Return on Invested Capital
The Central Factor in Assessing a Business

By: Dan Erdle

Introduction

We all would like to own superior businesses in our portfolios. But how exactly do we go about determining which businesses are likely to generate strong returns? What exactly is it that makes a great business? Although not the only factor to consider, **a company's Return on Invested Capital should be the primary tool in assessing a business.**

Return on Invested Capital measures what should be the true test of a successful business—the business's ability to generate profit from the amount of resources available to it. From an investor's standpoint the primary resource available to the business is the **amount of capital the business has at its disposal.** In short, an investor's primary objective should be to acquire businesses where profits are maximized *per unit of capital in the business*.

Put another way, the goal of the company should be to allocate capital so as to achieve returns on capital that exceed the cost of capital. However, achieving returns in excess of costs is no easy task. The free market system is ruthless. According to financial theory, all returns on capital will eventually be driven down to the cost of capital as a result of competition. Theory says no firm can earn excess profits adjusted for risk. However, what we see in practice is that a few, although not many, businesses can earn high Returns on Invested Capital for sustained periods. When a company is able to do this we say it has a **Durable Competitive Advantage**. We will talk more about this later.

Traditional value investors tend to focus most of their time trying to buy things cheap. In the short run, say a 1-3 year period, a discounted price is probably the primary way a value investor makes their money as the gap closes between the purchase price and the fair value of the stock. However, over the long term the quality of the underlying business becomes the dominant factor in determining the investor's success. As value investors we should focus on cheapness as well as quality.

> ***"Over the long term, it's hard for a stock to earn a much better return than the business which underlies it earns. If the business earns 6% on capital over 40 years and you hold it for that 40 years, you're not going to make much different than a 6% return—even if you originally buy it at a huge discount. Conversely, if a business earns 18% on capital over 20 or 30 years, even if you pay an expensive looking price, you'll end up with a fine result."***
>
> ***- Charlie Munger, Berkshire Hathaway***

Calculating Return on Invested Capital

$$\text{Return on Invested Capital} = \frac{\text{Net Operating Profit After Tax (NOPAT)}}{\text{Invested Capital}}$$

Where:

$$\text{NOPAT} = \text{EBIT} * (1 - \text{tax rate})$$

$$\text{Invested Capital} = \text{Fixed Assets} + \text{Total Current Assets} - \text{Current Non Interest Bearing Liabilities}$$

There are a few things to note here. The numerator NOPAT is attempting to get at the core earnings power of the business's operations. It is calculated prior to interest expense which neutralizes any effect of leverage. Therefore, businesses with different degrees of leverage can be compared apples to apples. NOPAT is after taxes as a result of a hypothetical tax rate being applied to the operating earnings. As a general matter I use 35% (.35) in my calculations. A more technically correct way is to figure out actual cash taxes paid and subtract it from EBIT. But I will cut corners when it won't affect my decision making.

The denominator Invested Capital includes the companies fixed assets which will primarily consist of the company's Property, Plant, and Equipment. Total Current Assets are added to this and Current Non Interest Bearing Liabilities are subtracted. The primary non- interest bearing account is accounts payable.

A major thing to note is that other long term assets such as goodwill and intangibles are not included in invested capital in my calculation. The only long term assets included are tangible assets such as property, plant, and equipment. The exclusion of Goodwill and Intangibles is up to personal discretion. I choose to exclude them because they are accounting plugs as a result of one time acquisitions that are not used in the day to day operations of the business. What I am really interested in is the physical "stuff" that the company must make cash investments in to generate earnings.

There is another way to arrive at the denominator that may be more intuitive to some people. Invested capital is simply the sum of all the equity and debt in the business.

$$\text{Invested Capital} = \text{Total Shareholder's Equity} + \text{Total Debt (Short and Long term)}$$

It would then be up to the discretion of the investor whether to then subtract out Goodwill and Intangibles. For many, the straightforward sum of the debt and equity on the right side of the balance sheet may be intuitively and practically the easiest method. Just be sure you are adding only the debt from liabilities section because things such as accounts payable are not capital invested in the business.

