Introduction
Using the income approach to value an asset has its challenges. However, the income approach really brings home the concept of value. The economic value of an asset is the present value of the cash flows that are expected to be received by the investor. It really should not matter if the asset is a share of stock of a company, a machine, a painting, or a piece of jewelry. While there may be other reasons for an asset to have value to the owner, the economic reality is that economic value can only be achieved if the investor gets a return on his or her investment.

In business valuation, we discuss the concept as the earning capacity of the business or business interest. The same can be applied to a single asset. Earning capacity, as applied in the methods about to be discussed, may be defined in a number of different ways. Some of the more common definitions used by the business appraiser include the following:

- Net income after tax
- Net income before taxes (pretax income)
- Net cash flow to equity
- Net income to invested capital
- Net cash flow to invested capital
- Earnings before interest and taxes (EBIT)
- Earnings before interest, taxes, depreciation, and amortization (EBITDA)

These income streams, also known as benefit streams, are converted into estimates of the value of the appraisal subject. Regardless of which benefit stream is used, the two processes that are used in the income approach are known as capitalization and discounting. They are defined as follows:

1. **Capitalization.** A single period valuation model that converts a benefits stream into value by dividing the benefits stream by a rate of return that is adjusted for growth. A common variation of this theme is the reciprocal of the market multiple price/earnings, which would be earnings/price. An earnings/price ratio is a capitalization rate.
2. **Discounting.** A multiple period valuation model that converts a future series of benefit streams into value by discounting them to present value at a rate of return that reflects the risk inherent in the benefits stream.

The following definitions come from the *International Glossary of Business Valuation Terms*, of which the American Society of Appraisers was part of in its development:


2. Capitalization Factor. Any multiple or divisor used to convert anticipated economic benefits of a single period into value.

3. Capitalization of Earnings Method. A method within the income approach whereby economic benefits for a representative single period are converted to value through division by a capitalization rate.

4. Capitalization Rate. Any divisor (usually expressed as a percentage) used to convert anticipated economic benefits of a single period into value.

5. Discount Rate. A rate of return used to convert a future monetary sum into present value.

6. Discounted Cash Flow Method. A method within the income approach whereby the present value of future expected net cash flows is calculated using a discount rate.

7. Discounted Future Earnings Method. A method within the income approach whereby the present value of future expected economic benefits is calculated using a discount rate.

A capitalization model uses a current benefit stream and assumes that the particular stream of income will be received into perpetuity. A discounting model uses a forecast benefit stream and
discounts that stream back to present value. The forecast may or may not include a reversionary interest in the asset. Both of these methods should result in the same value if applied correctly.

In general, the capitalization rates and discount rates used for the various benefit streams will be different in each situation. Capitalization and discount rates will be discussed later in this presentation, but I promise to keep it simple.

The fundamental theory behind the income approach to valuing an asset is that the value of an investment is equal to the sum of the present values of the future benefits it is expected to produce for the owner of the interest. The present value of the future benefits is determined through the application of a rate of return (discount rate), which reflects the time value of money, the relevant investment characteristics, and the degree of risk perceived by the market. In other words, if I invest $1 and the risk is low and the period of the investment is short, I should not expect a large return on my investment. However, if I invest that same dollar, and the risk is high and the period of the investment is long, I would require the ability to earn a much greater return on my investment for taking the additional risk of the second investment.

**Value is from an Investor’s Viewpoint**

The income approach is generally used in determining the value of the appraisal subject from the viewpoint of an investor. The income approach is based on the assumption that an investor could invest in a property with similar investment characteristics, but not necessarily the same asset. This approach looks to the earnings power, or cash generation capabilities, of the asset being appraised.

Very often, a particular asset is so unique that the appraiser cannot find good information about rates of return that might apply to that particular asset. Instead, the appraiser tries to compare the risk associated with the benefit stream to alternative types of investments in the marketplace. This
becomes another form of the principle of substitution at work. The valuation analyst will go a long way by having knowledge about the rates of return available in the marketplace.

Although this approach can be difficult to apply at times, it is frequently an excellent choice for estimating the value of an asset. Intuitively, if you can put together a reasonable forecast and you can determine a reasonable rate of return from other, similar investment alternatives, this approach may be a much more reasonable approach than attempting to find comparable sales, particularly when the subject property is unique. What are the similarity issues of appraising an original piece of art, a particular piece of furniture that is a collectible or a uniquely designed piece of jewelry? Another asset may or may not be similar enough to the subject property to make a good comparison. If you are lucky enough to find what you think is a good comparable, you then have the feat of subjectively choosing how to adjust the value that will make it applicable to the appraisal subject. While the income approach also has its own degree of subjectivity, a well-grounded forecast is sometimes easier to achieve. Some valuation analysts reading this may not agree with me, but if you really start to think about companies that are acquiring other companies, most of them are using some form of discounting model (usually cash flow) as a primary method of determining the value of the target company. Of course, they may not ignore the market multiples, but it will usually come down to the forecasted cash flow. The same can be true when valuing a particular asset.

