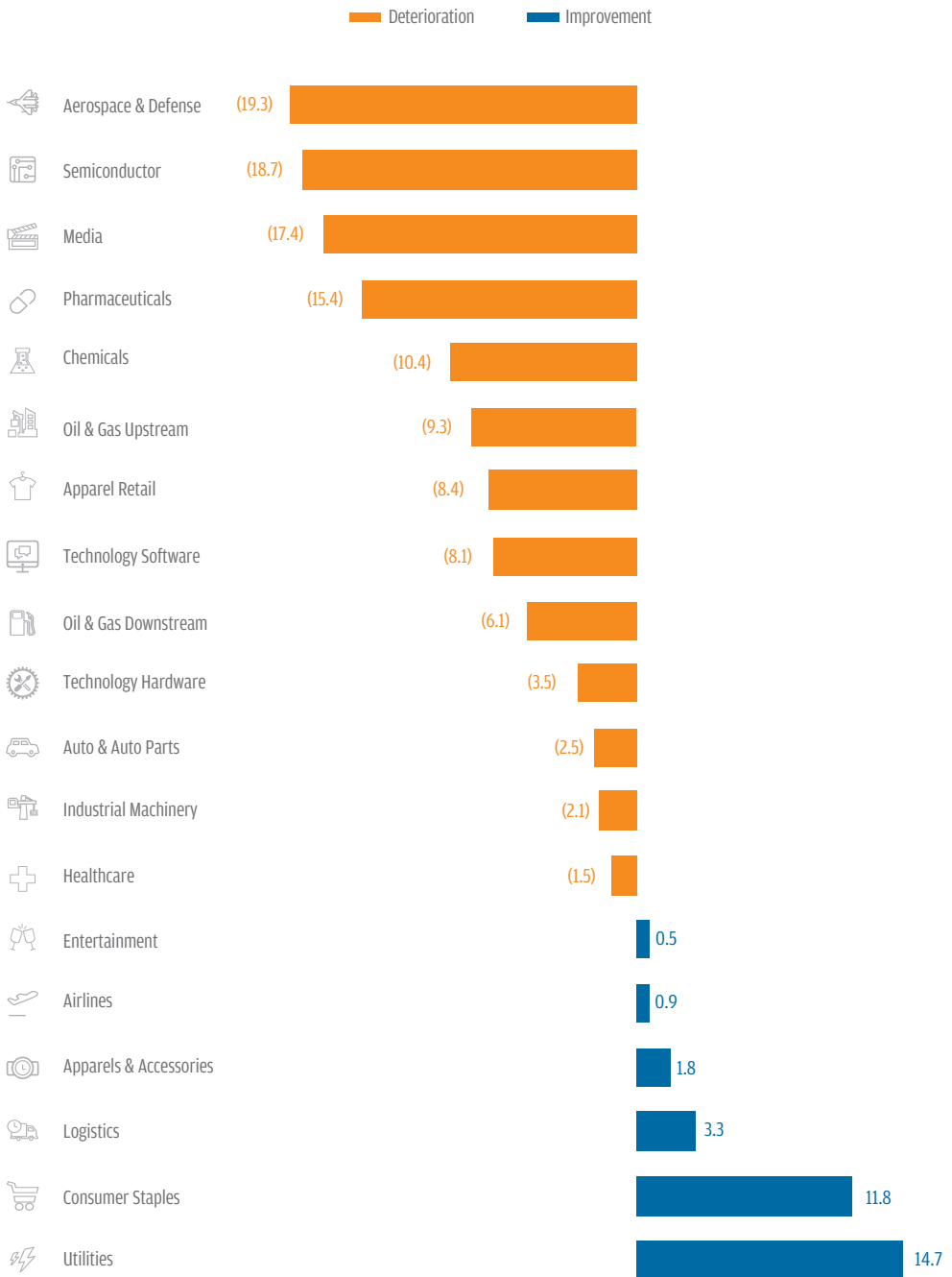
Larger firms also tend to have longer DPO cycles, taking an average of 13 more days to pay their suppliers. This can be attributed to their scale, resulting in higher bargaining power with suppliers, as well as greater focus on standardization and automation of their working capital processes.

**Takeaway:**

**The difference in working capital efficiency between large and small companies remains quite significant. This can be attributed to better bargaining power of larger corporates and their focus on centralization, standardization and automation.**

## 4. Sector Insights

Changes in cash conversion cycle by sector (days) 2011-2018



Source: CapitalIQ

To assess how individual sectors fared, we calculated the extent their average CCCs changed from 2011 to 2018. We ranked the industries where the CCCs have deteriorated the most (aerospace and defense were the biggest laggards with the CCC lengthening by 19.3 days on average) to sectors where the CCCs have shown most improvement (utilities performed the best with the CCC shortening by 14.7 days on average).

