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## A Long-Term Perspective on the Cash Generating Capacity of Corporate America: The Lessons from Dell, Inc.

### Executive Summary

In the years before the company was taken private, Dell, Inc. was adept at generating operating cash flow. Between the company's fiscal years ending January 1996 and January 2013, operating cash flow increased 1,776.0% on a 975.2% increase in revenue. The primary driver of this increase in operating cash flow was the company's efficient management of working capital – especially inventory and accounts payable.

Using data for all nonfinancial industries, we find similar results. Between 2000 and 2015, for the 3,800 companies in our database, median revenue increased 83.5% while operating cash flow increased 391.8%. Here again, contributing to the improving cash flow fortunes of corporate America was an improvement in working capital management, especially through reductions in inventory. What remains to be seen is whether these firms can continue improving on their cash-generating prowess or whether the benefits from working capital management have all been achieved. An inability to continue improving on working capital management will have negative effects on growth of operating cash flow in the future.

These results have implications for analysts and investors, who may need to adjust downward future cash flow forecasts that rely heavily on continued improvement in working capital management. CFOs will also find these results to be of interest as they seek to boost cash flow as much as possible at a time when the easy gains in working capital management have already been achieved.

The study concludes with a look at three select industries: Technology Hardware and Equipment, Software & Services and Media.

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**Georgia Tech Financial Analysis Lab**

The Georgia Tech Financial Analysis Lab conducts unbiased stock market research. Unbiased information is vital to effective investment decision-making. Accordingly, independent research organizations, such as this Lab, have an important role to play in providing information to market participants.

Because the Lab is housed within a university, all its research reports have an educational quality, as they are designed to impart knowledge and understanding to those who read them. Its focus is on issues that it believes will be of interest to a large segment of stock market participants. Depending on the issue, the Lab may focus its attention on individual companies, groups of companies, or on large segments of the market at large.

A recurring theme in Lab's work is the identification of reporting practices that give investors a misleading signal, whether positive or negative, of corporate earning power. It defines earning power as the ability to generate a sustainable stream of earnings that is backed by cash flow. Accordingly, the Lab research may look into reporting practices that affect either earnings or cash flow, or both. At times, its research may look at stock prices generally, though from a fundamental and not technical point of view.

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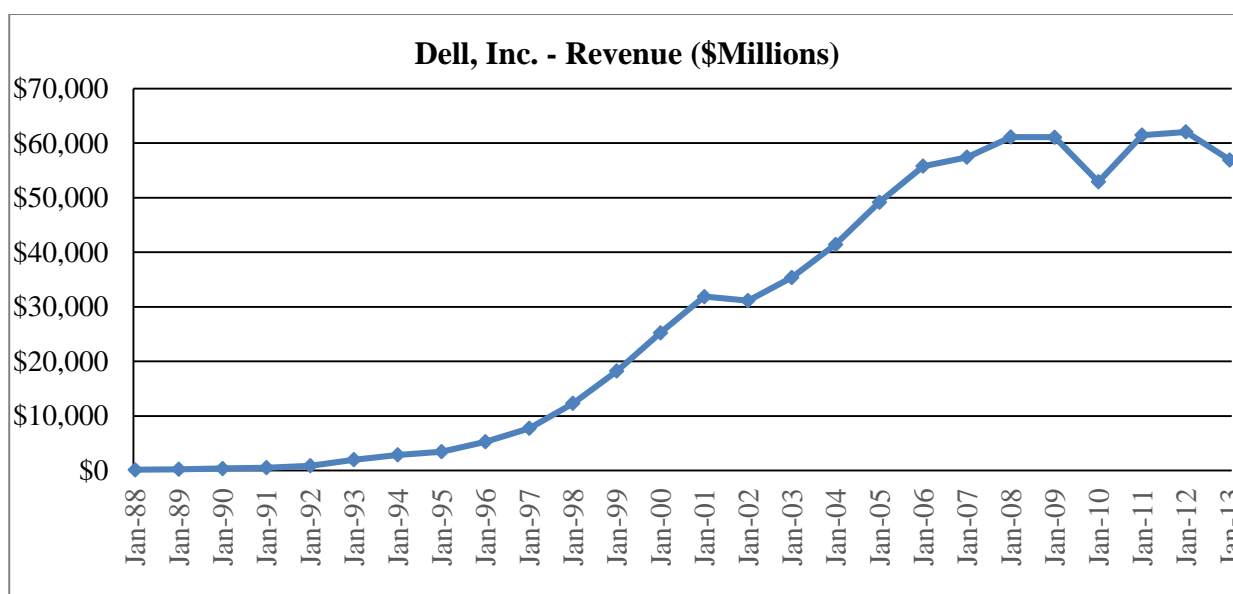
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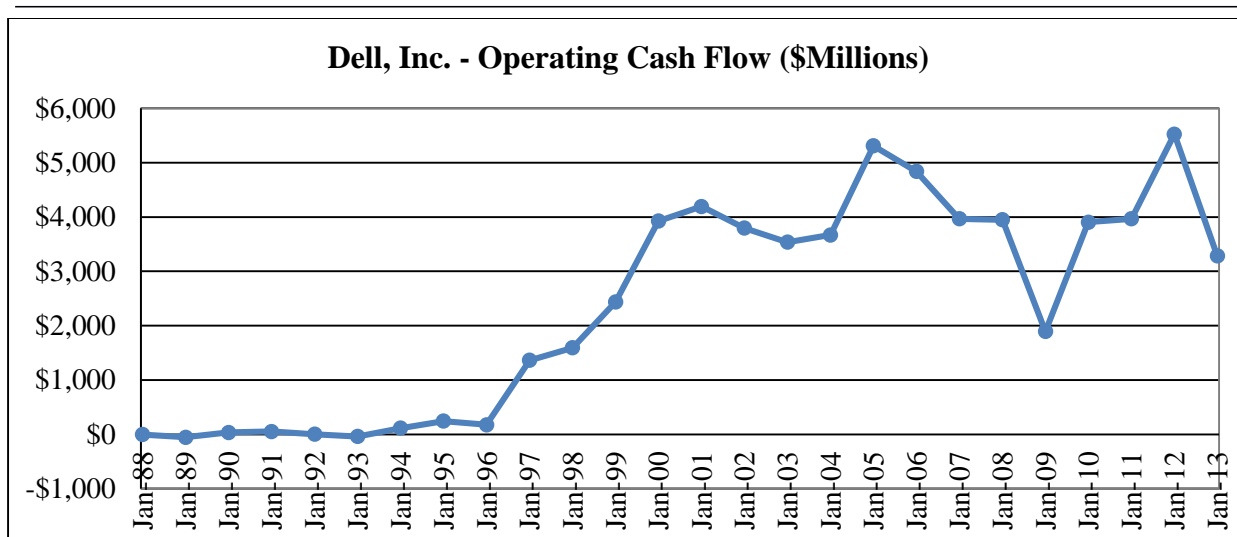
## A Long-Term Perspective on the Cash Generating Capacity of Corporate America: The Lessons from Dell, Inc.