**Selecting Benefit Streams**

The benefit stream(s) to be used in the application of the income approach depends on many factors. For personal property, the benefit stream selection process is much less complex that it would be for a business. Imagine leasing a piece of art or jewelry. The amount of revenue that is derived as a result of the lease may or may not have to be adjusted for any direct expenses associated with leasing the particular asset. If you own that 20 carat diamond necklace that you regularly lease to movie stars, the revenue that you can get from leasing that piece may be your income stream.
**Forecasting Future Benefit Streams**

One of the most important parts of the valuation process is the forecast of the future benefits stream that will be used in the income approach. The starting point of the forecasting process is that historical leasing records must be analyzed to determine how often and for how much was the asset leased for previously. You then have to consider what is the likelihood that history is going to repeat itself?

Factors such as the state of the economy may enter into the forecasting process. If the economy just went into a bad recession, will the rental of that asset be made as often as if the economy was strong? Yes, we appraisers have to wear our economist hats when we do this stuff.

Historical results should be analyzed to gain an understanding of the quality of the earnings reported. You will most likely use historical operating results to support your forecast. At a minimum, you will want to use it to double-check what your client gave you as a forecast (if you are lucky enough to have a client that can forecast). The appraiser should also look for trends that may help predict the future with respect to the direction in which the leasing of the asset is headed. These trends may indicate growing, declining, flat, or volatile income streams. If an asset’s leasing revenues have been growing at an exceptionally high rate, the likelihood is slim that the same rate will continue into the future. Because this rate cannot be maintained, the appraiser must compensate in the forecast by reducing the growth going forward.

If the leasing rate or frequency is in a declining mode, the sales value may be calculated on the basis of liquidation, as opposed to that of a going concern. If a decline is forecast indefinitely into the future, the appraiser should consider whether the highest and best use of the asset is in a quick sale. If so, the asset should be valued in this manner.
The next question that the appraiser asks is, how far out into the future should the forecast go? Unless you have a really good crystal ball, you may not want to go too far into the future with a forecast. The question that you need to address is how far can you go before you reach the point of pure speculation? History is going to be very important in assisting you with answers to these questions. For example, a piece of equipment may have a definitive useful life, say 10 years. That would mean that a leasing situation would rarely go beyond that life. But what about a Picasso painting that can be leased forever? You may have to make certain assumptions about how long the painting can be leased for, and assuming that it is for a long time, a capitalization model may be needed in the application of the income approach. I will demonstrate this shortly.

What if the forecast is incorrect? You can be absolutely certain that your valuation will be wrong! But don’t worry; potential investors are frequently wrong also. If I was right every time that I made an investment, I would probably be retired and paying someone to do this presentation for me! The concept of fair market value, as well as other standards of value, requires the appraiser to put himself or herself in the position of the willing buyer on the valuation date and to make an informed judgment, based on all information known at that time, on what the future will be like. That is what is really being purchased. But don’t forget about the willing seller also. Any knowledge that the willing seller has would also be known and factored into the selling price. So if your forecast turns out to be wrong, your valuation may still be correct based on what was known at the time.

One of the real world difficulties that will take place regarding your forecasts, especially if the appraiser is testifying in a court proceeding, is when the opposing attorney gives the appraiser financial data beyond the valuation date to prove that the forecast was wrong. This is where the cross-examining attorney watched too many episodes of Law and Order and expects to have a “gotcha” moment.
The appraiser should emphasize that the concept of fair market value would be violated if subsequent information was used. A willing buyer cannot know what is in store in the future, other than by performing the same level of due diligence that the appraiser attempts to perform. The analysis of the historical results, economy and industry forecasts, and other similar information should be used to project the future income of the asset being appraised. All of the information gathered during this analysis will assist the appraiser in making reasonable forecasts. Work with management or the owner of the asset to get the forecast to a reasonable level. Understand, however, that what management or the owner wants to accomplish with the appraisal may be a factor in the type of information that you will be given.

**Income Approach Methods**

The valuation methods included in the income approach are (1) the capitalization of benefits method and (2) the discounted future benefits method.

