PERSONAL FINANCE

Explorations Off the Beaten Path

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Acknowledgments & Thanks

The contents of this book touch on topics that were of particular interest to me during my thirty-three years as a professional financial advisor. Despite the technical nature of some of the material covered, I hope I have been able to render it understandable and useful.

In recognition of its completion, there are a number of individuals I wish to thank:

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- To my former employer, MD Management, for building a financial advisory company I was proud to work for, and for accommodating me with the professional latitude to make beneficial use of my eclectic personality and skill set.

With my sincere thanks,

Rob @ Living a Mindful Life

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While history can be a useful guide to the future, there is, nonetheless, no guarantee that what worked in the past or what happened in the past will continue to work, or continue to happen, going forward.

In short, investing involves uncertainty and risk – always has, always will – including the ever-present possibility of losing money, usually temporarily, but sometimes permanently.

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Chapter 1: Is NOW *Really* a Good Time to Invest in Stocks?!

This is a common question typically reserved for periods of economic turbulence and tumbling stock markets. Simply put, investors are leery of putting money into stocks[1] at such times, worried they could experience an immediate loss of hard-earned capital.

However, such hesitation is ill-founded for several reasons:

1. Timing the market is a losing proposition that, barring considerable luck, cannot be done with a consistency sufficient to better a simple buy-and-hold strategy.

2. Stocks can inflict an immediate loss *at any time*, regardless of whether markets have recently been good or bad. So, believing that it's safer to invest in stocks when times look good (or less safe when times look bad) is simply faulty thinking.

   The truth is that, on any given day, stocks only provide about a 51% chance of making money and a 49% chance of losing money. However, this minutely-greater probability of earning a positive return is what makes stocks an excellent *long-term* investment.

3. Stock returns show mean-reversion, this being a tendency to revert to their real[2] long-term average return. Bonds do not exhibit this tendency. Such reversion to the mean for stocks is the result of above-average returns being followed by periods of below-average returns. Put the two together and, over a reasonably long investment holding period, (say 20+ years), *the real return on stocks has been a pretty consistent 6%/annum* (see the table on the next page).

   What this means is that, ***regardless of timing***, if one has a suitably-long investment time horizon (otherwise why are equities even being considered?), stocks have consistently provided an attractive long-term return.

4. Stocks are riskier than bonds and so, over the long-run, *deserve* a greater return as compensation for taking on their higher risk (otherwise, who would ever buy them)? Standard deviation, one statistical measure of such risk, was 15 for stocks but only 6 for bonds over the period 1900 to 2020.

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[1] This essay assumes investment in a globally-diversified portfolio of stocks, one consisting of thousands of different companies and so *closely mirroring the All-Country global equity index*.

[2] Real return means the return *above* inflation. For example, if the actual return has been, say, 7%/annum and inflation over that same time period has been 2%/annum, the real return is roughly 5%/annum (i.e. approximately 7% nominal return minus 2% inflation).

In other words, stock returns were roughly *2.5 times more volatile than those of bonds*. As compensation for this higher risk, stocks posted an average return of 8.6%/annum versus 4.8%/annum for bonds over this same time period.

The Concept of 'Expected Return'

On any given day, the long-term 'expected return' from stocks is the same as it is on any other day.

So, what is meant by 'expected' return? This is the real return an investor *expects* to earn over the long-term given the higher risk of stocks, current market conditions, all currently-known economic information, and all anticipated future economic news.

Looking at every thirty-year period from 1900 to 2019, this expected real stock return turned out to be about **6%/annum**[3] with a low standard deviation of just **0.6%** (i.e. meaning the 30-year returns varied little from one 30-year period to the next[4]).

