

It's 5:00 p.m. How Much Did You Lose Today In Your Supply Chain Finance?

by Jason Verwohlt, Vice President, Product Development, Citigroup

In an environment characterized by decreasing demand and narrowing margins, it is not surprising that the strategic focus for major corporations is to optimize process management. As a result, the cash conversion cycle (also known as working capital days deployed or operating cycle) of a company takes on great significance – and justifiably so. If cash is ‘the oxygen of business,’ by the same token, the process of spending and collecting cash is comparable to breathing – and no less essential to the functioning of all other systems.

Understanding the cash conversion cycle

At first glance, the formula looks straightforward: the cash conversion cycle (CCC) = DSO + DIO – DPO. Add the number of days a company waits to receive payment, known as Days Sales Outstanding (DSO), to the number of days it takes to turn inventory, known as Days Inventory Outstanding (DIO), then subtract the number of days until suppliers are paid, called Days Payable Outstanding (DPO). But don't be misled by the simplicity of the basic equation. Understanding the meaning of each of the factors and their bottom line implications requires a closer look. Let us compare the cash conversion cycle of two hypothetical companies competing in the same industry (see Case A).

In spite of a significantly higher cost of goods sold, Company A has a much shorter cash conversion cycle; the result

Case A

Cash conversion cycle of two hypothetical companies

Calculating DSO = (Accounts Receivable/Revenues) x 365 days

	<u>Company A</u>	<u>Company B</u>
Accounts Receivable	\$4,630,000	\$5,337,000
Annual Revenue	\$33,000,000	\$32,000,000
Implied DSO	51.2 days	60.9 days

Calculating DIO = (Inventory/Cost of Goods Sold) x 365 days

	<u>Company A</u>	<u>Company B</u>
Inventory*	\$2,992,000	\$2,741,000
Cost of Goods Sold	\$9,500,000	\$5,300,000
Implied DIO	115.0 days	188.8 days

**Note: For service companies with little or no Cost of Goods Sold, a more appropriate formula may be Inventory/Revenues x 365 days*

Calculating DPO = (Accounts Payable/Cost of Goods Sold) x 365 days

	<u>Company A</u>	<u>Company B</u>
Accounts Payable*	\$2,840,000	\$1,580,000
Cost of Goods Sold	\$9,500,000	\$5,300,000
Implied DPO	109.1 days	108.8 days

**Note: For service companies with little or no Cost of Goods Sold, a more appropriate formula may be Accounts Payable/Revenues x 365 days*

Using the formula CCC = DSO + DIO - DPO, we see that Company A has a cash conversion cycle of 57 days while Company B's cycle is 140.9 days:

Company A's Cash Conversion Cycle = 51.2 + 115.0 - 109.1 = 57.1 days
Company B's Cash Conversion Cycle = 60.9 + 188.8 - 108.8 = 140.8 days



of turning inventory faster and waiting fewer days for payment. But Company B, with a lower cost of goods sold is squeezing its margins by adding funding costs to finance its longer and costlier cash conversion cycle. Clearly, the interval between a dollar spent and a dollar earned can have a profound effect on profitability.

The ultimate goal: a negative cash conversion cycle

Ideally, companies should work toward a negative cash conversion cycle where they would collect from customers quickly, hold very little inventory if any, and push out payment to suppliers as long as possible. In effect, companies with a negative cash conversion cycle are using their suppliers to finance daily operations. By maintaining a low DSO and low DIO, while paying suppliers slowly for a high DPO, they are able, at least in the short term, to improve both gross and net margins.

A change in strategy for a win-win solution

In response to the growing concern about working capital and the cash conversion cycle, Citibank developed the Citibank® Electronic Account. This solution creates a closed loop exchange between the buyer, its suppliers and Citigroup. To understand the nuances of this strategy, let us look at an example. Consider the example of a national discount retailer (see Case B), which routinely pays its manufacturers in 55.7 days – in spite of being offered 2% discount for payment in 10 days – because they know they have more to gain by delaying payment. But by implementing the Citibank Electronic Account, the buyer gets to extend payment beyond the current 55.7 days, and the manufacturer benefits by receiving payment in 10 days, less the 2% discount they have been offering

Case B

National discount retailer's implied results of utilizing the Citibank® Electronic Account