**Capitalization of Benefits Method**

The theoretical value of an asset is the present value of all of the benefits that can reasonably be expected to be generated to the owners in the future. This concept can be mathematically displayed.

If you are anything like me, you will not be happy trying to remember all of the mathematics of finance that you took (or maybe decided not to take) in school and forgot shortly thereafter. But this stuff is important, so I am going to give you what I consider to be the minimum of math to demonstrate what we will be doing in the application of these models. The mathematical model to express this concept is as follows:

\[
P_V = \frac{E_1}{(1+k)^1} + \frac{E_2}{(1+k)^2} + \frac{E_3}{(1+k)^3} + \ldots + \frac{E_n}{(1+k)^n}
\]

- \(E\) = Benefit stream
- \(k\) = Discount rate

In this equation, the present value (PV) of the asset is calculated by summing the discounted future benefits. The appraiser should ensure that the analysis includes all relevant information to make a reasonable forecast.
If you do not like long equations, this one can be reduced to the following:

$$ PV = \sum_{n=1}^{\infty} \frac{E_n}{(1+k)^n} $$

$E$ = Benefit stream  
$k$ = Discount rate  
$n$ = Time period 1 to infinity

For those mathematical neophytes (like myself), the symbol $\Sigma$ stands for “summation.” Therefore, this formula means the sum of the expected benefit streams from period 1 to period infinity, discounted to present value. Even more simply stated, it is the sum of the present values of the forecasted benefit streams going out for a long, long time (you can’t get much longer than infinity. This is as long as perpetuity, and we know that this is a long time from now).

If the growth of the benefit stream (the numerator) is assumed to be constant over time, the equation can be reduced again to the following:

$$ PV = \frac{E_t}{(k-g)} $$

$E$ = Benefit stream expected in the next period  
$k$ = Discount rate  
$g$ = Growth rate from time $t = 0$ to time $t = infinity$

Now that we got the math stuff out of the way, let’s restate what we just did in English. The equation for the single period benefit stream capitalization method is:

**Value = Benefit stream ÷ Capitalization rate**

If you think about what we just did, you will realize that we took the growth out of the numerator (we assumed it to be constant), and we removed the growth from the discount rate ($k - g$). Because this capitalization model assumes a continued benefit stream into perpetuity, the growth that is removed
from the discount rate must be the long-term sustainable growth. The mathematics, however, can be
demonstrated with a simple example. Let’s assume that the following information is available to you:

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>This year’s cash flow</td>
<td>$909</td>
</tr>
<tr>
<td>Next year’s forecast cash flow</td>
<td>$1,000</td>
</tr>
<tr>
<td>Forecast growth</td>
<td>10%</td>
</tr>
<tr>
<td>Required rate of return</td>
<td>35%</td>
</tr>
</tbody>
</table>

Forecasting the future cash flows and discounting them back to present value would result in the following calculation:

<table>
<thead>
<tr>
<th>Forecast</th>
<th>Present value</th>
<th>Forecast</th>
<th>Present value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,000</td>
<td>$741</td>
<td>5,560</td>
<td>19</td>
</tr>
<tr>
<td>1,100</td>
<td>604</td>
<td>6,116</td>
<td>15</td>
</tr>
<tr>
<td>1,210</td>
<td>492</td>
<td>6,727</td>
<td>12</td>
</tr>
<tr>
<td>1,331</td>
<td>401</td>
<td>7,400</td>
<td>10</td>
</tr>
<tr>
<td>1,464</td>
<td>327</td>
<td>8,140</td>
<td>8</td>
</tr>
<tr>
<td>1,611</td>
<td>266</td>
<td>8,954</td>
<td>7</td>
</tr>
<tr>
<td>1,772</td>
<td>217</td>
<td>9,850</td>
<td>5</td>
</tr>
<tr>
<td>1,949</td>
<td>177</td>
<td>10,835</td>
<td>4</td>
</tr>
<tr>
<td>2,144</td>
<td>144</td>
<td>11,918</td>
<td>4</td>
</tr>
<tr>
<td>2,358</td>
<td>117</td>
<td>13,110</td>
<td>3</td>
</tr>
<tr>
<td>2,594</td>
<td>96</td>
<td>14,421</td>
<td>2</td>
</tr>
<tr>
<td>2,853</td>
<td>78</td>
<td>15,863</td>
<td>2</td>
</tr>
<tr>
<td>3,138</td>
<td>63</td>
<td>17,449</td>
<td>2</td>
</tr>
<tr>
<td>3,452</td>
<td>52</td>
<td>19,194</td>
<td>1</td>
</tr>
<tr>
<td>3,797</td>
<td>42</td>
<td>21,114</td>
<td>1</td>
</tr>
<tr>
<td>4,177</td>
<td>34</td>
<td>23,225</td>
<td>1</td>
</tr>
<tr>
<td>4,595</td>
<td>28</td>
<td>25,548</td>
<td>1</td>
</tr>
<tr>
<td>5,054</td>
<td>23</td>
<td><strong>Total</strong></td>
<td><strong>$4,000 (Rounded)</strong></td>
</tr>
</tbody>
</table>