Here is a summary (including some overlapping 30-year periods shown in black):

Time Period	Real Stock Return	Annual Real Stock Return Standard Deviation
1900 – 1929	*5.3%/annum*	12.8%
1915 – 1944	5.8%/annum	17.5%
1930 – 1959	*6.5%/annum*	18.4%
1945 – 1974	5.6%/annum	17.4%
1960 – 1989	*5.5%/annum*	14.7%
1975 – 2004	7.5%/annum	12.9%
1990 – 2019	*5.5%/annum*	14.7%
AVERAGE	**6.0%/annum**	**15.5%**

[3] One note of caution. As there are *only four independent 30-year periods from 1900 to 2020*, some caution is warranted in putting a high degree of certainty that *future* real returns will be close to this same 6%/annum. However, this is what the available data imply. Further, this expectation is supported by the reasonable hypothesis that stock returns should *always* be commensurate with their higher risk.

[4] Given this average and standard deviation, statistical analysis tells us that, for any given 30-year holding period, we should expect the real stock return to fall somewhere between 4.8%/annum and 7.2%/annum about 95% of the time. Given the limited amount of data available, there is still a 5% chance the real stock return could fall outside of this range.

The Meaning of "Long-Term"

You may be wondering why I selected periods of thirty years for this analysis. I did so because this provides much greater confidence of achieving the expected return due to the simple fact that short holding periods experience much greater return fluctuations and so much greater likelihood of losing money.

This is illustrated by the fact that that the *annual* variability of stock returns from 1900 to 2020 (as measured by standard deviation) was about **15%** while the *thirty-year* variability of returns was only **0.6%**. In other words, investing in stocks over just one year was about twenty-five times riskier than investing over thirty years.

To no surprise, the probability of loss tells a similar story. Over any given *one-year* holding period, the risk of loss on stocks is about 30% whereas over any given *thirty-year* period, it is essentially nil.

Even holding stocks for as little as ten years reduces the risk of loss to around 0.2% (this, however, being *before* accounting for inflation. Once the wealth-reducing impact of inflation is factored in, the risk of loss over ten years is a not-insignificant 5%, or one chance in twenty).

Why Stocks Produce a Consistent Long-Term Real Return

So, while investors should certainly expect higher returns on stocks than on bonds, there is nothing pre-ordained that says stocks should provide a *consistent* long-term real return. So, why have they?

Here is my take on this issue:

1. As argued above, investors reasonably expect to earn a greater return on stocks relative to bonds ***as compensation for taking on the greater risk of stocks*** (i.e. risk as represented by return uncertainty).

2. In light of this, it is reasonable to assert that ***investors price stocks daily to produce a real[5] return commensurate with stocks' higher risk***.

[5] Return is gauged on a real (i.e. after-inflation) basis because only then has wealth actually increased. Simply keeping up with inflation does not put one ahead financially. Therefore, it is the *real* return that investors focus on and it is the *real* stock return, not the *nominal* return, that has been stable over time. Over the period 1900 to 2020, 30-year *nominal* stock returns (i.e. *before* taking inflation into account)) ranged from 6.3%/annum to 12.2%/annum, *much more variable than the range for real stock returns*.

3. ***Because, as we have seen, long-term stock risk is relatively stable, it is reasonable to expect real long-term stock returns to also be stable.***

   In other words, it appears that ***investors consistently price stocks daily to produce an expected long-term real return of about 6%/annum, a return seemingly deemed suitable compensation for stocks' higher risk.***

Hindsight versus Foresight

To help make sense of what we've just covered, it is important to keep in mind that the prices set for all stocks, the ones you see in the newspaper every day, are those that equally-willing buyers and sellers have agreed is a fair price ***given everything known up to that point in time and everything expected to happen going forward***.

Of course, in the short-term, actual return and 'expected' return can, and do, differ. However, actual return is only known in hindsight. ***In foresight, on any given day, investors should always expect the 'expected' return***.

This is why ANY day is as good as any other day to invest in stocks – the *expected* return is always identical.

Why Actual and Expected Returns Differ

Almost certainly the news tomorrow will prove to be better or worse than expected (no one has an accurate crystal ball – *not even the professionals*). However, investors will once again adjust stock prices to reflect each day's new reality.