### Introduction

The story of Dell in the years before it was taken private was one of ample cash flow generation through the efficient management of working capital. The company's cash-generating prowess was especially strong beginning in 1996. For example, as presented in the graph below, for the year ended January 1996, Dell reported revenue of \$5,296 million. From that amount, revenue grew 975.2% to \$56,940 million in the year ended January 2013, the final full year before the company was taken private.



During that same time period, however, the company increased its operating cash flow at a much faster rate. For the year ended January 1996, the company reported operating cash flow of \$175 million. By the year ended January 2013, operating cash flow had grown to \$3,283 million, an increase of 1,776.0%. Refer to the graph below.



### Operating Cash Flow

Operating cash flow is a GAAP-defined measure that consists of the cash generated by a firm's income-oriented activities. It includes revenues and expenses from core operations as well as other sources of income such as interest and dividends. Interest expense and taxes are also subtracted in deriving operating cash flow as are changes in operating-related working capital accounts, such as accounts receivable, inventory and accounts payable. Excluded from operating cash flow are the cash effects of investing activities, such as capital expenditures and investments in other firms, and the cash effects of financing activities, such as borrowings and equity raises.

### Dell's Cash-Generating Success

While improvements in operating margins contributed somewhat to Dell's cash-generating success, most of the increase in the company's operating cash flow over the identified period was derived from the careful management of working capital, in particular, inventory and accounts payable.

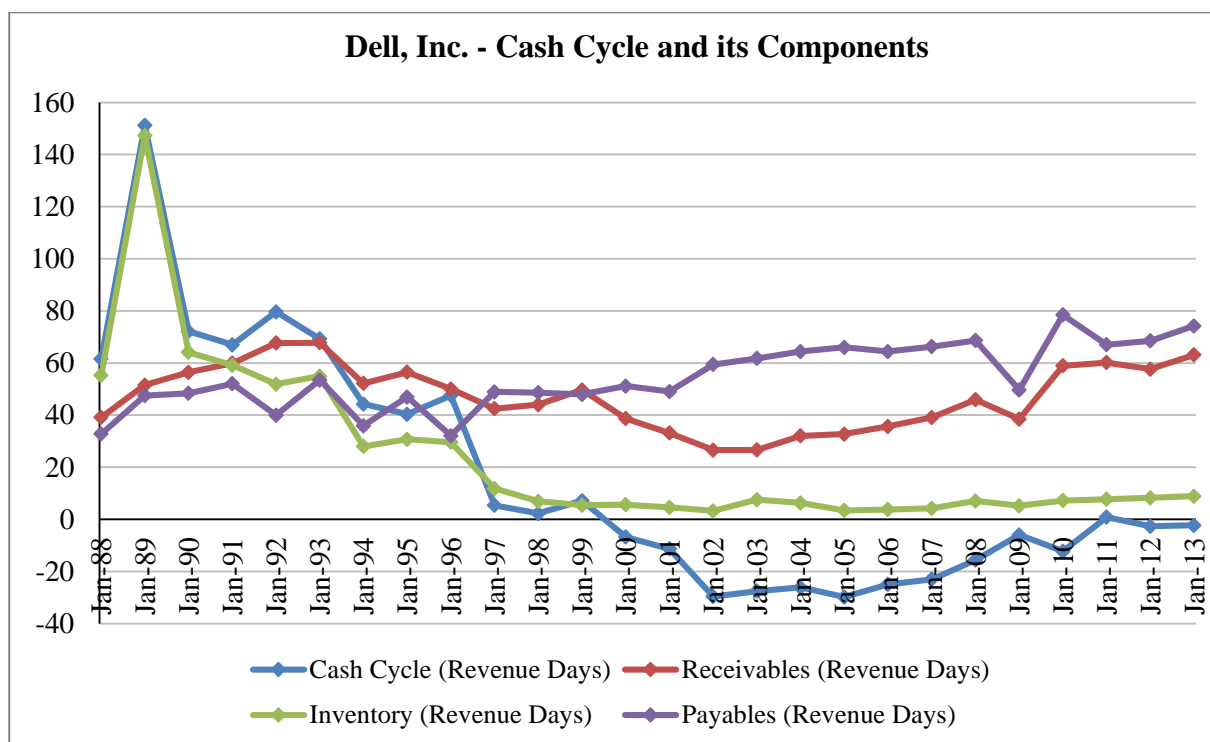
The following chart presents changes in three key working capital accounts, accounts receivable, inventory and accounts payable, between 1996 and 2013:

(In Millions)	Accounts Receivable	Inventory	Accounts Payable
January 1996	\$726	\$429	\$466
January 2013	\$9,842	\$1,382	\$11,579
% Increase	1,255.7%	222.1%	2,384.8%

Recall that during the period between January 1996 and January 2013, Dell increased revenue by 975%. During that same timeframe, accounts receivable did increase somewhat faster, 1,255.7%, causing a drain on operating cash flow. However, of particular note, is the small 222.1% increase in inventory and the significantly large, 2,384.8%, increase in accounts payable. The changes in these two accounts added markedly to operating cash flow over the identified time period. The company boosted operating cash flow by minimizing inventory and maximizing the time taken to pay its bills.