Overall, 13 of the 19 industries captured showed a lengthening of the CCCs, which implies working capital levels increased across the majority of the industries and is in line with the Working Capital Index rising over the same period.

Utilities, consumer staples, logistics and apparels & accessories were the top four industries that displayed the most improvement in their CCCs, while the CCCs among the aerospace/defense, semiconductors, media and pharmaceuticals sectors showed the most deterioration.

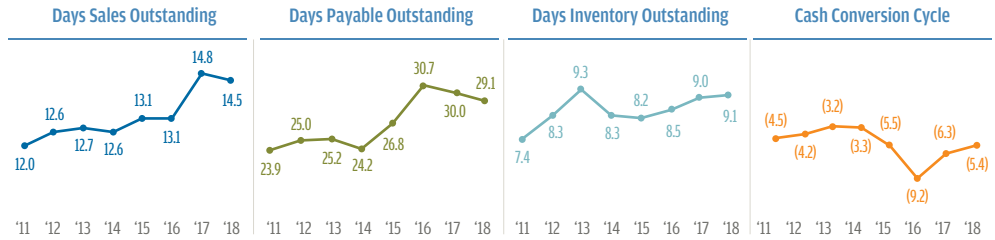
## 5. Industry Deep Dive

In this section, we examine the shifts in working capital levels and the drivers of change for select industry segments over the years. We have also introduced a tool to gauge the working capital performance among companies in each selected industry. The tool consists of parameters made up of four quartiles, with the first quartile representing the performance of the top 25 percent companies within the industry and the fourth quartile corresponding to the bottom 25 percent.

This tool will allow treasury practitioners to identify industry averages and benchmark their organization's working capital performances against their peers.

## Airlines

Comparison of working capital parameters within the airline industry 2011-2018  
(in average number of days)

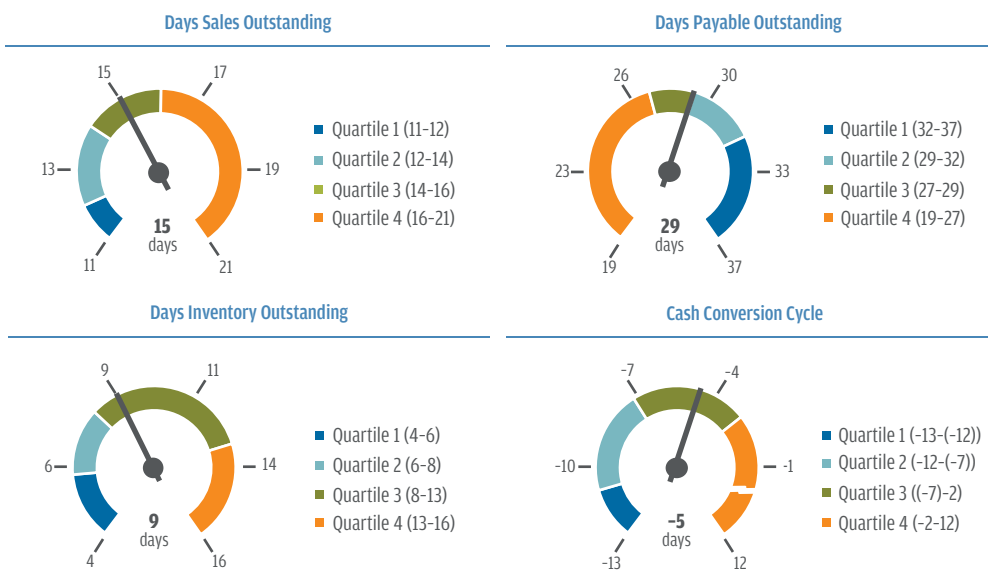


Source: CapitalIQ

Over the years, the airline industry showed an improvement in the CCC, which shortened significantly between 2014 and 2016 as the DPO increased. The rise in the DPO at that time could be attributed to the state of the oil markets; oil prices were falling as a result of an oversupply in the market, which put airlines in a more advantageous position to negotiate better credit terms - via delayed payments - with their fuel suppliers. The marginal decline in the DPO since 2016 was in tandem with a rebound in oil prices.

Meanwhile, the overall rise in the DSO observed could be correlated to increased revenues from the sale of air miles to credit card issuers, where the collection of sales proceeds tend to be longer than that from regular air ticket sales.