Instead of forecasting constant growth in each period and discounting it for the 35 periods in the table above, the mathematics of removing growth from the numerator and the denominator of the equation allows us to capitalize a single stream as follows:

$$\frac{1,000}{.35 - .10} = 4,000$$

Much easier, isn’t it? What this example actually proves is that the single period capitalization model should derive the same answer as the multi-period discounting model if you have constant growth. I will explain this further in a little while, but the reason for using one model as opposed to the other has to do with the stability of the income stream that is being forecast.
To apply the single period capitalization of benefits model correctly, the benefit stream (cash flow) to be capitalized must be from stabilized operating conditions. This means that it is expected to have a relatively stable growth rate (as opposed to being up and down). Combining this with anticipated growth, the stabilized benefit stream should reflect the future expected income or cash flow of the asset.

The benefit stream will be capitalized by a rate that reflects the risk of the benefit stream being capitalized. The appraiser should apply a sensitivity analysis to the capitalization process since relatively minor variations in either the benefit stream or the capitalization rate being considered can result in significant differences in the end result. This can be illustrated as follows:

<table>
<thead>
<tr>
<th>Benefits stream ($)</th>
<th>Cap. Rate (%)</th>
<th>Value ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100,000</td>
<td>20</td>
<td>500,000</td>
</tr>
<tr>
<td>100,000</td>
<td>25</td>
<td>400,000</td>
</tr>
<tr>
<td>100,000</td>
<td>30</td>
<td>333,333</td>
</tr>
<tr>
<td>100,000</td>
<td>35</td>
<td>285,714</td>
</tr>
<tr>
<td>100,000</td>
<td>40</td>
<td>250,000</td>
</tr>
</tbody>
</table>

Alternatively, this can be shown as follows:

<table>
<thead>
<tr>
<th>Benefits stream ($)</th>
<th>Cap. Rate (%)</th>
<th>Value ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100,000</td>
<td>25</td>
<td>400,000</td>
</tr>
<tr>
<td>120,000</td>
<td>25</td>
<td>480,000</td>
</tr>
<tr>
<td>140,000</td>
<td>25</td>
<td>560,000</td>
</tr>
<tr>
<td>160,000</td>
<td>25</td>
<td>640,000</td>
</tr>
<tr>
<td>180,000</td>
<td>25</td>
<td>720,000</td>
</tr>
<tr>
<td>200,000</td>
<td>25</td>
<td>800,000</td>
</tr>
</tbody>
</table>

The objective in a single period capitalization method is to determine through analysis the level of benefits that are reflective of a sustainable level for the appraisal subject.
If an asset rental tends to be cyclical in nature, an average of historical data is sometimes used to approximate the stable earnings base that can be capitalized. Once again, as a reminder, any time that historical data is used, it should represent probable future earnings. Do not rely purely on historical data! Willing buyers do not buy history!

When an asset rental is growing, a multi-period method (soon to be discussed) should be considered because the benefit stream is not expected to be stable. A weighted average of historical data—or more preferably, forecasted data—should be used as a basis for discounting. When an asset rental has changed, the appraiser should ignore the historical data that is no longer representative of the current situation. This means that even though it is generally preferable to use a period of five or more years as the basis of the valuation, it is perfectly acceptable to ignore the historical information if the future is expected to be different.

The following exhibit shows the mechanics of the capitalization of benefits method:

<table>
<thead>
<tr>
<th>Capitalization of Benefits Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted net income</td>
</tr>
<tr>
<td>Forecasted growth</td>
</tr>
<tr>
<td>Estimated future income</td>
</tr>
<tr>
<td>Capitalization rate</td>
</tr>
<tr>
<td>Indicated Value</td>
</tr>
</tbody>
</table>

In this example, you will notice that the estimated future income is being capitalized. Discount rates and capitalization rates that are determined from the market are considered to be prospective in nature.
Discounted Future Benefits Method

Founded on the principle of future benefits, the value of an asset is the present value of all of the “benefits” it can reasonably be expected to generate in the future. These “benefits” are generally considered to be the future cash flows available to the owners from the asset (rental income and ultimate sale). In theory, if the holding period is expected to go into perpetuity, the future cash flow stream discounted to the appraisal date at an appropriate discount rate should represent the value of the asset. Because investments rarely go to perpetuity, a proper time horizon must be determined and should be substituted as the holding period for the particular asset.