## Dell's Cash Cycle

The cash cycle, calculated as accounts receivable days plus inventory days less accounts payable days, measures the length of time a company has its own funds tied up in working capital. It is a measure of efficiency – the shorter the cash cycle, the more operating cash flow a company generates on each sale. A negative cash cycle is a desirable state of affairs where, in effect, a company is paid in advance to produce inventory and make a sale. Consider the following graph of Dell's cash cycle and its primary components:

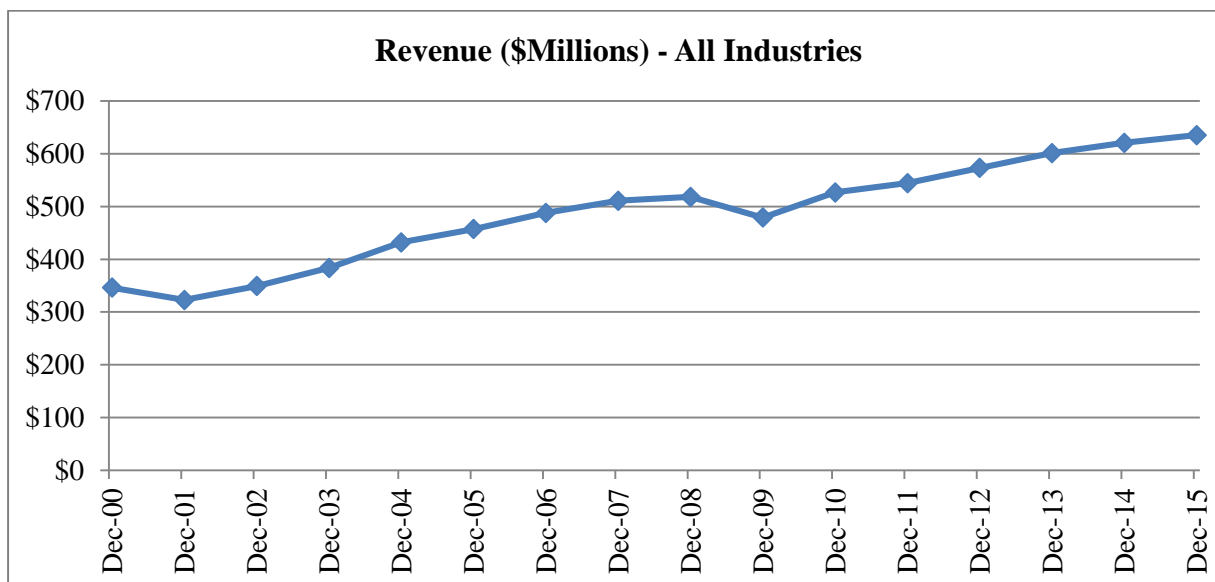


In examining the graph it can be seen that Dell's cash cycle dropped significantly in the years after January 1996 as the company cut inventory and boosted accounts payable. The cash cycle eventually became negative in the years beginning with January 2000. For example, in January 1996, with accounts receivable days at 50.04, inventory days at 29.57 and accounts payable days at 32.12, the cash cycle was 47.49 days. For the year ended January 2005, with a decline in accounts receivable days to 32.74, a decline in inventory days to 3.40 and an increase in accounts payable days to 65.98, the cash cycle had reached negative 29.84 days. While in the ensuing years, with an increase in accounts receivable days and a modest increase in inventory days, the cash cycle did increase somewhat, it was still a negative 2.28 in the year ended January 2013. With these developments, the company continued to improve on its ability to generate ever-increasing amounts of operating cash flow from operations.

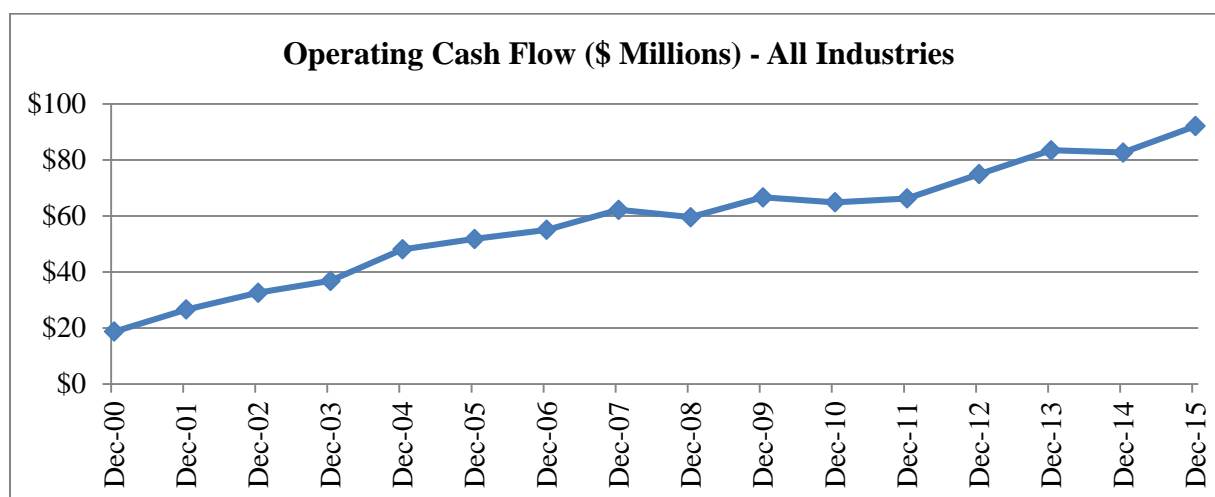
With these thoughts about Dell's ability to generate operating cash flow in mind, we set out to determine if the lessons from Dell were being applied by corporate America generally and in three select industries, Technology Hardware and Equipment, Software & Services and Media.