Working capital parameters within the airline industry in 2018  
(in average number of days)

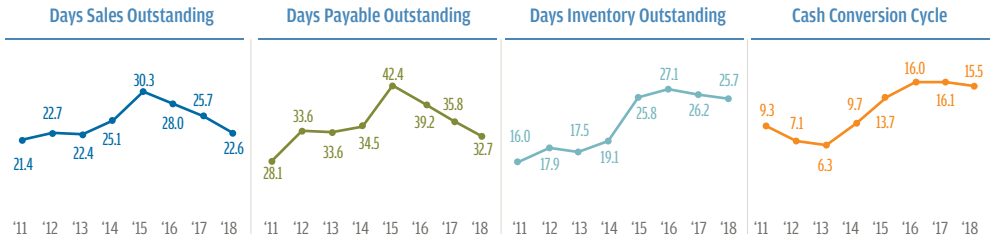


Source: CapitalIQ

As of 2018, the airline industry took an average of 29 days to pay its suppliers, while cash from sales was realized in 15 days. Companies maintained nine days' worth of inventory on average.

## Oil and Gas Downstream

Comparison of working capital parameters within the oil and gas downstream sector 2011-2018 (in average number of days)

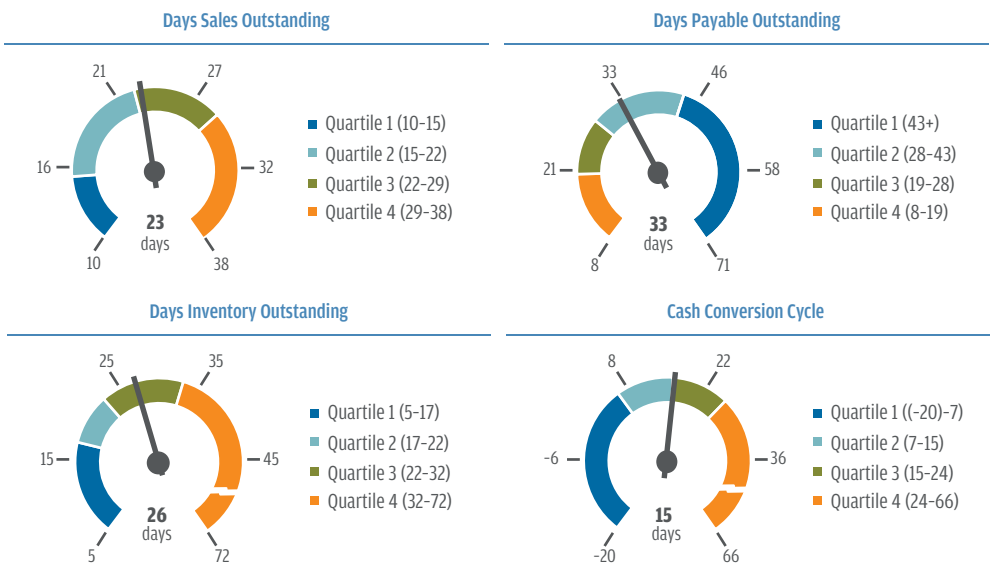


Source: CapitalIQ

Reflecting the movements in the oil markets, an increasing trend in the CCC was observed in the oil and gas downstream sector between 2013 and 2016. The slump in oil prices and the commodity's oversupply caused a spike in inventory levels as the downstream sector absorbed some of this excess supply, contributing to the steep rise in the DIO. At the same time, better productivity through higher capacity utilization among refineries also contributed to rising inventory levels of refined products.

The DPO and the DSO levels also increased between 2013 to 2015 as the oil and gas downstream companies received better credit terms from their suppliers while also passing on the benefit to their customers to boost sales. As oil prices rebounded in 2016, the CCC for the sector has since stabilized.

Working capital parameters within the oil and gas downstream sector in 2018 (in average number of days)

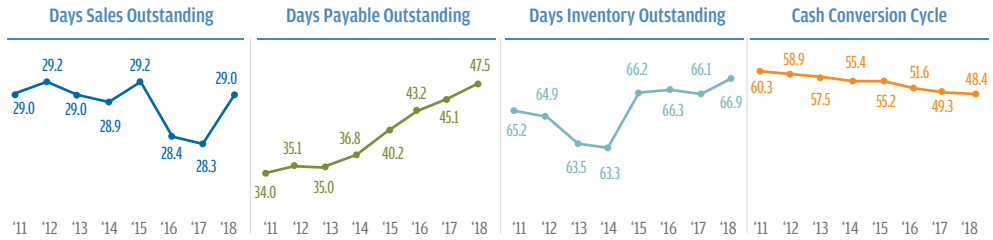


Source: CapitalIQ

In 2018, it took 33 days on average for downstream companies to pay its suppliers while cash from sales was realized in 23 days. On average, 26 days' worth of inventory was maintained by the companies.