Regardless of the method of how you calculate invested the calculation for Return on Invested Capital is as stated above:

$$\text{Return on Invested Capital} = \frac{\text{Net Operating Profit After Tax (NOPAT)}}{\text{Invested Capital}}$$

Why Are High ROIC Businesses So Valuable?

The reason high ROIC businesses are so valuable is because **for any level of growth, a higher ROIC creates more distributable cash for shareholders.** Saying the same thing—a high ROIC requires less reinvestment to achieve the same level of growth.

Growth Rate = Return on Invested Capital X Reinvestment Rate

Rearranging the formula:

$$\text{Required Reinvestment} = \frac{\text{Growth Rate}}{\text{Return on Invested Capital}}$$

The average U.S. company has generated a historical ROIC of about 10%. Therefore, in order to grow 5%, the company with a 10% ROIC needs to reinvest 50% of their earnings.

5% = .10 X .50

Therefore the average company growing at 5% has only half of their earnings available to distribute to shareholders.

On the other hand, to achieve the same growth rate of 5%, a company with a 25% ROIC only needs to reinvest 20% of their earnings.

5% = .25 X .20

Therefore a company growing at 5% with an ROIC of 25% has a full 80% of its earnings available for distribution to its shareholders.

As stated above, **for any level of growth, a higher ROIC creates more distributable cash for shareholders.** The 10% ROIC company that earns $1.00 can distribute $0.50 to shareholders while growing 5%, while the 25% ROIC company earning $1.00 can distribute $0.80 to shareholders while growing 5%. Clearly, the higher ROIC business is more valuable.

Let's look at a similar situation but instead of holding the growth rate steady at 5%, let's take a look at how much growth in intrinsic value can be achieved at varying Returns on Invested Capital. Let's assume there are 3 different companies that all have internal investment opportunities that allow them to reinvest 75% of their earnings. Company A will act as the baseline with an ROIC of 10%, Company B will act as an above business with an ROIC of 15%, and Company C will act as our superior business with an ROIC of 30%. As you will see, if we can find a portfolio of Company C's we will be able to compound our wealth at a very impressive rate.

As a reminder, Growth Rate = Return on Invested Capital X Reinvestment Rate

Company	Reinvestment Rate	X	ROIC	=	Growth Rate
A	.75		.10		7.5%
B	.75		.15		11.25%
C	.75		.30		22.5%

If we were able to build a portfolio of companies that had Returns on Invested Capital of 30% and those businesses could reinvest 75% of their earnings every year, the intrinsic value of our companies would compound at 22.5% annually. Also don't forget that the remaining 25% that was not reinvested could be used to pay a dividend, buy back shares, or acquire other companies.

We have looked at Return on Invested Capital from multiple angles and can see that Return on Invested Capital is the primary driver of shareholder wealth. To summarize our findings:

1) **For any level of growth, a higher ROIC creates more distributable cash for shareholders.**

2) **If money is reinvested back into the business, a higher ROIC compounds shareholder wealth at a higher growth rate.**

Analyzing Return on Invested Capital

As discussed previously,

$$\text{Return on Invested Capital} = \frac{\text{Net Operating Profit After Tax (NOPAT)}}{\text{Invested Capital}}$$

What is interesting about the ROIC formula is that it can be "disaggregated" into component pieces that allow for better analysis. The ROIC formula broken down into pieces is:

$$\text{Return on Invested Capital} = \frac{\text{NOPAT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Invested Capital}}$$

You can see from the formula that if you were to multiply the equation the Sales terms would cancel each other out and we would be left with our original equation. Therefore we will get the same answer using either method.

Using the broken down formula we see that the first term is calculating a margin. NOPAT/Sales is telling us how much operating profit we are getting per dollar of sales. If a company gets to a high ROIC

through a high NOPAT margin, we often say they have a **consumer advantage**. The company is generating a lot of profit per unit of sales. This is likely to occur with something like a strong brand where the brand allows the company to have significant pricing power.

$$\text{Return on Invested Capital} = \frac{\text{NOPAT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Invested Capital}}$$

You can see that the second term is an efficiency ratio. It is measuring how many capital "turns" they are getting as a result of their sales. For example, if the sales/invested capital ratio is 5, it means the company is generating $5 of sales for every $1 of capital in the business. If the company's high return comes from a high turnover ratio indicating high capital efficiency, we say the company has a **production advantage**. We might think of these businesses as "asset light" because very little capital is required to generate a lot of sales.