In the end, the result will be – and must be – that the new prices are once again considered fair between willing buyers and willing sellers and that the prices agreed are expected to provide the buyers with sufficient compensation for taking on the higher risk of stocks.

Don't Invest on Hunches

What this all means is that, in uncertain times (and they're *always* uncertain!), putting off buying stocks *until things become clear* (and they're *never* clear!) comes down to managing your retirement savings based on a hunch about the future, a hunch that says, "*I think I'm right and the millions of investors who have set the current market prices are wrong*."

Needless to say, this is a very bold assertion, one that is almost certainly wrong. So, while staying out of the market when things look bad may prove lucky in hindsight, *luck should play no part in the prudent management of a portfolio*.

Because we only have *foresight* to go on, if you have a reasonably-long investment horizon of, say, 10-15 years or longer (otherwise, why are you considering investing in stocks?) ***then today is as good a day as any other day to invest in a diversified portfolio of global equities***.

Kind regards,

Rob Rienzo

Chapter 2: Is NOW *Really* a Good Time to Invest in Bonds?!

As a personal financial advisor for thirty-three years, had I been paid a dollar for every time I heard this statement, "*Should we really be holding bonds right now? It looks like interest rates*[6] *are going up*", I would have been a wealthy man. Of course, I would also have been a wealthy man had I'd engaged a better financial advisor – but I digress. 😊

Why Invest in Bonds?

To answer this, let's get back to basics. Why would an investor wish to hold bonds in their portfolio? Here are some reasons that come to mind:

1. *Reduced downside risk*

   From 1900 to 2020, during those years that Canadian mid-term bonds posted losses, their average loss was about 4%. In contrast, when global equities posted loss years, their average loss was 10%. Even a well-diversified portfolio of stocks can do down a very long way. For example, here are the nominal returns (i.e. not inflation-adjusted) for a globally-diversified stock portfolio during the Great Depression:

   - 1929 -11%
   - 1930 -22%
   - 1931 -29%
   - 1932 -12%

   So, over this painful four-year period, a well-diversified stock investor still experienced a **57% cumulative loss of value**. Over this same time period, a bond investor would have experienced a cumulative value *increase* of about 16%.

2. *Reduced volatility*

   Over the period 1900 to 2020, the volatility of a 100% globally-diversified equity portfolio as measured by the standard deviation of annual returns was about 15%. By way of contrast, a diversified Canadian bond portfolio experienced volatility of about 6%, *a 60% reduction in risk*. Simply put, bond investing translates into a whole lot less anxiety year-to-year.

[6] It is important to note that rising short-term interest rates do no not necessarily imply rising mid-term or long-term rates. Indeed, long-term bond investors may be willing to accept a *lower* interest rate upon seeing short-term rates rise. Why? Because this could be viewed as a reassuring sign that the Central Bank is committed to keeping inflation under control by raising short-term rates. **So, when someone says that it appears that interest rates may start rising (or falling), it is necessary to ask which part of the yield curve they are referring to – short, medium, or long**.

3. *Low Correlation to Stocks*

   One of the main benefits of constructing a portfolio (rather than holding just one asset type, say all stocks or all bonds) is the reduction in volatility that comes from holding assets that do different things at different times. In other words, if Asset X is going down, hopefully Asset Y is going up, thus lessening the loss of value and smoothing out returns over time.

   In this regard, over the period 1900 to 2020, the correlation between bonds and stocks was a beneficially-low 10% (perfect correlation being 100%) which meant that downturns in stocks and bonds rarely occurred at the same time.[7]

4. *Guaranteed return*

   Investing in a bond provides two main benefits:

   - A guaranteed, known-in-advance return.
   - The guaranteed repayment of your original invested amount (assuming, of course, the issuer of the bond is financially sound).