## All Industries

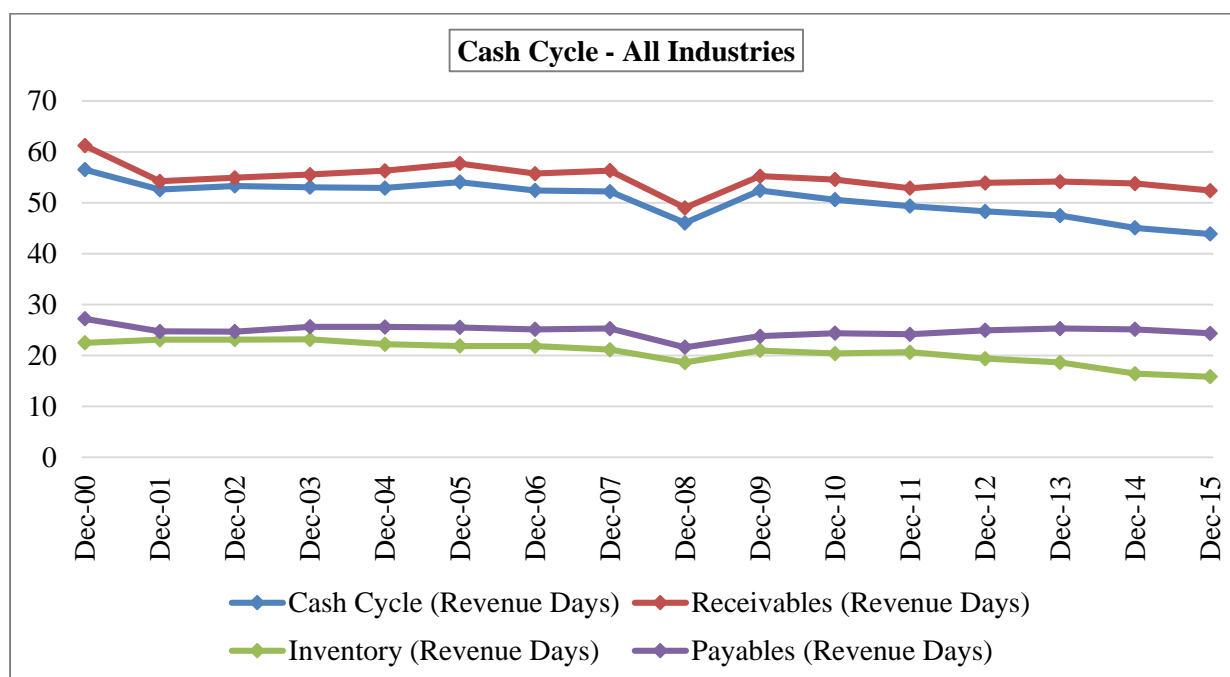
In the graph below we depict median revenue for the 3,800 non-financial companies in our database with total assets greater than \$100 million for the years ended December 2000 through December 2015.



As can be seen in the graph, median revenue increased 83.5% from \$346.35 million for the year ended December 2000 to \$635.47 million for the year ended December 2015. During that same time period, as depicted below, median operating cash flow increased 391.8% from \$18.73 million for the year ended December 2000 to \$92.12 million for the year ended December 2015.



As with Dell, the efficient management of working capital is contributing markedly to corporate America's improving ability to generate operating cash flow. Consider the following graph of the cash cycle and its primary components between 2000 and 2015.



In the year ended December 2000, the median cash cycle for all non-financial firms in our sample was 56.52 days, consisting of 61.23 accounts receivable days, 22.53 inventory days and 27.24 accounts payable days. For the year ended December 2015, the cash cycle had declined to 43.90 days. During that time period, accounts receivable days declined 14.4% to 52.41 days and accounts payable days declined 10.6% to 24.36 days. However, inventory days continued a relentless decline, dropping 29.7% to 15.85 days. Thus, unlike Dell, nonfinancial companies generally are not taking longer to pay their vendors. What they are doing, however, is cutting inventory and improving operating cash flow in the process. Of course, what is unclear is whether companies can continue their pursuit of increased operating cash flow through reduced inventory levels. At some point, inventory reaches a minimum level. Even Dell saw a need to increase inventory above levels reached in 2002.

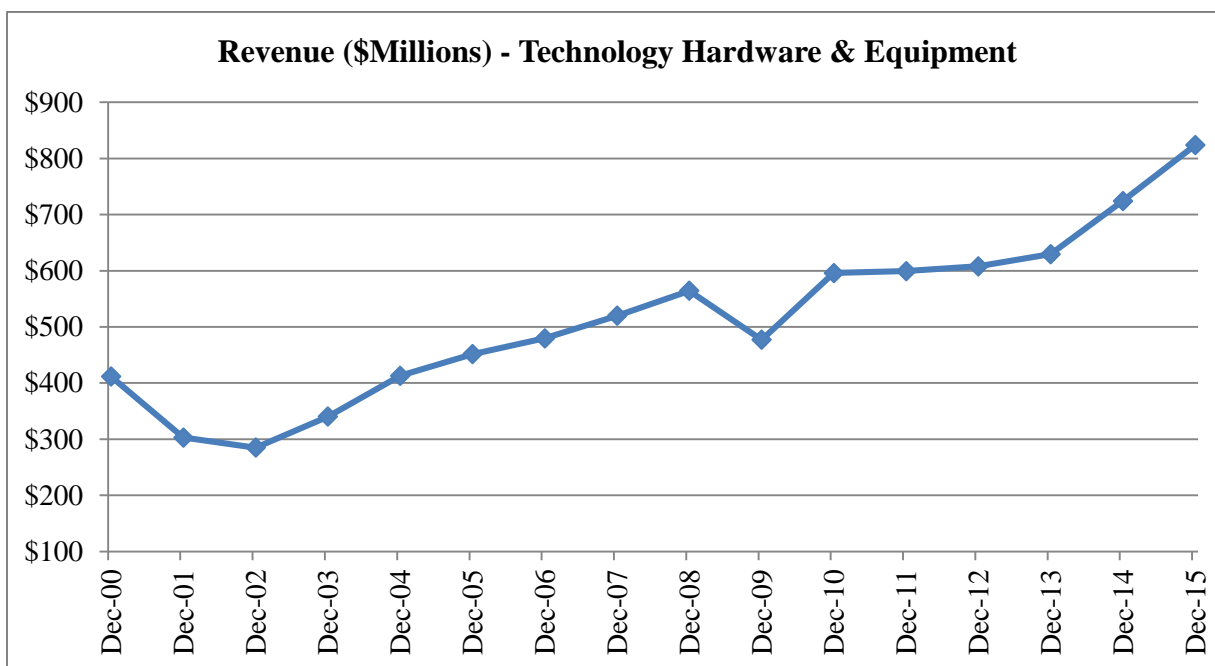
### A look at Selected Industries

Having established that companies generally, like Dell, have boosted operating cash flow through working capital management, we set out to determine if other industries might be well represented by the Dell case – growing operating cash flow faster than revenue through efficient management of working capital. Here we look at 3 industries. One industry, Technology Hardware and Equipment, is very similar to Dell. Two other industries, Software & Services and Media are quite different in that they do not carry any meaningful inventory. Of these two, as examined in the paragraphs that follow, Technology Hardware and Equipment and Software & Services firms were successful in boosting operating cash flow faster than revenue while Media firms were not.