## Consumer Staples

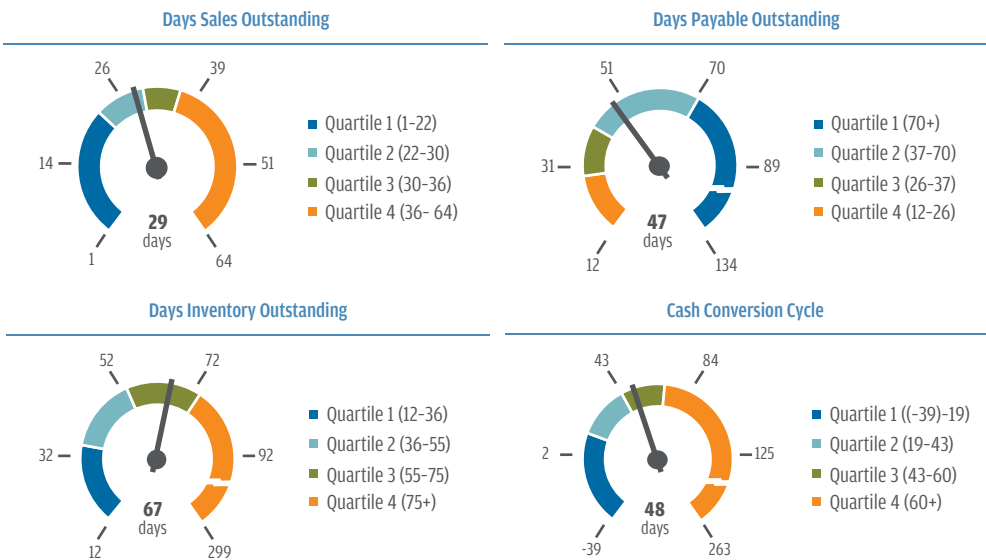
Comparison of working capital parameters within the consumer staples industry 2011-2018 (in average number of days)



Source: CapitalIQ

The consumer staples sector has demonstrated consistent improvement in the CCC over the years. This can be attributed to the rise in the DPO across a wide spectrum of sub-industries including food and beverage, tobacco and diversified consumer goods as companies renegotiated payment terms with their suppliers in an effort to improve working capital. The rising popularity of supply chain financing has also seen consumer staples firms, which generally have healthy credit ratings, tap into such trade solutions to lengthen their DPO.

Working capital parameters within the consumer staples industry in 2018 (in average number of days)



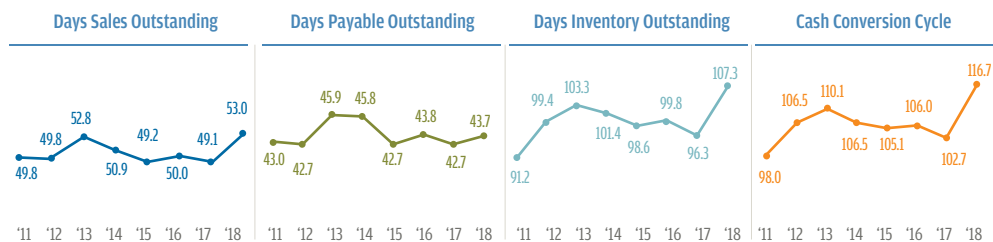
Source: CapitalIQ

In 2018, it took an average of 29 days for the consumer staples industry to turn sales into cash proceeds. It held 67 days of inventory and payments to suppliers were typically made in 47 days on average.



## Semiconductors

Comparison of working capital parameters within the semiconductor industry 2011-2018  
(in average number of days)