   By way of comparison, investing in stocks provides neither benefit; neither a known return nor the certainty that your capital will be repaid to you.

<u>But Don't Bond Mutual Funds Behave Differently than Individual Bonds?</u>

Most investors don't buy individual bonds but, rather, own bonds through a mutual fund or exchange-traded fund (ETF). These are a bit more difficult to understand because, instead of being just one bond, they are a collection of bonds, often hundreds of them in fact, with neither a fixed interest rate nor a fixed date for the return of capital.

But here's a useful insight: ***it is possible to think of a bond fund as one bond whose characteristics are***:

- ***Interest yield*** = the dollar-weighted average yield of all the bonds held in the bond fund.
- ***Maturity date*** = the dollar-weighted average maturity of all the bonds held in the bond fund.

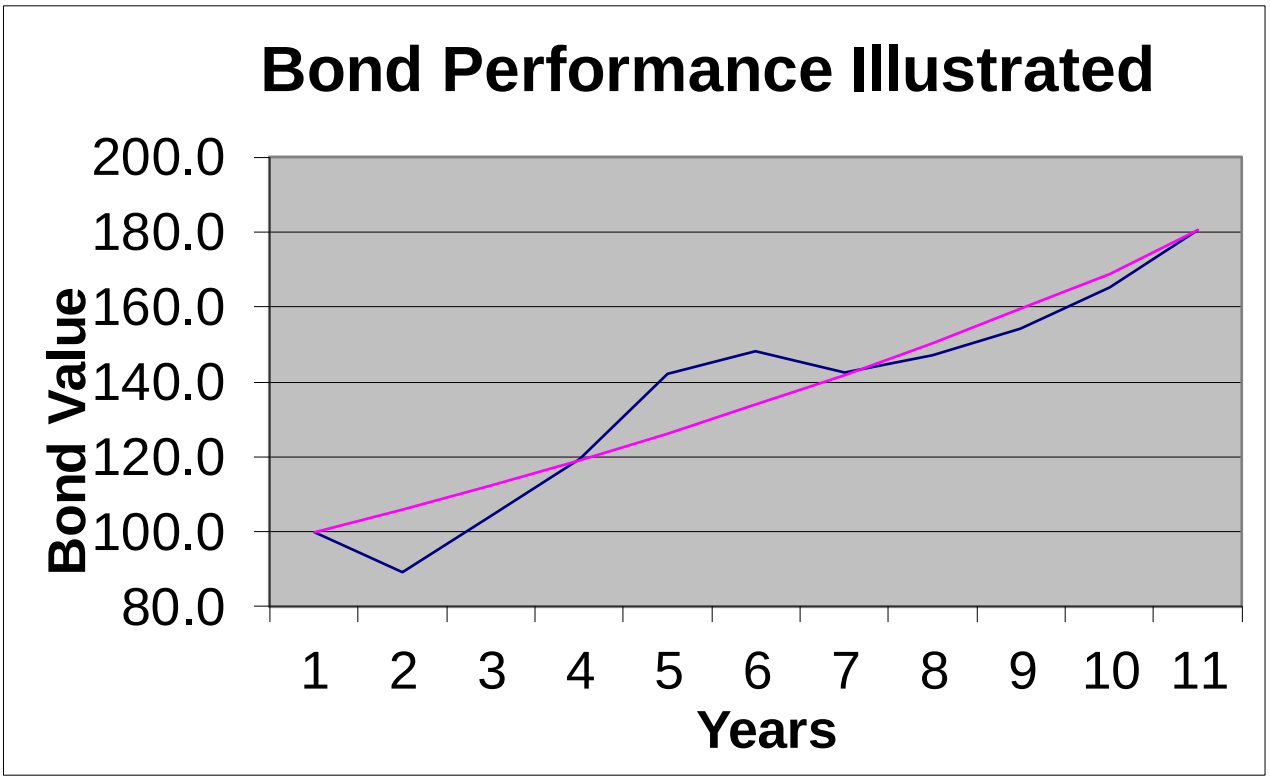
[7] However, periods of rising interest rates do increase the correlation of stock and bond returns as both suffer from rising rates (as do most other assets, including real estate).