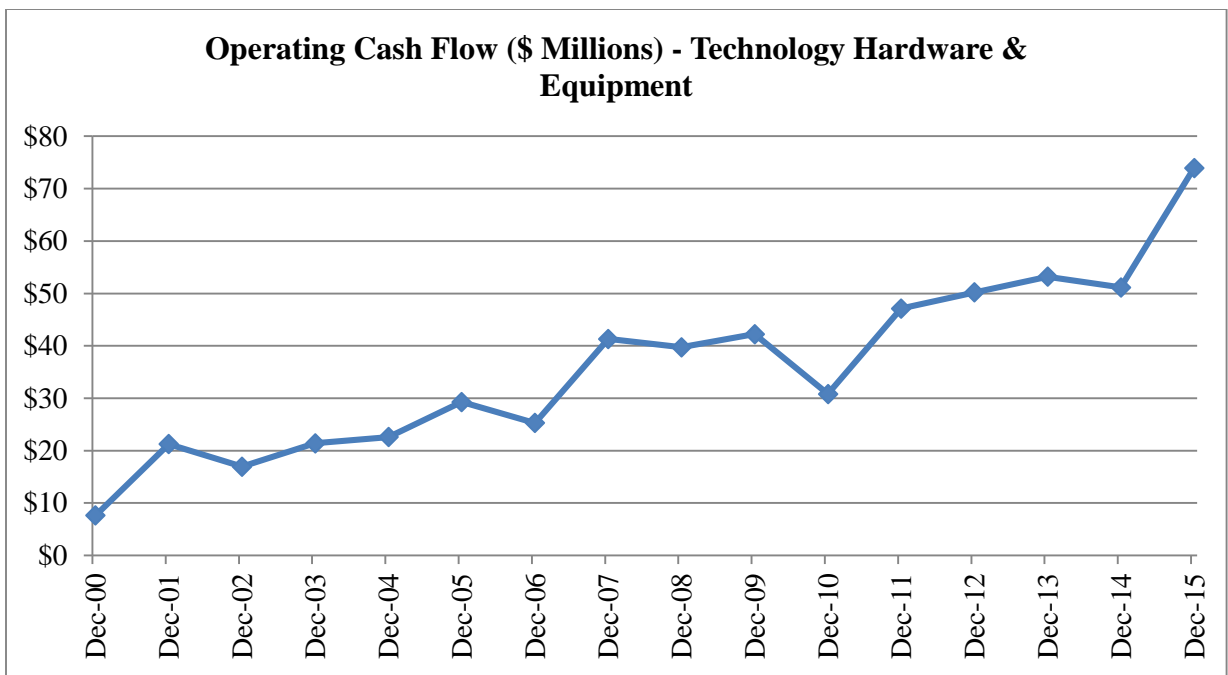
## The Technology Hardware and Equipment Industry

The Technology Hardware and Equipment industry is the one that most closely follows the success of Dell in efficiently managing working capital.

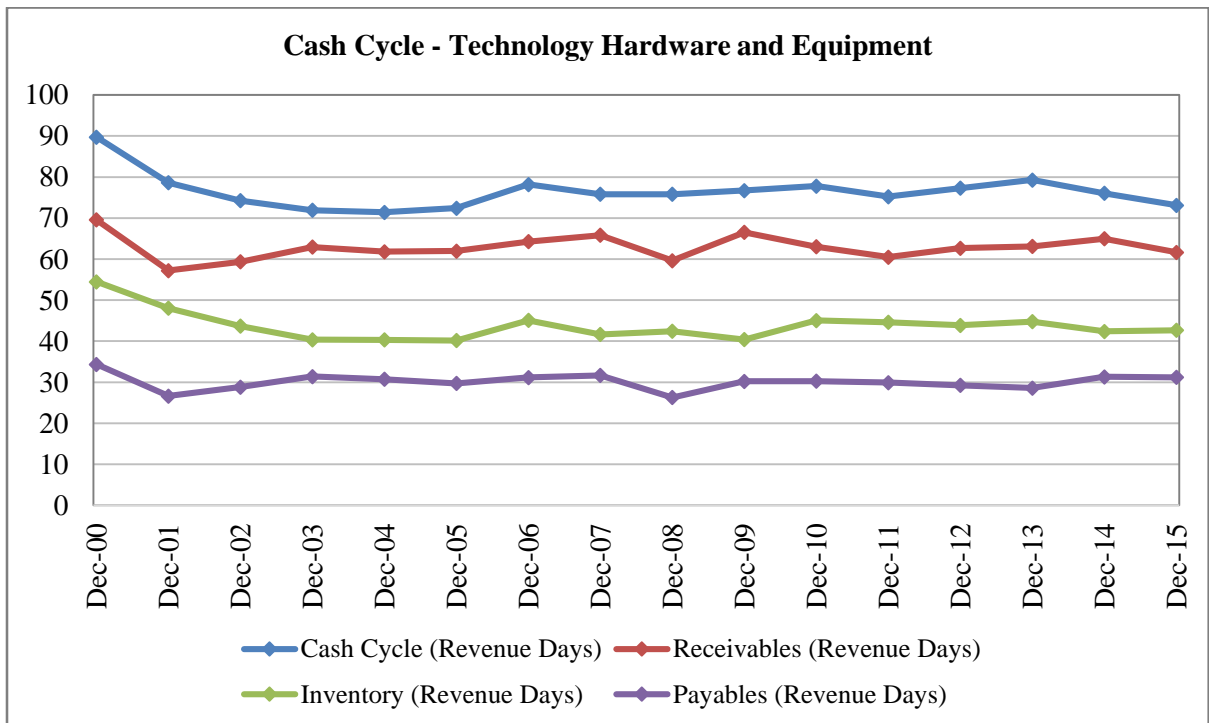
Whereas median revenue for the industry increased 100.2% from \$411.50 million for the year ended December 2000 to \$823.60 for the year ended December 2015, operating cash flow increased 870.1% from \$7.62 million to \$73.92 million during the same time period. Refer to the graphs below.







