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### Determining Benchmark Working Capital in a Business Acquisition

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**Takeaway:** Having a good understanding of the company's working capital needs is extremely important in a sales process. Invest the time necessary to understand, in detail, the operating cycle of the company for sale.



In an article titled *Multiple of EBITDA or SDE: A Car With or Without the Gas (and the Driver)*, I compare and contrast two levels of earnings, two types of market [multiples](#), and the resulting two quite different valuation conclusions, or the most probable selling price (MPSP).

The metaphor used in that article to represent the business being sold was a car. When the car is priced by applying the [multiple of EBITDA method](#), included in the price is the necessary working capital (gas) necessary to power the car. This resulting MPSP is also the company's [enterprise value](#). Generally, enterprise value can be expressed as follows:

**Enterprise Value = Working Capital (the gas) + Fixed Assets + Intangible Assets**  
 (Working Capital is defined as: Current Assets - Current Liabilities)

	Callan's Normalized	Phoenix Projected
Sales	\$ 7,500,000	7,730,000
Cost of Goods Sold:		
Beginning Inventory	800,000	820,000
Purchases	5,050,000	5,200,000
Ending Inventory	-820,000	-840,000
Total Cost of Goods Sold	<u>5,030,000</u>	<u>5,180,000</u>
Gross Profit	2,470,000	2,550,000
SG&A Expenses	<u>1,950,000</u>	<u>2,010,000</u>
EBITDA	\$ 520,000	540,000
Depreciation and Amortization		<u>130,000</u>
Profit Before Taxes		<u>410,000</u>
Income Taxes		<u>160,000</u>
Net Income		\$ <u>250,000</u>

### The Bardahl Formula

What my previous article did not do was to provide guidance on how much gas is required - which we'll call benchmark working capital.

The purpose of this article is to describe a methodology to compute benchmark working capital, which arose out of a 1965 Tax Court case *Bardahl Manufacturing Corp. vs. Commissioner (T.C. Memo 1965-200)*.

The *Bardahl* case dealt with accumulated earnings tax in a C Corp, and in doing so, provided a formula approach to determine the working capital needs of the company. The case gave birth to what is commonly referred to as the "Bardahl Formula" in calculating the working capital required for one operating cycle.

The following example will be used to show how the benchmark working capital computation is made using the Bardahl formula, and what consideration is paid to the seller at closing.

Inventory	\$	850,000
Accounts Receivable		800,000
Accounts Payable		470,000

### An Example in Calculating Benchmark Working Capital

Assume ABC Distributing Co. is in the process of being sold. The [operating cycle](#) for this type of business is the time needed to convert inventory into sales and accounts receivable, and any accounts receivable into cash. When purchasing inventory, the company benefits by using other people's money in the form of trade accounts payable.

Buyer and seller agree that the total enterprise value for ABC Distributing Co. is \$2.3 million - a 4.43x multiple of seller's [normalized](#) EBITDA (Table 1).

At the [letter of intent](#) (LOI) stage as shown on Table 7, the total consideration paid to the seller will be \$1.54 million in cash, and a seller note of \$.76 million (subject to the [working capital adjustment](#) at Closing).

Here are the steps to determine benchmark working capital by applying the Bardahl formula:

<u>Inventory Cycle:</u>		
Inventory (Table 2)	\$850,000	16.9%
Seller's Cost of Goods Sold (Table 1)	\$5,030,000	
<u>Accounts Receivable Cycle:</u>		
Accounts Receivable (Table 2)	\$800,000	10.7%
Seller's Sales (Table 1)	\$7,500,000	
<u>Accounts Payable (Credit) Cycle:</u>		
Accounts Payable (Table 2)	\$470,000	-9.3%
Seller's Purchases (Table 1)	\$5,050,000	
Average Operating Cycle (% of a Year)		18.3%
		(to Table 5)

### Step 1 - Determine One-Year Average Operating Cycle (Table 3)

#### Inventory Cycle

- Consists of the period of time from the purchase of inventory to the sale of inventory.

- Calculated on Table 3 from amounts obtained from Tables 1 and 2.

Plus: Accounts Receivable Cycle

Consists of the period of time between the creation of accounts receivable from the sale of inventory, and the receipt of cash upon the settlement of accounts receivable by the customer.

- Calculated on Table 3 from amounts obtained from Tables 1 and 2.

Minus: Accounts Payable (Credit) Cycle

Consists of the period of time between the purchase of inventory from a trade creditor, and the payment of cash to settle the account with the trade creditor.

- Calculated on Table 3 from amounts obtained from Tables 1 and 2.
- The result is the average operating cycle expressed as a percentage of a year. In this example, it is 18.3%, or 67 days (18.3% times 365 days).