Individual Bonds under Changing Interest Rates

Before we get to how fluctuating interest rates impact bond funds, let's first look at the simpler scenario of what happens to the value of an individual bond as interest rates change year-to-year. In our example we will assume an investment of $100 into a 10-year bond that, at the time of issue, pays 6% interest. We will further assume that all interest is reinvested at the 6% rate[8].

Here are the assumed prevailing interest rates for each subsequent year: Year 2 = **8%**, Year 3 = **7%**, Year 4 = **6%**, Year 5 = **4%**, Year 6 = **4%**, Year 7 = **6%**, Year 8 = **7%**, Year 9 = **8%**, Year 10 = **9%**.

So, in Year 2 for example, the prevailing interest rate on a 9-year bond (i.e. the remaining life of our 10-year bond) is 8%. Because our 10-year bond, with nine years left to its maturity, only yields 6%, it's not worth what a new 8% 9-year bond is worth and so declines in value in Year 2, as illustrated below and for each subsequent year:



[8] Or, alternatively, we can assume the purchase of a strip bond, this being one that is purchased at a discount to its face value, is redeemed at its full face value, but pays zero interest from purchase date to maturity. As a result, an investor's guaranteed return is simply the difference between the discounted purchase price and the face value repaid at maturity.

The pink line shows the growth of $100 at a level 6%/annum. ***Note that our bond, despite year-to-year fluctuations in its cumulative value due to changes in prevailing interest rates, still ends up at the same value upon maturity in Year 10 as the level 6%/annum scenario***.

What this means is that, despite fluctuating interest rates along the way (and investment statements from your broker showing the value of your bond sinking and soaring), **we ultimately get what we signed up for: a 6% compound return**.

Of course, if we decide to sell our bond prior to maturity, we could experience either a capital gain (if rates have declined) or a capital loss (if rates have risen), but if we hold our bond until maturity, we know in advance what our return will be.

Now let's see what we should expect from a bond mutual fund (or bond ETF) as prevailing interest rates change over time.

Bond Funds Under Changing Interest Rates

As previously mentioned, it is possible to think of a bond fund as a single bond whose interest rate is equal to the dollar-weighted average yield of all the bonds inside the fund and whose maturity is the dollar-weighted average maturity of all the bonds inside the fund.

To confirm that this is a reasonable assumption, let's look at an actual bond fund (MDBF) using data for the eight-year period from 2008 to 2016:

- MDBF average maturity in 2008: ~8 years
- MDBF 8-year return to the end of 2016: **~5.2%/annum**[9]
- MDBF composition in 2008: ~25% Federal government bonds, 25% Provincial government bonds, & 50% Corporate bonds
- Federal 8-year bond yield in 2008: ~4.3%
- Provincial 8-year bond yield in 2008: ~4.9%
- Corporate 8-year bond yield in 2008: ~5.4%
- Average yield for 25% Federal / 25% Provincial / 50% corporate: **~5.0%**

Therefore, based on the bond composition of the MDBF back in 2008, we would have predicted that its 8-year return to the end of 2016 would be approximately 5.0%/annum and we were pretty darned close: 5.2%/annum.

[9] This is the return *before* deducting the management fee of 1%/annum.

This confirms that a bond fund behaves quite similarly to the average of its component bonds. Therefore, **if you hold a bond fund for its average maturity period you have a pretty good idea at the outset what return to expect**[10].

Holding a Bond Fund Beyond Its Average Maturity

Of course, most investors hold bonds in their portfolio on a permanent basis, not just for a set maturity period. In essence, investing in a bond fund with, say, an eight-year average maturity, *is akin to buying a brand new 8-year-maturity individual bond each year*: the estimated return for each ensuing 8-year period is roughly the fund's average yield at the start of each new 8-year period.[11]

So, our bottom-line question is this: ***are bond fund investors getting a good deal or a bad deal over the long term***?

