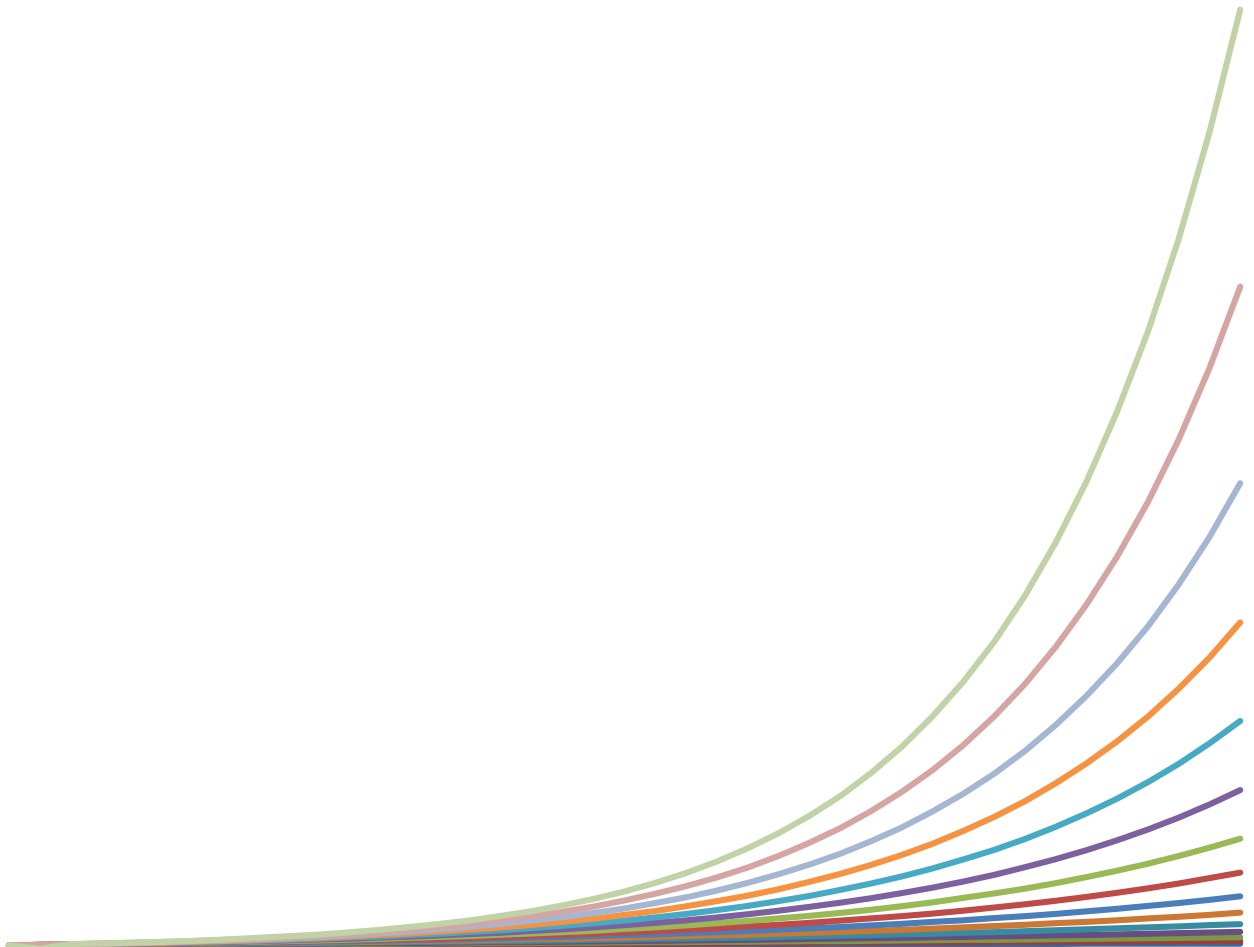




Applying the Power of Compounding

Growth Creates Growth



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Growth Creates Growth: The Power of Compounding

Albert Einstein supposedly once said that the most powerful force in the universe is compound interest. Naturally investors seek compound growth, but often fail to capture it's full benefit.