This methodology generally involves two steps: First, calculate the sum of the present values of the benefit stream for each of a number of periods (normally years) in the future, and second, add to that amount the present value of a “terminal” value. Sometimes the terminal value is also known as a “residual” value.

The terminal or residual value is generally calculated one or two ways. Either the income stream that the asset generates is assumed to eventually stabilize and, therefore, the stabilized benefit stream can then be capitalized into perpetuity and discounted back to the valuation date or a sale of the asset is assumed at some point in the future and the proceeds from the sale are discounted back to present value.

What did I just say? The terminal value assumes that the benefit stream of the asset will eventually stabilize. This is similar to the assumption about single period capitalization models. Don’t panic; later, I hope to clear this up for you with some examples.

Because we had so much fun with the last mathematical equations, I thought that we should do it again. The mathematical equation for multi-period discounting is derived as follows:
The equation just illustrated can be changed. If we use a definite period of time instead of infinity, we can add another component to the equation that would represent the “terminal” value. Let’s change “n” to a finite period of time ending with period “t.” Let’s also allow for the inclusion of all future value beyond the end of period t as a terminal value. The equation then becomes:

\[ \sum_{n=1}^{n=t} \frac{E_n}{(1+k)^n} \]

\[ \frac{FV_{i+1}}{(1+k)^n} \]

Where:
- \( E = \) Benefit stream
- \( k = \) Discount rate
- \( n = \) Time period 1 to infinity
- \( FV = \) Future value or terminal period benefits stream

In simple language, value is estimated as the sum of the present values of the benefit stream for the projection period plus the present value of the terminal value. The terminal value will be the present value of the stabilized benefit stream capitalized into the future. The terminal value may also be the present value of the sale proceeds of the asset. Use one or the other, but not both!

The mechanics of the discounted future benefits method are illustrated in the following exhibit. In the example, it is assumed that the first five years of the projection are “unstable,” and that stability takes place at the end of year 5. Two calculations require an explanation. The first is the calculation of the terminal value (TV) of $350,000. This is achieved by starting with the year 5 forecasted net cash flow of $70,000 and growing it by the next year’s rate of growth that will result in the stable net cash flow stream of the company into the future (in this case, we assumed 5 percent). This means that the next year’s (year 6) net cash flow is assumed to be $73,500 ($70,000 \times 1.05).
The next step is to capitalize the stable benefit stream by using a capitalization rate equal to the discount rate used in the present value computations and subtracting the assumed long-term growth rate (in this case, 5 percent). Therefore, the capitalization rate in this example would be 21 percent (26% — 5%). (Note: Don’t worry yet about where these rates come from because we will spend more time on this subject shortly.)

The TV is, therefore, calculated as follows:

$$73,500 \div 0.21 = 350,000$$

The second item needing an explanation is the fact that the discount factor used to discount the terminal value is the same factor that was applied to the year 5 forecasted net cash flow. Because stability is reached at the end of year 5, we are capitalizing the future cash flow (year 5 plus growth), but it is being done at the end of year 5. Because year 5 is used for both the forecasted cash flow for that year and the terminal value, both years should be discounted by the same present value factor. This assumes that the cash flow stream is being received on the last day of the year during the forecast period, say December 31. Then, the terminal period begins on the first day of the next year, January 1. This is the reason why we use the same present value factor.

### Example of the Discounted Future Benefits Method

<table>
<thead>
<tr>
<th>Year</th>
<th>Forecast Cash Flow</th>
<th>26% Present Value Factors</th>
<th>Present Value Cash Flows</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>$40,000</td>
<td>.79365</td>
<td>$31,746</td>
</tr>
<tr>
<td>2012</td>
<td>49,000</td>
<td>.62988</td>
<td>30,864</td>
</tr>
<tr>
<td>2013</td>
<td>57,500</td>
<td>.49991</td>
<td>28,745</td>
</tr>
<tr>
<td>2014</td>
<td>64,300</td>
<td>.39675</td>
<td>25,511</td>
</tr>
<tr>
<td>2015</td>
<td>70,000</td>
<td>.31488</td>
<td>22,042</td>
</tr>
<tr>
<td>TV</td>
<td>350,000</td>
<td>.31488*</td>
<td>110,208</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>$249,116</td>
</tr>
</tbody>
</table>