To summarize, high returns on invested capital come from one of two sources; 1) high levels of after-tax profits generated per dollar of revenue, known as high-profit margins and/or 2) Large amounts of revenue generated for each dollar of invested capital, known as high "turns" of invested capital.

Margin X Capital Turns = ROIC

High ROIC and Durable Competitive Advantage

> "A truly great business must have an enduring "moat" that protects excellent returns on invested capital."
>
> –Warren Buffett, Berkshire Hathaway

It was discussed previously that under most circumstances competition drives the return on capital down to the cost of capital. The average American business achieves a ROIC of around 10% which is probably right around their cost of capital. So even though the average investor has seen positive shareholder returns, they do not achieve "excess returns" above that deserved for their level of risk.

There are a small percentage of businesses that are able to achieve above average Returns on Capital for significant periods of time. How can this be? What makes these businesses different than others? When we see that a business has long term excellent Returns on Capital we conclude that they must have a **Durable Competitive Advantage**. Warren Buffett using his own terminology would simply say the business has a **Moat**. They both mean the same thing.

Two important things to note at this point:

1) You cannot say a business has a moat unless it is evidenced by above average returns on capital. It is the fundamental test.
2) The "durable" part of durable competitive advantage may be the most important part. So when we are doing qualitative analysis of an industry or company we are looking for factors that will protect our returns on capital well into the future.

The search for a moat involves two levels of analysis: 1) The structural dynamics of the industry; 2) Specific factors to the company that protect it from competition. Both will affect the ability of the business to earn high returns in the first place as well as into the future.

The following is not meant to be a comprehensive study of durable competitive advantage. It is meant only to provide an outline of important factors for consideration as well as some of the characteristics that have the ability to provide a moat for a business.

1) Industry Dynamics

- *Industry Stability*

  Industries that are stable with predictable economics tend to be more conducive to investment returns. Industries that undergo constant change provide a shaky foundation to build a long term business. Rapid change requires the managers of the businesses to constantly make the right decision. If we find a business with high returns that is protected by the moat the *last* thing we want is a lot of change.

- *Barriers to Entry*

  An industry that is constantly under siege by new competitors can make it very difficult to earn high returns on invested capital for an extended period. Industries that are protected by high start up costs, have the advantages of a substantial learning curve, and the requirement of specialized expertise can provide strong barriers to entry. It is also extremely helpful if the industry has a cost curve that requires new entrants to gain substantial market share before they can become profitable. If it is easy for a new competitor to first enter the industry and then become immediately profitable we may want to rethink the industry.

- *Level of Rivalry Among Competitors*

  Some industries contain participants and competitive dynamics in which members for the most part leave each other alone and in which many companies can earn high returns on capital. In general, a concentrated industry with only a few key competitors tends to be better for investment returns. This allows opportunities for more rational competitive conduct such cooperation, even though explicit cooperation is illegal.

Other industries are marked by cutthroat competition in which firms seem almost as motivated by hurting the competition as they are with their own well being. The worst possible situation is one in which participants ruthlessly compete on price and will undercut each other at a moment's notice. **Consumers win when businesses compete on price, but it is horrible for profits.**

To oversimplify:

The best situation to find ourselves in is in a **stable industry** with **high barriers to entry** in which **rivalry among existing competitors is weak** and **competition is not heavily based on price**.

---

2) Firm Specific Analysis

$$\text{Return on Invested Capital} = \frac{\text{Net Operating Profit After Tax (NOPAT)}}{\text{Invested Capital}}$$

$$\text{Return on Invested Capital} = \frac{\text{NOPAT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Invested Capital}}$$

Recall that the ROIC formula can be broken out as shown above. It contains a margin component that shows the amount of value the firm captures from its sales and a capital efficiency component that shows that number of "turns" a business achieves. We say that if the company achieves a high margin it likely has a **consumer advantage** that allows it to charge a premium and if it achieves a high number of turns it likely has a **production advantage**. While the distinction between consumer advantages and production advantages is not so straightforward in reality it provides a useful way to conceptually analyze moats.