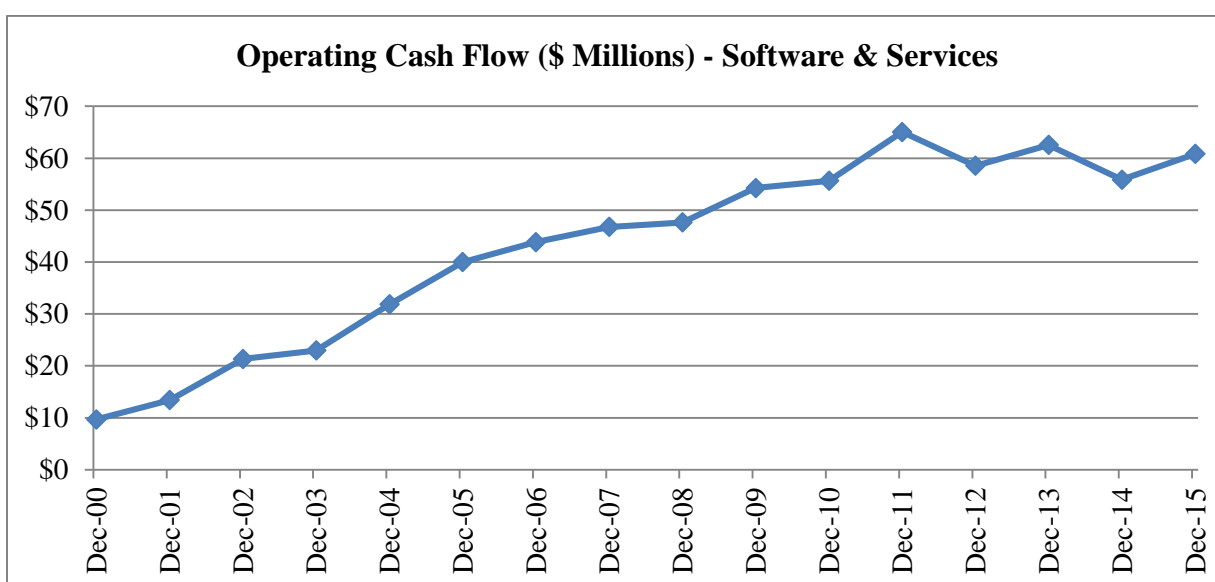
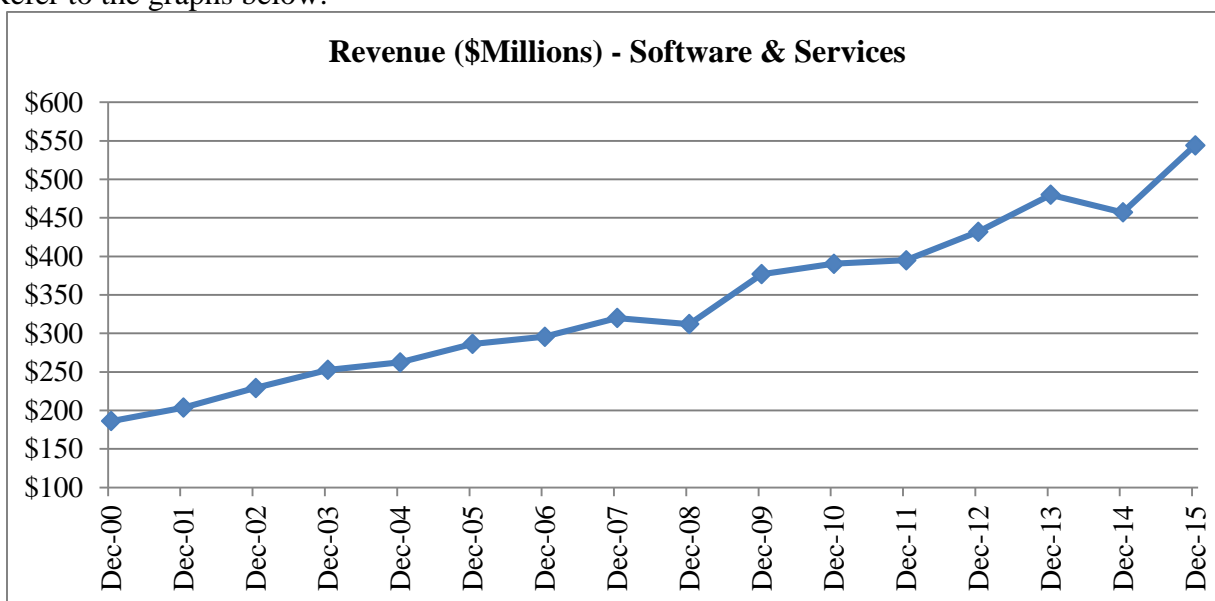
The graph below presents the cash cycle and its primary components for the Technology Hardware and Equipment industry. As noted in the graph, from 89.72 days for the year ended December 2000, the cash cycle declined 18.5% to 73.11 days in the year ended December 2015. Contributing to the decline was a 21.6% drop in inventory days from 54.47 days to 42.68 days. Accounts receivable days also declined 11.4%, from 69.59 days to 61.64 days and accounts payable days declined 9.1% to 31.21 days from 34.34 days.



Like Dell, Inc., firms in the Technology Hardware and Equipment industry boosted operating cash flow through efficient working capital management. In particular, inventory levels were reduced. Accounts receivable were also lowered and account payable were generally left unchanged.