Current DPO	55.7 days
Proposed DPO on Citibank Electronic Account throughput (volume)	65.0 days
Citibank® Electronic Account throughput (volume)	\$1,000,000,000
Results Assuming Weighted Average Cost of Capital of 8.54%	
New Blended DPO	56.1 days
Cash Conversion Cycle Cost Savings	\$3,175,542
Improvement to Gross Margin	0.008%
Required sales increase to obtain the equivalent net income results (assuming net income margin of 3.43%)	\$92,581,411
Results Assuming Blended Cost of Debt of 2.77%	
New Blended DPO	56.1 days
Cash Conversion Cycle Cost Savings	\$1,030,006
Improvement to Gross Margin	0.003%
Required sales increase to obtain the equivalent net income results (assuming net income margin of 3.43%)	\$30,029,334

“The interval between a dollar spent and a dollar earned can have a profound effect on profitability.”

for decades. In essence, both sides win. For a full understanding of the retailer's financial benefits see the table in Case B. The win-win result is that both companies reduce the cost of financing their working capital needs. The supplier has a reduced DSO while the DPO of the retailer (buyer) is increased.

The case of the manufacturing giant and a single supplier

Let us look at another example. In Case C a well-known, multinational manufacturer is the largest client of an international employment agency, which places highly specialized experts on a temporary basis.

The giant manufacturer routinely pays suppliers in 71.4 days, in spite of the offered 2% discount for 10-day payment. However, in order to attract and retain high quality talent, the employment agency must pay its highly skilled laborers on a weekly basis. Not surprisingly, the cost of borrowing for 70 or more days, while waiting for payment, is reflected in its pricing.

Using the Citibank Electronic Account, the giant manufacturer now has 85 days to repay its invoices while the employment agency has agreed to accept a 1% discount in exchange for 10-day payment. This increases days payable for the buyer and reduces days outstanding for the supplier from 76.2 days to 73.1

Case C – Buyer

Leading manufacturer's implied results of utilizing the Citibank® Electronic Account

Current DPO	71.4 days
Proposed DPO on Citibank Electronic Account throughput (volume)	85.0 days
Citibank® Electronic Account throughput (volume)	\$1,000,000,000

Results Assuming Weighted Average Cost of Capital of 5.83%

New Blended DPO	71.5 days
Cash Conversion Cycle Cost Savings	\$2,897,059
Improvement to Gross Margin	0.002%
Required sales increase to obtain the equivalent net income results (assuming net income margin of .93%)	\$311,511,745

Results Assuming Blended Cost of Debt of 2.24%

New Blended DPO	71.5 days
Cash Conversion Cycle Cost Savings	\$1,113,107
Improvement to Gross Margin	0.001%
Required sales increase to obtain the equivalent net income results (assuming net income margin of .93%)	\$119,688,904

increase its sales by \$311,511,745 (assuming current weighted average cost of capital (WACC) and net profit margin environments). These numbers are especially powerful in an economic climate where increasing sales is difficult for many companies.

Even a company that already has a negative cash conversion cycle can improve its working capital. For instance, if a leading computer manufacturer (see Case D) were to implement this solution, the company could improve its cash conversion cycle by approximately half a day on \$1 billion of spend, paying Citibank back in 90 days for a savings of over \$5.7 million. This assumes WACC is 11.76%, but if we used an estimated blended cost of debt number of 3.36% they could still save \$1.6 million.

Reducing borrowing costs is only the first advantage

Increased profitability is only the first of many benefits clients report. A second and important benefit of the product's design is its technical adaptability. By integrating directly with a company's electronic invoice presentment system or a company's accounting or accounts payables systems, the Citibank Electronic Account can become an end-to-end solution that includes transaction authorization, payment reporting and supplier financing, for all types of goods and services. The electronic transmission of orders and payments not only eliminates the need for mailing but also greatly reduces the costs for lost or erroneous payments.

For companies that have not yet migrated to electronic billing, a compelling argument can be made that the cost advantages of implementing this solution more than pays for installing new technology. In addition to the reduced cost of borrowing, it also eliminates the hard costs for printing, paper, envelopes and postage, as well as the corresponding need for personnel, cutting payables expenses by as much as 70%.