CONSUMER ADVANTAGES

These factors tend to manifest themselves in healthy margins. They allow the business to command a price premium compared to other companies. When analyzing businesses for consumer advantages you are hoping to answer "yes" to one or hopefully both of the following:

Does the business command a price premium compared to its competitors?

Does the business have pricing power over time? i.e. Can they raise prices from year to year or will they lose customers as a result?

- *Patent Protection*

  Patent protection is an excellent place to look for high returns on invested capital. The grant of a legal monopoly on a product limits competition and in turn often leads to very high margins.

- *Franchise Brand*

  A brand alone is not enough. Everyone puts their name on their product. The key with brands is to go back to the two questions above. Does the brand allow the business to command pricing power at *any point in time* and *over time*. Great brands showcase quality, image, reputation, or credibility. But be careful with brands, not as many have power as investors think. Most customers will go with a lower cost item in a category—a franchise brand must make customers choose that product even though it sells at a premium.

- *Switching Costs*

  In most circumstances customers can go back and forth between competitors with no costs. The most basic example is restaurants. It costs customers nothing to go to one restaurant versus another. However, in a select number of businesses there are customer switching costs. The magnitude of switching costs determines the degree to which a customer is locked in. The most obvious form of "lock in" are contractual subscription agreements (e.g. cable companies, software companies licensing their product). Switching costs can also take the form of the time and energy to learn a new product or system or the downtime in productivity while the customer switches product.

- *Network Effects*

  Network Effects occur when the good or service becomes more valuable as more people use it. It results from a positive feedback loop. It is incredibly advantageous because the business itself doesn't really have to do anything. The very fact that more and more people are using their product makes it in and of itself more valuable. Companies like Visa, Mastercard, eBay, Facebook, and Uber, get the benefit of network effects. The reason people want to use Visa is because it is accepted everywhere. As more and more people started using ebay it only got better because there were more buyers and sellers for products. Companies that establish "platforms" or "marketplaces" are the likely candidates to receive the benefits of network effects.

PRODUCTION ADVANTAGES

Whereas customer advantages tend to focus on outperformance in providing benefits, production advantages focus on outperformance on the cost side. Recall that production advantages tend to lead to a relatively higher number of turns on capital.

$$\text{Return on Invested Capital} = \frac{\text{NOPAT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Invested Capital}}$$

- *Complex Production Process*

  Simple processes are easy to imitate and are unlikely to be a source of advantage. More complex processes, in contrast, require more know how or coordination capabilities and can be a source of advantage.

- *Learning Curve Advantages*

  Well established companies can sometimes obtain an advantage as a result of their time in the industry. They may have been able to develop valuable experience which may result in a more efficient production process.

- *Resource Uniqueness*

  Some companies may have access to unique resources as a result of their geographical location. Others may have a production advantage because of internal proprietary processes or technology.

- *Economies of Scale in Distribution*

  Some businesses are able to build an elaborate distribution network which lowers their overall costs per unit. Their use of complex planning and logistics allow them to achieve the same processes at a substantially lower cost than competitors.

- *Economies of Scale in Purchasing*

  This one is straightforward. Some businesses are able to use their size as leverage to achieve lower costs for the raw materials or goods they purchase. Bulk pricing ability can allow some businesses to achieve much lower costs than competitors.

Conclusion

- In the long run it is difficult for a stock investment to return more than the returns generated by the underlying business.
- High returns on invested capital create more distributable cash for shareholders which lead to higher valuations.
- High returns on invested capital create greater growth in intrinsic value when money is reinvested in the business
- A business can achieve high returns on invested capital from either a high margin or from creating a large number of turns on their capital base.
- Sustainably high returns on capital can only exist if the business is protected by a “moat.”
- There are a number of characteristics that create a moat through consumer or production advantages.