To help address this question, I simulated owning a mid-term bond fund over a twenty-year period using the following assumptions:

- The fund's average maturity remains at 8 years for the entire 20-year period. This means that 1/8th of the fund matures in any given year to be replaced by new bonds paying whatever the then-prevailing interest rate is for a new 8-year bond.
- Net new deposits to the fund average 4%/annum (which, in the absence of any reinvested interest or capital gain, would double the size of the fund in 25 years).
- Maturing bonds in the fund and new deposits to the fund get invested into new bonds that pay the then-prevailing 8-year-bond interest rate.
- The initial bond fund yield is 2% as is the prevailing interest rate on an 8-year bond.
- Prevailing interest rates on 8-year bonds increase at 0.5%/year for the first ten years, reaching 6.5% in the 10th year. They remain at 6.5% for the 11th year, and then they begin declining at 0.5%/year for ten years until the 20th year when they have returned to the starting 2% rate.

  As a result, this gives us two ten-year periods – one with constantly-rising interest rates and one with constantly-falling interest rates.

[10] Minus, that is, whatever management fee your particular bond fund charges.

[11] I've assumed that a mid-term bond fund roughly maintains its average maturity, akin to a Canadian equity fund not venturing into international stocks. If an investor wants short-term bonds, they can buy a short-term bond fund and if they want long-term bonds, they can buy a long-term bond fund, but they should not find that their mid-term bond fund morphs into a short-term or long-term bond fund as this would wreak havoc with their desired risk profile. I'm not saying this never happens – but it shouldn't. And if it does, select a better mid-term bond fund, meaning one that sticks to its mandate!

Key Observations

- Our simulated bond fund return over the 10-year rising-rate period works out to 2.5%/annum. This is in line with what we would have expected given a starting fund yield of 2% in Year 1 (and an average maturity of 8 years that is close enough to the10-year period under discussion to make little difference to our predictive ability for the fund's return).

  In other words, we signed up for an 8-year return of about 2%/annum and that's about what we get over the initial ten-year holding period, *despite constantly-rising interest rates*.

- Our bond fund return over the subsequent 10-year period of falling interest rates works out to 6.8%/annum. Again, this is completely in line with the starting yield of 6.5% in Year 11.