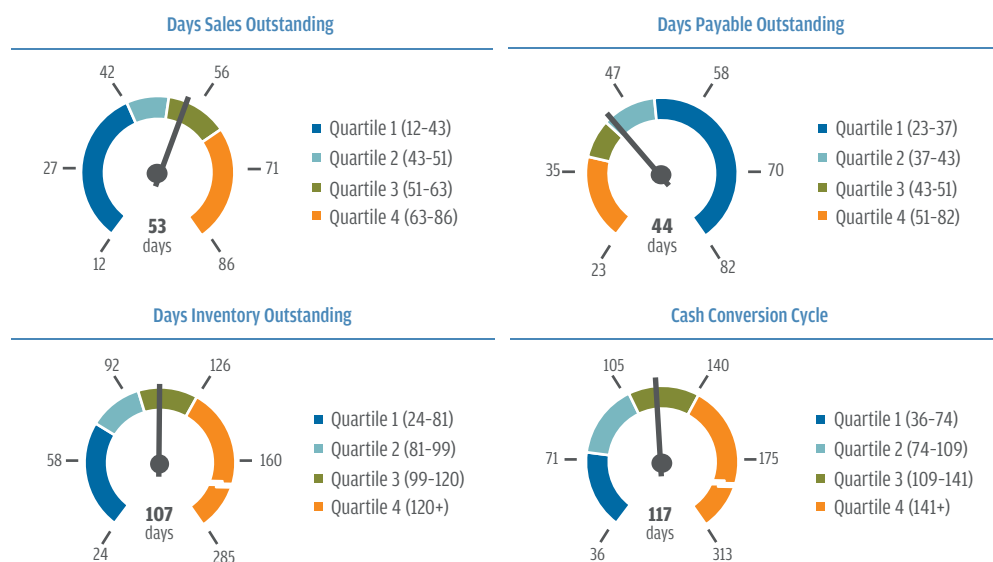
Source: CapitalIQ

Prior to 2017, the semiconductor industry enjoyed stability in its CCC, led by improvements in the DIO and the DSO.

However, the onset of the U.S.-China trade tensions in 2018 drove a spike in inventory levels as the pace of production across industrial, automotive, electronics and white goods slowed. This was exacerbated by a slowdown in the overall growth of the semiconductor sector. As a result, the industry’s DIO lengthened by 11 days while the DPO rose by four days, contributing to the 14 days jump in the CCC.

The increase in the DSO in the same year could be due to semiconductor firms extending credit terms to customers in a bid to reduce excess inventory.

Working capital parameters within the semiconductor industry in 2018  
(in average number of days)

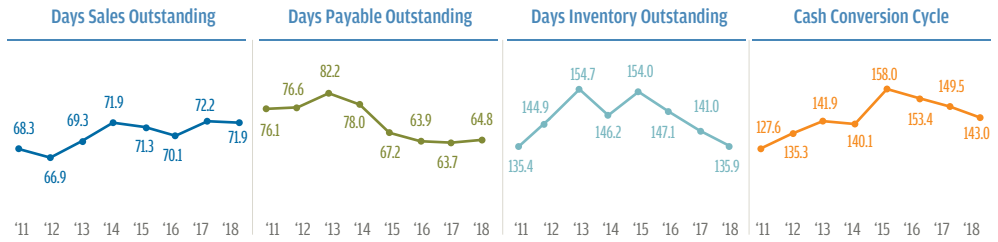


Source: CapitalIQ

As of 2018, semiconductor companies took an average of 44 days to pay off supplier invoices. They maintained 107 days of inventory and took 53 days to convert sales into cash proceeds on average.

## Pharmaceuticals

Comparison of working capital parameters within the pharmaceuticals industry 2011-2018  
(in average number of days)

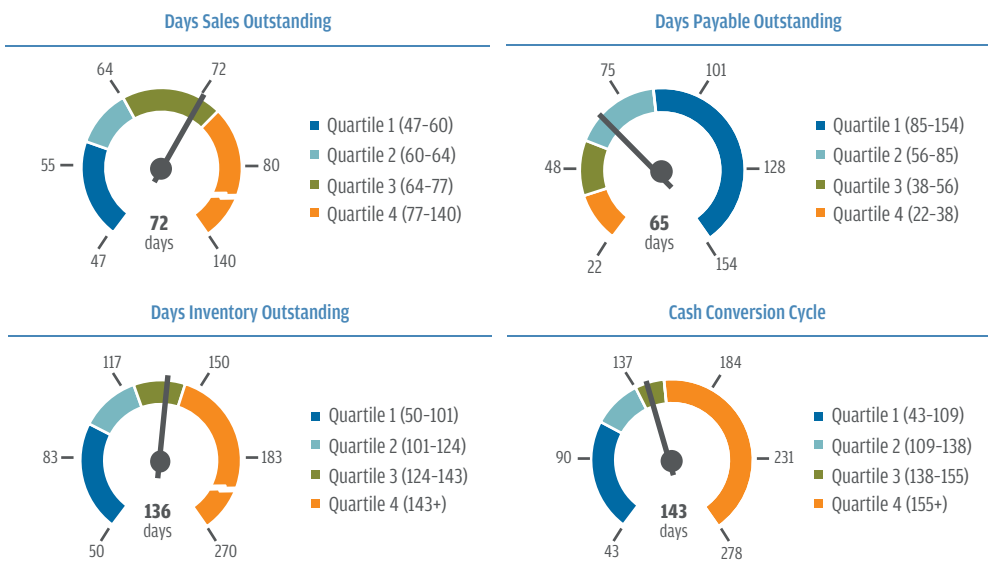


Source: CapitalIQ

The pharmaceutical industry witnessed a reduction in its CCC over the last few years, led by a fall in the DIO. This could be due to the FX market volatility particularly in the Indian and Chinese currencies; India and China are major sources of raw materials for the pharmaceutical sector and the depreciation in both currencies against the U.S. dollar led to a reduction in inventory values across the industry. The DIO reduction during this period could also be attributed to better inventory management by pharmaceutical companies.