Growth on Growth - The principle of compound growth can be defined as the power of exponential growth, that is, growth on growth. It's like a snowball effect whereby you receive growth, not only on your original investments, but also on any interest, dividends, and capital gains that have accumulated — thus, your money can grow faster and faster as time goes on.

Recently we released a white paper called "[Math Matters: Rethinking Investment Returns & How Math Impacts Results](#)." The choice of a title was deliberate: math really does matter to the ultimate success or failure of an investment plan.

However, the irrefutable truths of these mathematical principles sometimes get lost when fear and greed take over the investor's mind. The white paper seeks to fortify rational investors by proving the importance of four mathematical concepts, namely:

1. The importance and power of compounding
2. The value of avoiding large losses to returns
3. The importance of variance drain
4. The value of a non-normal distribution of returns

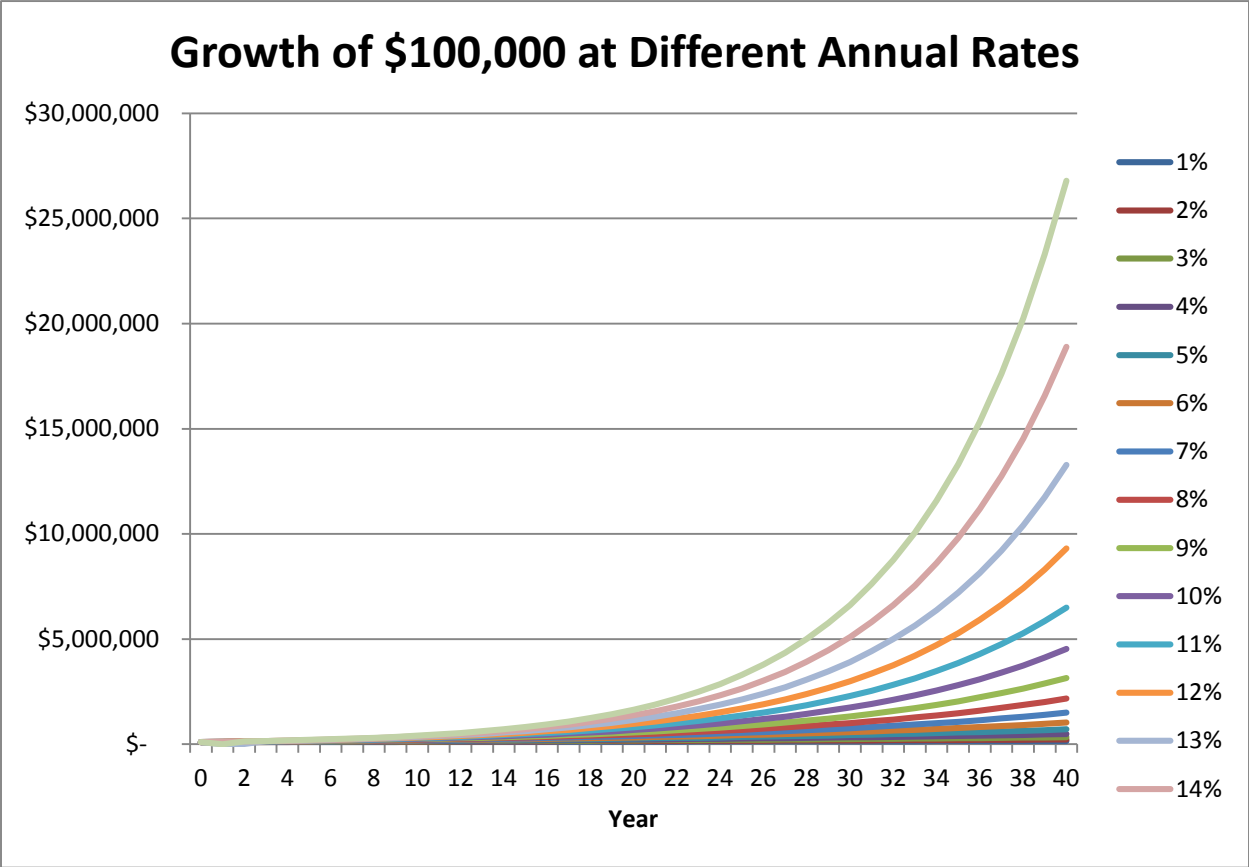
In future blog posts we will discuss the latter three points, but this post is focused upon the power of compounding returns.