*The terminal value is discounted at the same rate as in the final year of the projection.*
As stated above, this example assumes that discounting is being performed at the end of each year because the net cash flow stream is received at the end of the year. If a mid-year convention is assumed (because the benefit stream is generated throughout the year), the present value factor that would be used for the terminal value would still be the same as the factor used for year 5. There used to be a debate in the appraisal profession on whether the year 5 factor should be used in a mid-year model. I believe that this debate has been decided by most appraisers. A mid-year convention would change the basic formula to the following:

$$V = \frac{E_1}{(1+k)^{0.5}} + \frac{E_2}{(1+k)^{1.5}} + \frac{E_3}{(1+k)^{2.5}} + \frac{E_4}{(1+k)^{3.5}} + \frac{E_5}{(1+k)^{4.5}} + \frac{E_5 * (1+g) / (k-g)}{(1+k)^{4.5}}$$

\(E\) = Benefit stream  \\
\(TV\) = Terminal value  \\
\(k\) = Discount rate  \\
\(g\) = Rate of growth

And you said you didn’t like math! The difference between these two formulas is the period used to discount the benefit stream, including the terminal value, back to present value. The vast majority of appraisers agree that the same factor should be used for the final forecast period and the terminal period. The minority opinion says that because the terminal period is intended to begin on the first day after the forecast period, the factor should be as of the first day of that terminal period or, conversely, the last day of the forecast period. Using 4.5 instead of 5 in the preceding formula moves the income stream up six months. This results in a higher value. The income stream is considered to be a continuous stream and, therefore, there really is no gap at the end of a forecast period and the beginning of the terminal period.

**Calculating the Terminal Value**
In the discounted future benefits method, the terminal value can represent a significant portion of the overall value of the asset and, therefore, care must be exercised in its derivation. The terminal value should represent the value at the point in time in which the asset is in a stabilized and sustainable condition. It is frequently calculated using a single period capitalization methodology if it has a perpetual life. Otherwise, you will most likely assume a sale at some point in the future. The issue is trying to guess at what the value of the asset might be 5 or 10 years from now. That is why we get paid the big bucks!

**Discount and Capitalization Rates**

Here comes the good stuff! This is the part that you have been waiting for. If you are dangling on the edge, this is the part of the presentation that is sure to push you over. Hold on tight because here we go! One of the most difficult tasks that the appraiser faces is selecting an appropriate discount or capitalization rate. For many years, I went to seminars waiting for some business valuation guru to give me the formula for developing the “right” discount rate. When I realized that no one could do it, I started teaching and writing about this stuff myself. The theory behind discount rates is quite simple. The amount of risk that is perceived by the market must generally be balanced by the rate of return that is offered for the investment in order to entice investors to take the risk of making the investment. Stated differently, if a willing buyer wants to make an investment in an asset, the rate of return being offered, based on the price to be paid for the investment, must be high enough to justify taking the risk. This can be illustrated by the figure below, The Rate of Return Department Store.
As you go from the ground floor to the roof of the rate of return department store, the risk of the investment increases. When you examine the rates of return in the market, you will find that the rates of return increase in the same direction. This shows the correlation between risk and reward. There is a positive relationship between these two items. This relationship is shown in figure 2. It even looks like something that you would see in a finance textbook.

The opposite relationship exists between returns and value. These are negatively related. Greater risk means lower value. This is illustrated in figure 3.
As you read the rest of this paper, and as you practice in the field of appraisal, always remember that what you are really trying to do is figure out which floor in the rate of return department store you need to get off on based on the risk of the benefit stream that is going to be discounted. You may even choose to get off between floors. What you are ultimately trying to do is use the principle of substitution that states that no reasonable investor would accept a lower rate of return, given the risk of the investment, than they could get in another investment in the market.

As long as we are still in the introduction section, let’s get another goody out of the way. Discount and capitalization rates are not the same. A discount rate is a required rate of return—a yield rate used to convert expected future receipts into present value. The rate of return represents the total rate of return expected by the market—the rate necessary to attract capital to the subject investment.

A capitalization rate is not a rate of return; it is a divisor used to convert a future return into an indication of value. The capitalization rate plus the long term sustainable rate of growth in the selected return combine to provide the rate of return. The rate of return is market driven. It is the rate determined to be available on alternative investments of comparable risk and with similar characteristics—an opportunity cost. And, of course, risk represents uncertainty. If there is no uncertainty, there is no risk. Therefore, risk is the degree of uncertainty associated with a given
investment. While discount rates come from the market, a capitalization rate can be observed in market transactions. Let’s keep this simple. A capitalization rate is the mathematical inverse of a price to earnings multiple. In English, if an asset is sold for $120 and it throws off income of $12, the price to earnings multiple is 120/12 or 10. This means that the capitalization rate for this transaction can be calculated as 12/120 or .10 or 10%.