Meanwhile, the overall increase in the DSO since 2011 was likely due to a gradual shift in bargaining power towards customers. Increased pressure from the consolidation of drug wholesalers and distributors into generic power buyers as well as independent, local pharmacies losing market share to their larger peers could be the underlying reasons for the trend.

Working capital parameters within the pharmaceuticals industry in 2018  
(in average number of days)



Source: CapitalIQ

In 2018, it took 65 days on average for pharmaceutical companies to make payments to suppliers while sales were typically converted into cash proceeds in 72 days. Companies held 136 days of inventory on average.

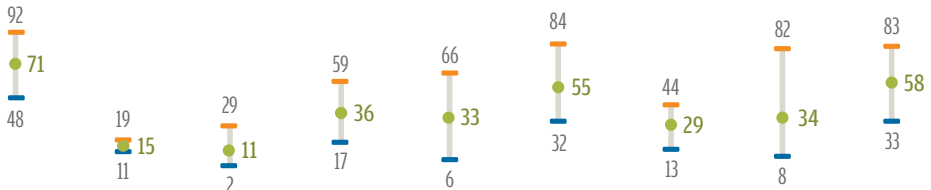
## 6. Industry Benchmarking

Significant performance gaps were observed across the DSO, the DPO and the DIO metrics as well as cash levels within industries. The full comparison between the top and bottom performers are detailed in the chart below using data from 2018.

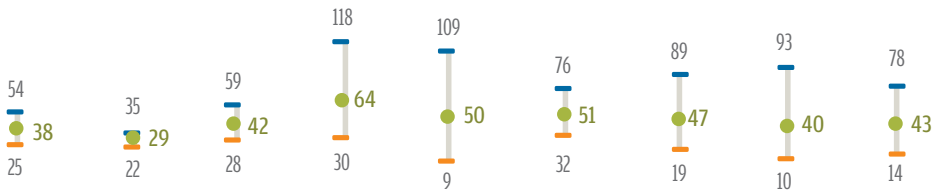
Snapshot of the average working capital performances between the top and bottom performers across 19 industries in 2018 (in average number of days)