While it sounds simple, the concept of compound growth and its impact can be a difficult one to grasp.

Why is compound growth so important and how does it impact the returns one might achieve with an investment?

One of the best ways to illustrate the power of compound growth is through a simple hypothetical illustration.

Assume we have an initial investment of \$100,000. The lines on the following chart show the significant differences in ending value of such an investment with different rates of growth over 40 years.



Source: Swan Global Investments

There are a few key takeaways from this illustration.

1) First, it takes a while for the power of compounding to really take effect.

After 20 years, an initial investment of \$100,000 that grows at a 12% annual rate is worth \$964,629; a gain of \$864,629. Not bad at all. However, over the following 20 years that \$964,629 grows to \$9,305,097, an increase of \$8,340,468 (highlighted in the table below). *That is the power of compounding returns.*

Year	1%	5%	10%	12%	15%
0	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
1	\$ 101,000	\$ 105,000	\$ 110,000	\$ 112,000	\$ 115,000
5	\$ 105,101	\$ 127,628	\$ 161,051	\$ 176,234	\$ 201,136
10	\$ 110,462	\$ 162,889	\$ 259,374	\$ 310,585	\$ 404,556
15	\$ 116,097	\$ 207,893	\$ 417,725	\$ 547,357	\$ 813,706
20	\$ 122,019	\$ 265,330	\$ 672,750	\$ 964,629	\$ 1,636,654
25	\$ 128,243	\$ 338,635	\$ 1,083,471	\$ 1,700,006	\$ 3,291,895
30	\$ 134,785	\$ 432,194	\$ 1,744,940	\$ 2,995,992	\$ 6,621,177
35	\$ 141,660	\$ 551,602	\$ 2,810,244	\$ 5,279,962	\$ 13,317,552
40	\$ 148,886	\$ 703,999	\$ 4,525,926	\$ 9,305,097	\$ 26,786,355

Source: Swan Global Investments

Viewed another way, the difference between a 10% annual rate of return and a 12% annual rate of return on an initial investment of \$100,000 is only \$291,879 after 20 years: \$672,750 vs \$964,629, respectively.

However, after 40 years the difference is immense. Those extra 200 basis points will more than double the value of an investment: \$4,525,926 at 10%, \$9,305,097 at 12%.

Of course, this is a theoretical example meant to illustrate a mathematical point. In the real world, it's safe to say no one has ever seen an investment that has provided a constant 10%, 12%, or 15% annual return over 40 years with zero volatility, or fluctuation in value over a given period.

This highlights the second major take-away from this illustration:

2) Volatility or losses will have a big impact on the ending wealth of any scenario.

The hypothetical case above represents an ideal scenario: positive returns with no risk, no volatility, and no losses. In the real world anything that causes a “reset” to the value of an investment will be detrimental.

In conclusion, yes, compound returns are a wonderful thing. However, its power will be severely undermined by large losses and volatility. The extent to which large losses and volatility can limit or even overwhelm the power of compounding returns will be explored in future blog posts in this series.

About the Author:



Marc Odo, CFA®, CAIA®, CIPM®, CFP®, Director of Investment Solutions, is responsible for helping clients and prospects gain a detailed understanding of Swan's Defined Risk Strategy, including how it fits into an overall investment strategy. Formerly Marc was the Director of Research for 11 years at Zephyr Associates.

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