Case C – Supplier

Leading human resource supplier's implied results by accepting the Citibank® Electronic Account

Current DSO	76.2 days
Proposed DSO on Citibank Electronic Account throughput	10.0 days
Citibank® Electronic Account throughput (sales)	\$500,000,000

Results Assuming Weighted Average Cost of Capital of 7.89%

New Blended DSO	73.1 days
Cash Conversion Cycle Cost Savings	\$2,151,799
Improvement to Gross Margin	0.020%
Required sales increase to obtain the equivalent net income results (assuming net income margin of 1.07%)	\$201,102,676

Results Assuming Blended Cost of Debt of 5.69%

New Blended DSO	73.1 days
Cash Conversion Cycle Cost Savings	\$157,634
Improvement to Gross Margin	0.001%
Required sales increase to obtain the equivalent net income results (assuming net income margin of 1.07%)	\$14,732,173

days (Case C – Supplier), while also opening the door for the buyer to renegotiate pricing. Specifically the manufacturer has saved \$2,897,059

and improved its gross margin by .0002%. In order to realize this same \$3 million improvement to its bottom line, this manufacturer would have to

Case D

A leading computer manufacturer

This manufacturer's strategy is to custom-build computers and computer systems for direct shipment to the customer. This direct model allows the company to carry little or no inventory, receive payment within a month and delay paying suppliers for more than 75 days. Its position as low-cost market leader is, in part, a result of its negative cash conversion cycle. Its negative cash conversion cycle of approximately 38.9 days is a result of collecting payment from customers quickly (on average in 32.5 days), maintaining low levels of inventory (approximately 3.8 days) and paying suppliers in two months (approximately 75.2 days). Its competitors, with positive cash conversion cycles, borrow from the market to finance day-to-day operations and pay suppliers. These added borrowing costs result in narrower profit margins and higher prices – which ultimately gives this leading manufacturer the competitive edge.

Note: Based on Securities and Exchange Commission's Staff Accounting Bulletin No. 101 (SAB 101), this manufacturer defers the cost of revenue associated with in-transit shipments in 'other assets' in its Consolidated Statement of Financial Position. As a result, the manufacturer does not account for these in-transit products as inventory. If we were to include these finished goods as inventory, this would result in an increase in DSI from 3.8 days to approximately 21.4 days and therefore a change in the CCC from a negative 38.9 days to a negative 21.4 days.

Case D

Leading computer manufacturer's implied results by utilizing the Citibank® Electronic Account

Current DPO	75.2 days
Proposed DPO on Citibank® Electronic Account throughput (volume)	90.0 days
Citibank® Electronic Account throughput (volume)	\$1,000,000,000

Results Assuming Weighted Average Cost of Capital of 11.76%

New Blended DPO	75.7 days
Cash Conversion Cycle Cost Savings	\$5,796,247
Improvement to Gross Margin	0.016%
Required sales increase to obtain the equivalent net income results (assuming net income margin of 5.99%)	\$96,706,094

Results Assuming Blended Cost of Debt of 3.36%

New Blended DPO	75.7 days
Cash Conversion Cycle Cost Savings	\$1,656,071
Improvement to Gross Margin	0.005%
Required sales increase to obtain the equivalent net income results (assuming net income margin of 5.99%)	\$27,630,312



Jason Verwohlt is Vice President, Product Development for the Citibank® Electronic Account at Citigroup Global Transaction Services. Prior to joining Citigroup, he held various management positions within private equity, investment and retail banking, and asset management.

To find out more about the Citibank® Electronic Account, please contact Jason at jason.h.verwohlt@citigroup.com, by telephone at 212-657-7240 or visit our website www.citimanager.com

Advantages for suppliers

For suppliers with high borrowing costs, especially those who already offer a 2% 10-day discount, the Citibank Electronic Account adds increased value via timely and predictable payment at approximately half the cost. In addition, suppliers get access to Level III data. With line-by-line detail on every transaction, they are in a better position to identify additional savings as well as new opportunities. By speeding up the payment cycle to suppliers, buyers create additional buying power with suppliers without requesting the supplier extend additional credit.

Unraveling the cash conversion cycle

This article has attempted to set out the basics of the cash conversion cycle and explain it through example and comparison. But the details of cash conversion cycles vary, not only by industry, as we have shown, but also by individual company practices. Although the need to improve profitability and enhance vendor relationships is certainly a common thread, the old axiom that the 'devil is in the details' has special validity here.

For many companies, especially those with large spends, the ability to understand their cash conversion cycles has reached critical importance. In an economic environment where raising revenues has become increasingly difficult, companies are wisely shifting their focus to improving their working capital – in essence, enhancing the bottom line by turning receivables and inventory into cash. The Citibank Electronic Account provides an effective tool for both understanding and improving the details; enabling companies to realize impressive profitability gains through extended days payable outstanding, reduced borrowing costs and multilevel process improvements. ♦