If we want to reinforce what we discussed earlier, the income approach is applied by using the formula Value = Income/Rate or $120 = $12/.10. See— I told you that it was easy!

The discount and capitalization rates used will depend on what is being discounted or capitalized, but fortunately for you, you will generally not have to use as many different benefit streams as a business appraiser. You only need to make sure that when you derive a discount or capitalization rate that you understand what the outcome represents. Is it a rate that is application to cash flow or earnings or gross revenue?

The determination of which benefit stream will be discounted or capitalized will depend on various factors, including the availability and reliability of data. This data can relate either to market information about discount or capitalization rates or to the subject asset’s information.

**Discount Rates**

If this were a finance text, I would probably include a rather complex explanation of discount rates. Be grateful for little things because it’s not one! In simple terms, a discount rate is the required rate of return that an investor would demand—based on the risks associated with the benefit stream under consideration—to induce him or her to make the investment. What do I mean by risk? Risk is uncertainty: the greater the amount of uncertainty, the greater amount of risk. The greater the risk, the less someone is willing to pay for something. The lower purchase price is used to provide a
greater potential return to the buyer. For example, assume that a piece of art to be leased has an expected income of $100,000 that is sustainable into the future. To keep the example simple, let’s assume there is no growth anticipated. This would make the discount rate and the capitalization rate equal to each other. If the required rate of return was 20 percent, the value of the artwork would be calculated as follows:

\[
$100,000 \div 20\% = $500,000
\]

If the perceived risk by the buyer was greater, the buyer might offer only $400,000 for the artwork. This would provide a 25 percent rate of return to the buyer, calculated as follows:

\[
$100,000 \div $400,000 = 25\%
\]

Lowering the price provides a greater return for the buyer. However, if the risk related to an investment in the artwork is not really lower, the seller would insist on a greater price for the business. A $600,000 price would provide the buyer with a lower rate of return. In the real world, a negotiation will go forward between the buyer and the seller based on the perceived risk of the investment. The buyer will think it is very risky, and the seller will tell the buyer that there is no risk. Who would ever figure this could happen?

The discount rate represents the rate of return that an investor requires to justify his or her investment in an asset, depending on the amount of risk associated with the investment. For example, an investor may expect a 2 percent return on a certificate of deposit from a bank, a 5 percent return on a corporate bond, and a 15 percent return on junk bonds. Usually, the higher the risk, the higher the required rate of return. That is the exact nature of the rate of return department store example provided in figure 1. The discount rate is the basis for present value factors, which are used to discount a stream of future benefits to their present value.

On occasion, appraisers use other jargon (such as opportunity cost of capital, alternative cost of capital, or weighted average cost of capital (WACC) instead of the term discount rate. Regardless of
what term is used, discount rates are supposed to reflect the required rate of return on the benefit stream being discounted given the risks associated with the benefit stream. One such risk element is the ability of the investor to receive the benefit stream that is being forecast as part of the valuation. An asset with a steady track record of leasing revenue will generally be considered less risky than an asset that has had a volatile past.

Discount rates are determined by the market. They will vary with time, even for the same investment. This is easily illustrated through an explanation of why the interest rates paid on 30 year Treasury bonds vary. Discount rates take into consideration the inflationary expectations of the future benefit stream being used.

**Factors That Affect the Selection of a Discount Rate**

Factors that affect the selection of a discount rate are considered to be external (noncontrollable) and internal (controllable) to the appraisal subject. The external factors are those over which the owners of the asset have no control. For example, general economic conditions and the economic outlook at the valuation date are considered to be external factors that affect the selection of the appropriate rate. Other factors that could impact risk would be the market’s perception to a style of jewelry (e.g. a pear shaped diamond versus a round diamond).

Market perceptions regarding similar investment opportunities is another example of an external factor that is beyond the control of the owners. The sources and availability of capital to finance the asset is yet another example. These items are important to the willing buyer, and, therefore, should be considered by the appraiser.

Internal factors are those that the owner of the asset has some control over. The marketing of the asset is one example. The earning capacity of the asset is another. The ability to bring the products to
an available market is also a burden that rests with management. Another internal factor is the quality of the available data. High quality data is usually the result of a good accounting system with proper controls. The ability of management to meet its budgets, forecasts, and projections reflects on the quality of management.