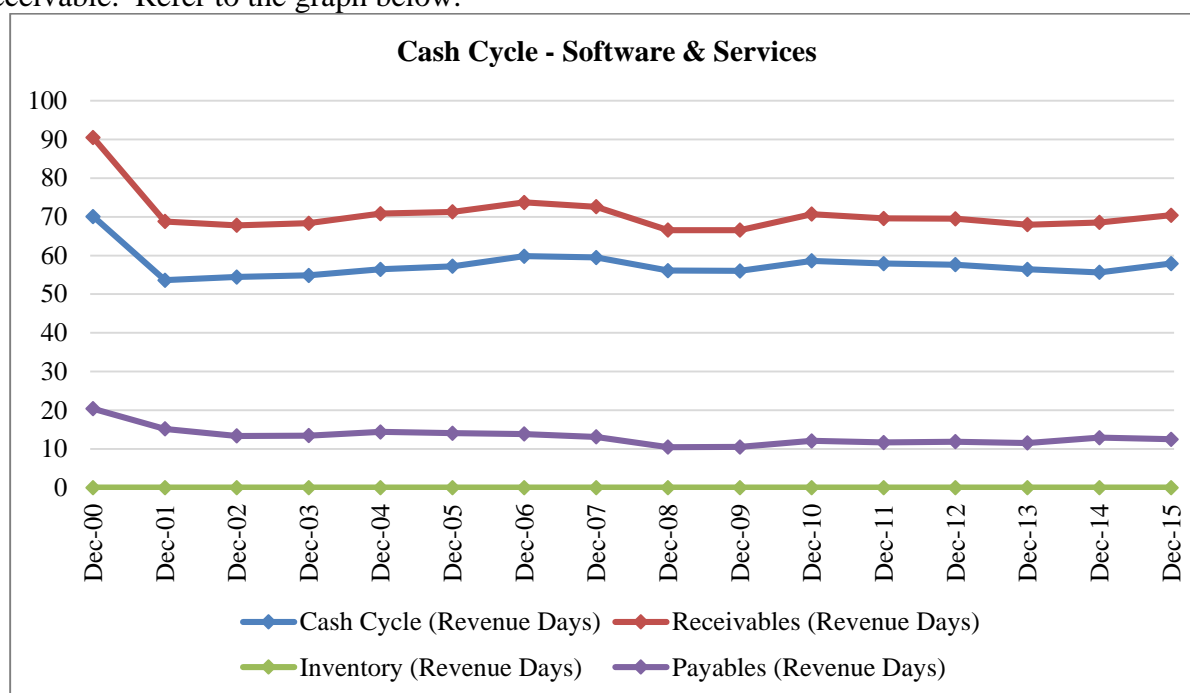
### Software & Services

Software & Services increased median revenue by 192.4% from \$186.11 million for the year ended December 2000 to \$544.21 million in for the year ended December 2015. During that same time period, operating cash flow increased 527.6% from \$9.69 million in 2000 to \$60.81 million in 2015. Refer to the graphs below.



Unlike the Technology Hardware and Equipment industry, companies in the Software & Services industry could not improve operating cash flow through more efficient inventory management.

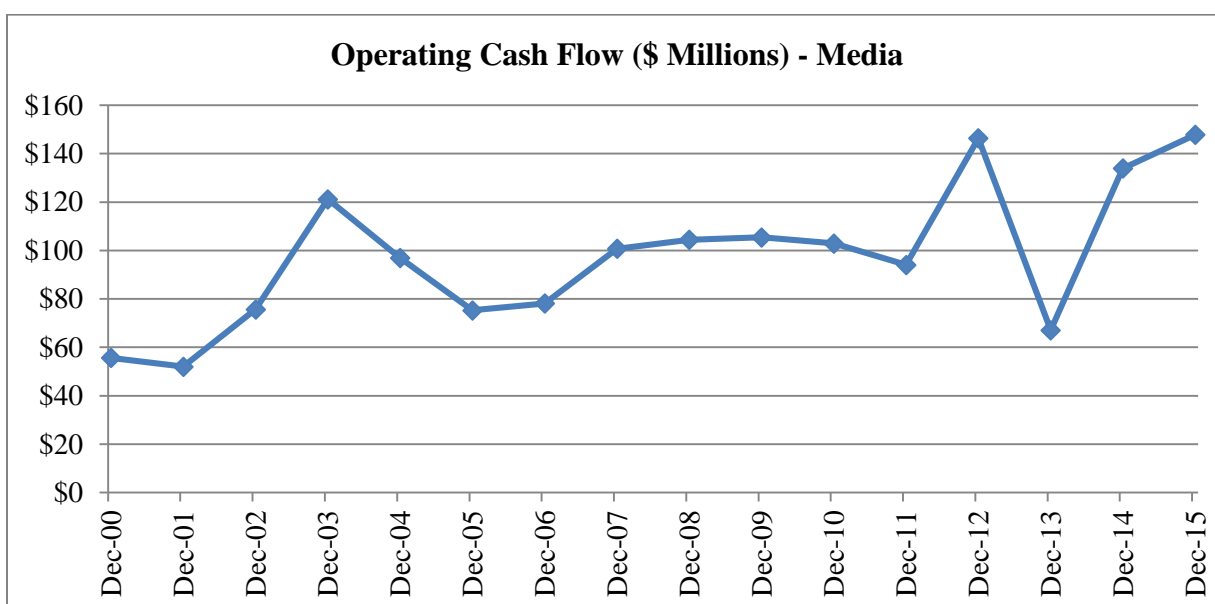
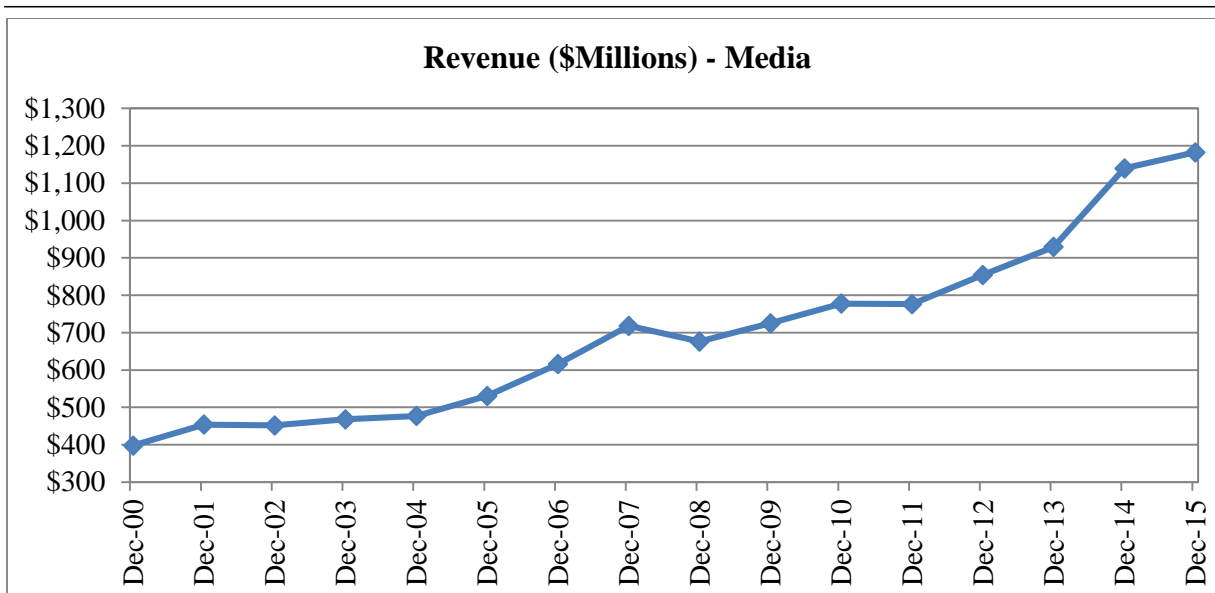
However, they were able to reduce the cash cycle by reducing the time it takes collect accounts receivable. Refer to the graph below.