**Step 2 - Determine Buyer's Projected Operating Expenses (Table 4)**

The example assumes that the buyer's first year's operations will grow by 3%, and that there will be depreciation and amortization write-offs in purchasing \$500,000 of fixed assets, and \$500,000 of goodwill (Table 7).

<b>Table 4</b>	
<b>Buyer's Projected Operating Expenses</b>	
	(from Table 1)
Cost of Goods Sold	\$ 5,180,000
SG&A Expenses	2,010,000
Income Taxes	<u>160,000</u>
Total Operating Expenses	\$ <u>7,350,000</u>
	(to Table 5)

**Step 3 - Calculate Benchmark Working Capital (Table 5)**

<b>Table 5</b>		
<b>Benchmark Working Capital Calculation</b>		
Buyer's Projected Operating Expenses	Table 4	\$ 7,350,000
Average Operating Cycle (% of a Year)	Table 3	<u>18.3%</u>
Benchmark Working Capital		\$ <u>1,300,000</u>
		(to Tables 6 & 7)

The \$1.3 million of benchmark working capital (rounded) was computed by multiplying the buyer's projected operating expenses (Table 4) by the average operating cycle percentage (Table 3). Therefore, at the LOI stage shown on Table 7, benchmark working capital is \$1.3 million, with the balance of the transaction price allocated to fixed assets and [goodwill](#).

In this example, the buyer and seller agree within the terms of the LOI, that the transaction will be treated as an asset sale, and that the buyer will be purchasing only the inventory and accounts receivable, and assuming the accounts payable; the seller is retaining the cash.

Every business needs some cash in the bank. So when the seller keeps the cash in an asset sale, it becomes a contributing factor that often produces a working capital shortage. At closing, should the actual working capital be more or less than the benchmark working capital, the \$2.3 million transaction price will be adjusted upwards or downwards through the [seller note](#).

**Step 4 - Calculate Working Capital Adjustments (Table 6)**

The actual net balance of inventory, plus accounts receivable, less accounts payable turns out to be only \$1.17 million at closing. Therefore, the seller note is reduced by the \$130,000 working capital shortage (Tables 6 & 7).

Working Capital Purchased at Closing:		
Inventory	\$	750,000
Accounts Receivable		820,000
Accounts Payable		<u>-400,000</u>
Total W/C Purchased at Closing (to Table 7)		1,170,000
Benchmark Working Capital (from Table 5)		<u>1,300,000</u>
Working Capital Shortage	\$	<u>-130,000</u> (to Table 7)

The buyer and seller could have negotiated a "collar" at the LOI stage. Let's say that they agree that should actual working capital at closing be within 90% and 110% of the \$1.3 million benchmark working capital, the transaction price would not be adjusted.

Any difference greater than this collar percentage range requires an adjustment of the transaction price, up or down. If this were the case in this example, the minimum Actual Working Capital would have been \$1.17 million (90% times \$1.3 million). It turns out that this equals the actual working capital purchased. Therefore, with this collar arrangement, the transaction price at closing would have remained at \$2.3 million, and the goodwill purchased would have increased to \$630,000. The consideration paid to the seller would have been what was stated at the LOI stage (Table 7).

	(from Table 5)	(from Table 6)
	LOI	Closing
Transaction Price:		
Working Capital	\$ 1,300,000	1,170,000
Fixed Assets	500,000	500,000
Goodwill	<u>500,000</u>	<u>500,000</u>
Total Transaction Price	\$ <u>2,300,000</u>	<u>2,170,000</u>
Consideration:		
Cash	\$ 1,540,000	1,540,000
Seller Note (W/C Shortage Table 6)	<u>760,000</u>	<u>630,000</u>
Total Consideration Paid to Seller	\$ <u>2,300,000</u>	<u>2,170,000</u>

### Issues to Consider

The Bardahl formula is only one method to compute benchmark working capital. The facts and circumstances of every transaction must be examined carefully to determine how much gas is required. Here are some situations where determining benchmark working capital should receive special attention:

- Service businesses with no inventory, but carry receivables
- Cash businesses with no receivables, but carry inventory
- Construction companies with varying operating cycles depending upon the project
- Differing company credit policies with customers for various products and services
- Seasonal businesses with a build up of working capital during a particular period of the year
- Service businesses that earn income on a contingent basis
- A particular company's credit policies when ordering inventory and paying vendors
- A particular company's philosophy on debt in general (e.g. use of a Bank Revolver)
- Special working capital levels to meet bonding and lending requirements

### It Pays to Understand this Concept

Invest the time necessary to understand, in detail, the operating cycle of the company for sale. Having a good understanding of the [company's working capital needs](#), you will then know if the car up for sale resembles a gasguzzling SUV, a gas-sipping Hybrid, or something in between.

You are then in a position to examine what else is included in the price of the car - the metal, rubber and glass (fixed assets), and the brand, technology and reliability (intangible assets).