— Average of Bottom Performers    — Average of Top Performers    ● Total Average

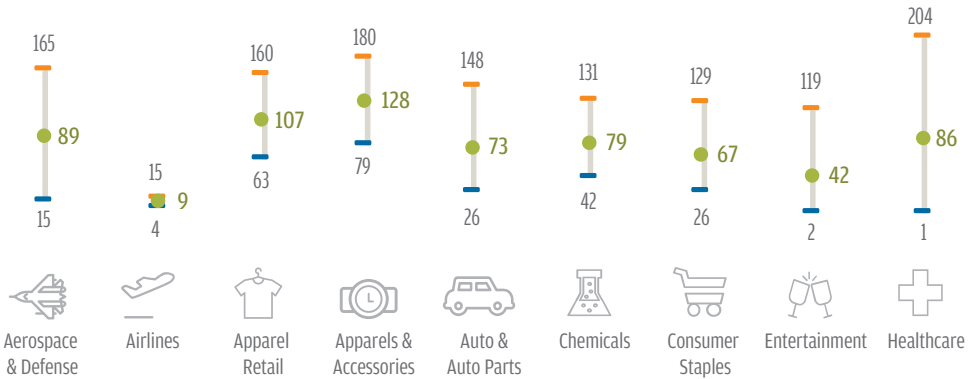
### Days Sales Outstanding



### Days Payable Outstanding



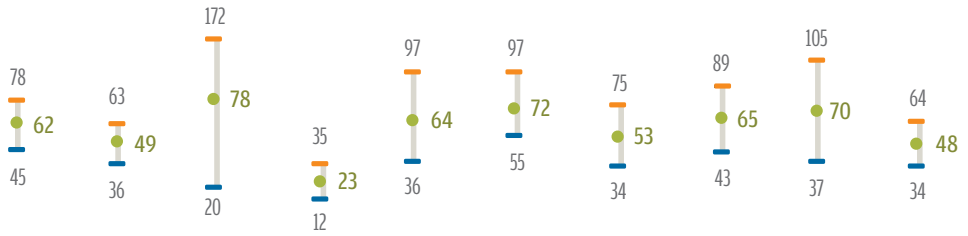
### Days Inventory Outstanding



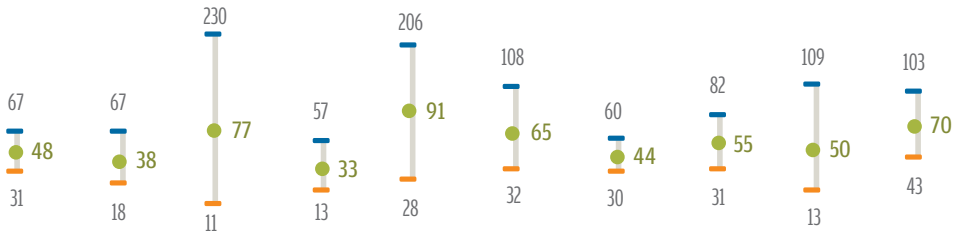
Source: CapitalIQ

— Average of Bottom Performers    — Average of Top Performers    ● Total Average

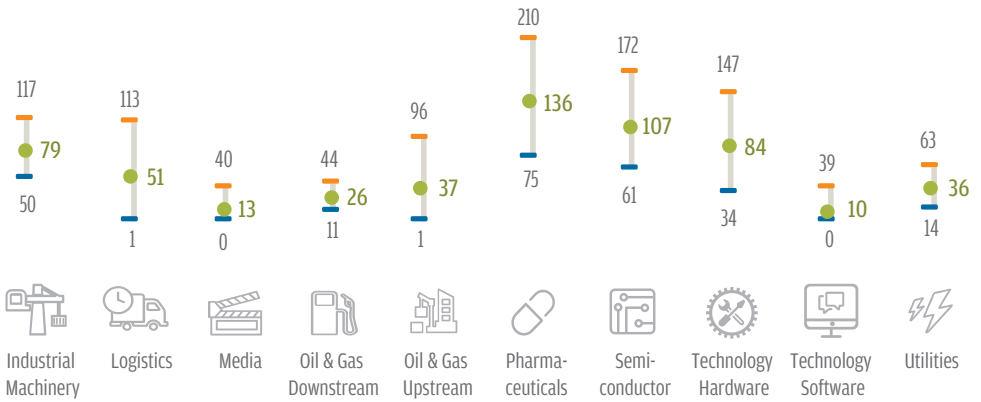
### Days Sales Outstanding



### Days Payable Outstanding

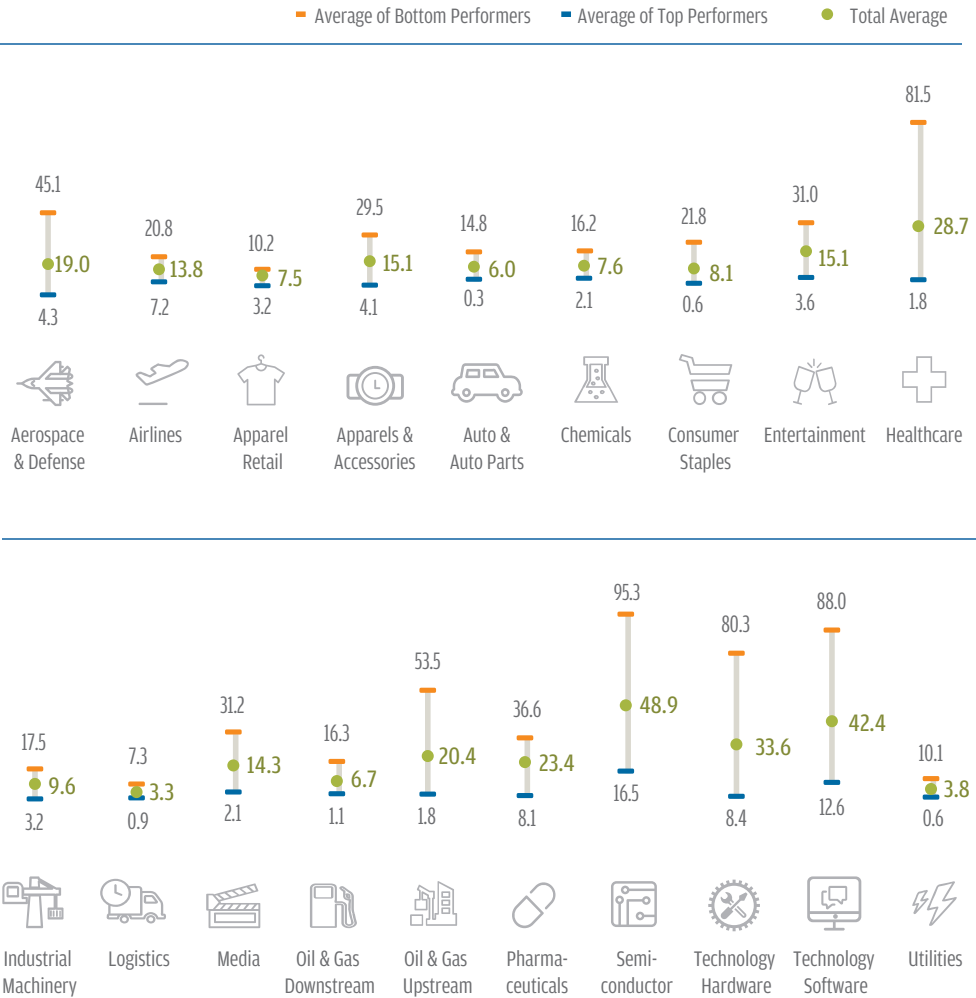


### Days Inventory Outstanding



Source: CapitalIQ

Snapshot of the average cash levels between top and bottom performers across 19 industries in 2018 (in percentage)



Source: CapitalIQ

There remains significant potential to improve working capital efficiencies across the S&P 1500 companies. Based on our calculations, assuming every firm in this study improves its working capital and moves into the next performance quartile across the DSO, the DPO and the DIO metrics, an estimated \$460 billion in working capital can be released across all industries.\*

\*This is calculated using:  
 - Company Sales/365 days x Number of Days in improved DSO  
 - Cost of Goods Sold/365 x Number of Days in improved DPO or DIO

## 7. Conclusion

### Significant money on the table

Industries have undergone a significant transition over the last decade driven by external market forces. Access to capital remains tight for the foreseeable future and attention is moving towards working capital optimization to supplement existing sources of capital. There remains significant capital trapped within the supply chains of S&P 1500 companies, with a potential to release an estimated \$460 billion through working capital optimization programs.

### All eyes on working capital

Companies have traditionally focused on the profit and revenue side of business, with a lack of discipline on balance sheet management. However, CFOs and treasurers are now committed to improving internal sources of liquidity, making working capital optimization an important priority.