Regardless of internal or external factors, discount rates are driven by risk. In the discussion that is about to take place, I will be telling you more about discount rates. Keep one important point in mind—discount rates are derived from the market based on the risk associated with comparable types of investments. You can apply all of the fancy formulas or methodologies that business valuation textbooks discuss, and even others, but the bottom line is that the result has to make sense.

**Risk Free Rate of Return**

The risk free rate of return is sometimes known as the *safe rate* or the *cost of money*. In theory, this is the minimum return that an investor would accept for an investment that is virtually risk free. It is the pure cost of money plus the rate of inflation anticipated by those who deal in these types of transactions. What this really represents is the minimum rate of return that an investor should accept because he or she can earn this amount with reasonable safety instead of risking an investment in a closely held company.

Sources of risk free rates of return include U.S. Treasury securities. The theory is that U.S. Treasury securities are about as close as we can get to an investment that is risk free. Obviously, there is no such thing as a risk free security, but the chance of a default by the U.S. government is pretty slim. If our government defaults, we are in more trouble than just understanding valuation theory!

The alternatives available in Treasury securities are short term, intermediate term, and long term securities. The longer term bonds are considered to have an inflationary risk built into them, which
explains why long term bonds pay a higher rate of interest than short term investments. So in a perfect world, we might want to use short term Treasury bills for a risk free security. However, this is not a perfect world. The problem with using short term bills is that over the long term, the rate of return that an investor would get is unknown because of the constant changing of interest rates. Therefore, we tend not to use the short term bills as the proxy for the risk free rate.

The selection of a long term, intermediate term, or short term rate will depend on the investment horizon implicit in the asset being appraised. Closely held businesses are generally purchased with the intent of a longer holding period and, therefore, should involve longer term rates in deriving the discount rate. On the other hand, a contract right with a life of three years must be properly matched with the proper risk free rate.

**Additional Risk Premia**

In business valuation, the business valuer generally adds different types of risk indications on top of the risk free rate to continue to “build up” a discount rate that considers all of the risk elements that need to be considered in a business valuation. I am not going to discuss those risk premia here because they do not seem applicable. Instead, you need to realize that the discount rate that you ultimately determine should result in a rate that is supportable from the market place.

Real estate appraisers frequently have the easiest time developing their rates because of the abundance of market data. A personal property appraisal may have a much more difficult time depending on the lack of data available for a particular type of asset.

**Sources of Data on Capitalization Rates**

The ideal source of data for capitalization rates is the market for similar types of assets as the one being appraised. However, if the appraiser is able to locate transactions that can be used in the
determination of capitalization rates, the market approach, and not the income approach, would be used. For example, assume that the following transactions were located from the public market:

<table>
<thead>
<tr>
<th>Sales price</th>
<th>$10,000,000</th>
<th>$5,000,000</th>
<th>$20,000,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net income</td>
<td>2,500,000</td>
<td>750,000</td>
<td>4,000,000</td>
</tr>
<tr>
<td>Revenues</td>
<td>20,000,000</td>
<td>15,000,000</td>
<td>48,000,000</td>
</tr>
</tbody>
</table>

This information could be used to calculate the implied capitalization rates that were the results of actual transactions. This makes transaction data useful. The implied capitalization rate is as follows:

<table>
<thead>
<tr>
<th>Net income</th>
<th>25%</th>
<th>15%</th>
<th>20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>200%</td>
<td>300%</td>
<td>240%</td>
</tr>
</tbody>
</table>

On occasion, the appraiser will locate transactions in an industry that has a considerable amount of sales activity. When transactions occur for a type of asset that is "hot," the capitalization rates reflected in the prices paid may have limited applicability, but you have to always keep in mind that as an appraiser, we are interpreters of the market, and not market makers.

The opinions of authors, experts, and others with special insight into the market may be used to develop capitalization rates. This is a dangerous practice, however, since the rates referred to in the writings are usually based on the individuals' own experiences. Without knowing the facts and circumstances of the particular situations, it is impossible to rely on someone else's experience.

**Conclusion**
This paper could have gone on for a considerable amount of time but I felt that by now, I have probably already got you thinking that you will call a business appraiser if you ever have to apply an income approach. It really is not that bad. However, without good and plenty of market data, the application of the income approach will be challenging, to say the least. This is because you really will have a hard time developing discount or capitalization rates that make sense with little data. Certain types of assets that are leasing more frequently than sold may be the perfect opportunity to be valued using the income approach. The benefit of being part of an organization such as the American Society of Appraisers is that there are many appraisers from other disciplines that are available to help you if the need arises.