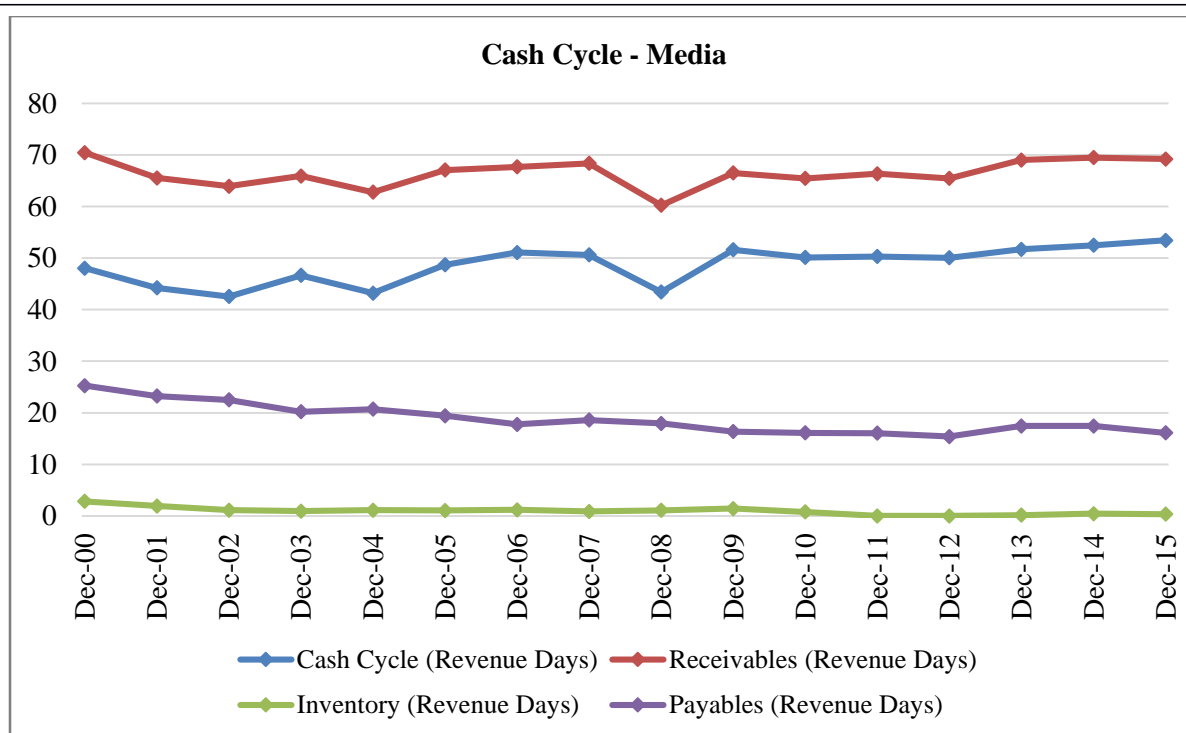
For companies in the Software & Services industry, the cash cycle declined from 70.06 days for the year ended December 2000 to 57.90 days for the year ended December 2015. This decline was driven primarily by a decrease in accounts receivable days, which declined from 90.46 days in 2000 to 70.41 days in 2015. Without inventory, that component of working capital could not contribute to the industry's improvement in operating cash flow. While not the subject of this study, the Software & Services industry also used improvements in operating margins to boost operating cash flow over the 2000 to 2015 time period.

## Media

In contrast with the Technology Hardware and Equipment and Software & Services industries, the Media industry saw its cash cycle worsen between 2000 and 2015. For media firms, median revenue increased 197.3% from \$397.69 million for the year ended December 2000 to \$1,182.25 million for the year ended December 2015. During that time, median operating cash flow increased by only 165.5% from \$55.68 million in 2000 to \$147.82 million in 2015. Refer to the graphs below.



The Media industry's cash cycle and components are depicted in the graph below. Note that the cash cycle for this industry actually increased from 48.03 days for the year ended December 2000 to 53.43 days for the year ended December 2015. During this period, accounts receivable days remained generally unchanged while inventory was, for all practical purposes nonexistent. Pushing up the cash cycle was a decline in accounts payable days from 25.25 days in 2000 to 16.12 days in 2015. Refer to the graph below. Operating margins remained generally unchanged over the time period in question.



## Conclusion

In the years before the company was taken private, Dell, Inc. was adept at generating operating cash flow. Between the company's fiscal years ending January 1996 and January 2013, operating cash flow increased 1,776.0% on a 975.2% increase in revenue. The primary driver of this increase in operating cash flow was the company's efficient management of working capital. By reducing inventory and increasing accounts payable, Dell was able to lower its cash cycle from 47.49 days in 1996 to negative 2.28 days in 2013. Using data for all nonfinancial industries, we find similar results. Between 2000 and 2015, for the 3,800 companies in our database, median revenue increased 83.5% while operating cash flow increased 391.8%. Here again, contributing to the improving cash flow fortunes of corporate America was an improvement in working capital management. For these firms, the median cash cycle declined 22.3% from 56.52 days in 2000 to 43.90 days in 2015. Driving the decline in the cash cycle was a reduction in inventory, where inventory days declined by 29.7% over the time period studied.

Looking at selected individual industries, we find that the Technology Hardware and Equipment industry tracks Dell, Inc. quite closely. On a 100.2% increase in revenue between 2000 and 2015, operating cash flow increased 870.1%. Contributing to the increase in cash flow was a decline in the cash cycle driven primarily by a drop in inventory. In the Software & Services industry, median revenue increased 192.4% between 2000 and 2015, while operating cash flow increased 527.6%. Firms in this industry do not carry inventory. Nonetheless, the cash cycle declined, driven primarily by a drop in accounts receivable days. One industry that has not fared as well as others over the time period studied in the Media industry. For media firms, median revenue increased 197.3% between 2000 and 2015, while operating cash flow increased 165.5%. As might be expected, the cash cycle for firms in this industry actually worsened between 2000 and 2015.

American firms have become very adept at generating operating cash flow. Over the past fifteen years, growth in operating cash flow has surpassed growth in revenue. Contributing significantly to their ability to generate cash flow has been a continuing improvement in working capital management. In particular, inventory levels have been reduced. Though improvements in the collection of accounts receivable have also helped. What remains to be seen is whether these firms can continue improving on their cash-generating prowess. An inability to continue improving on the cash cycle will have negative implications for growth in operating cash flow in the future.

These results have implications for analysts and investors, who may need to adjust downward future cash flow forecasts that rely heavily on continued improvement in working capital management. CFOs will also find these results to be of interest as they seek to boost cash flow as much as possible at a time when the easy gains in working capital management have already been achieved.