### Consider a structured approach

While external forces will always push businesses to search for quick wins, sustainable working capital improvements require a more structured approach and cannot be left to chance. Quick fixes like payment term extension that are not in sync with industry standards may potentially harm supplier relationships.

### Leverage industry insights and best practices

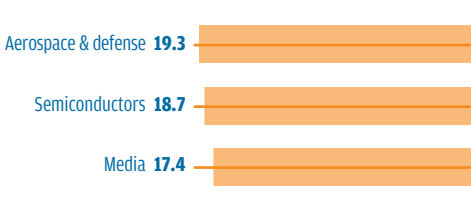
The differences in working capital performances both across and within industries are driven by various internal and external factors and it's important for companies to understand the drivers and formulate the best strategy to manage them effectively. Finance and treasury practitioners can leverage the Working Capital Index and underlying industry insights as a starting point to benchmark performance, guide action plans and monitor progress.

Summary of findings

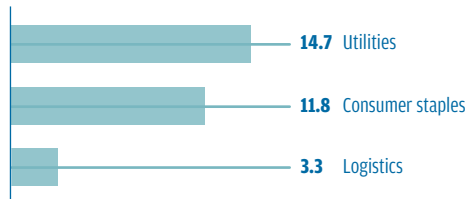
**\$460 billion**

Estimated working capital that can be released across S&P 1500 companies

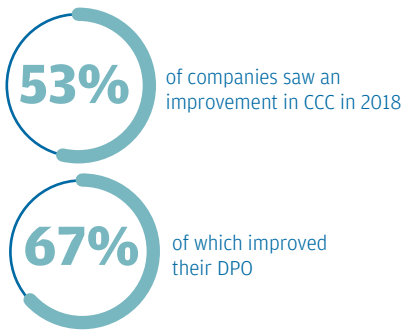
**Top 3 industries showing deterioration in CCC in last 8 years**  
(Number of days the CCC lengthened by)



**Top 3 industries showing improvement in CCC in last 8 years**  
(Number of days the CCC shortened by)



**CCC highlights**



**Top 3 industries showing decrease in cash levels in last 8 years**



**Average CCC difference between the top and bottom performers across industries**



**CCC of big versus small companies**



Small companies take **25 days longer** than big companies to convert inventory into sales cash flows

For additional information or if you require a review and assessment of working capital opportunities in your organization, please contact a J.P. Morgan Treasury Services team representative.

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