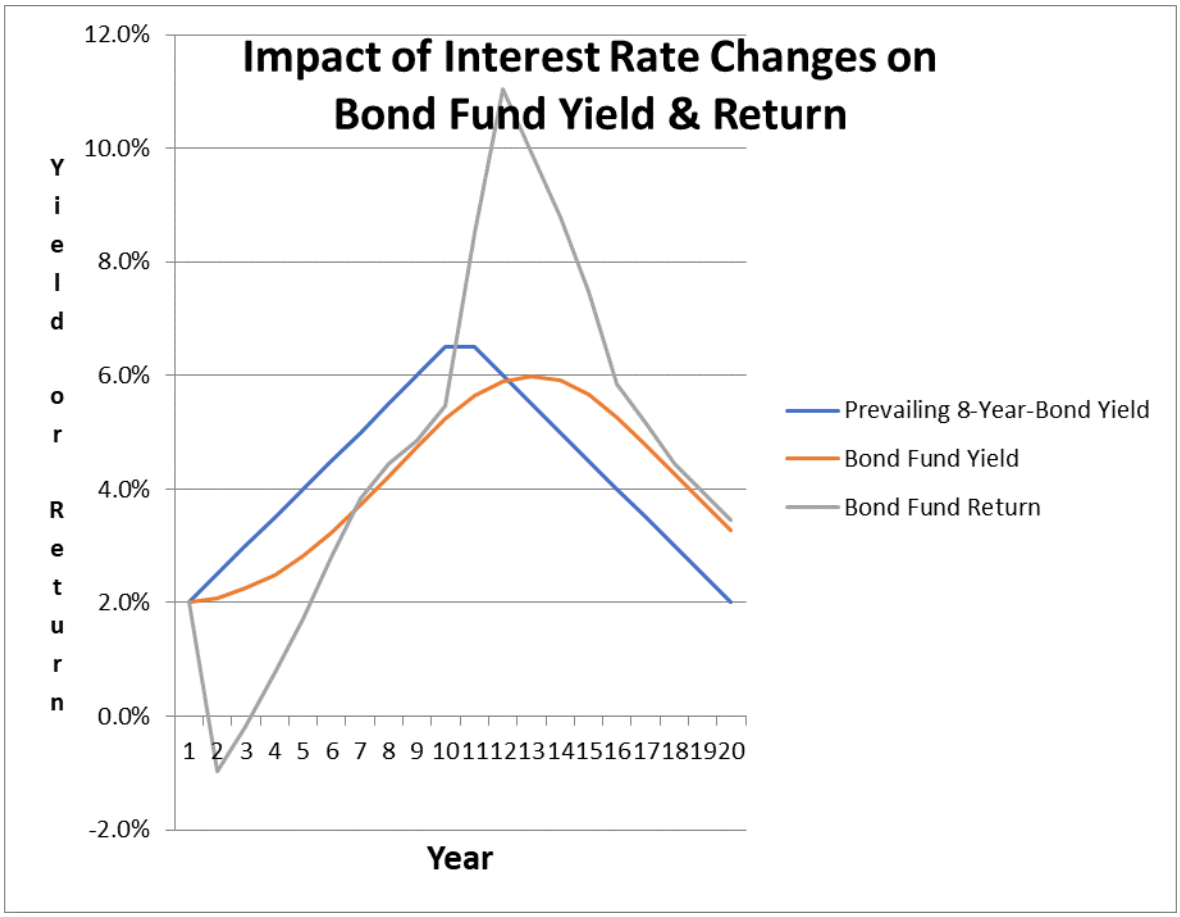
  In other words, we signed up for an 8-year return of about 6.5%/annum in Year 11 and that's about what we experienced over the final ten-year period, *despite constantly-falling interest rates*.

- The average 8-year bond interest rate over years 1 to 10 is 4.3% versus our bond fund return of 2.5%/annum over this ten-year period. **In periods of constantly-rising interest rates, bond fund returns lag the current yield**.

  This is not a surprise as it takes a while (in our case, about six years) for the fund's lower-yielding bonds to mature and be replaced by new higher-yielding bonds (helped along, of course, by new deposits to the fund also being used to buy new higher-yielding bonds).

- The average 8-year bond interest rate over years 11 to 20 is also 4.3%, this versus our bond fund return of 6.8%/annum. This too is not a surprise as it takes a while (again, about six years in our example) for the fund's higher-yielding bonds to mature and be replaced by new lower-yielding bonds (again, this process is accelerated by new investor deposits into the fund along the way).

These last two points are illustrated here:



Conclusion

A bond fund can be thought of as a large ocean liner that takes a long time to turn around (about six years in our simulated fund). The fund's interest yield lags as prevailing rates go up but then exceeds prevailing interest rates when rates start to go back down again (as illustrated above).

As a result, we would expect that, *over an entire interest rate cycle*, **a bond fund's return should be completely in line with the average rates that prevailed over the entire cycle**; and this is exactly what we find, a 4.3% average interest rate over the full twenty years and a 4.6% bond fund return over this same time period.

So, over a complete interest rate cycle, investors fully benefit from the rates that are on offer each year along the way.

Moral of the Story

As with stocks, the best approach is to ignore what's going on in the markets day-to-day in the knowledge that, over the long run, all is going to be absolutely fine.

As we've seen, bond fund investing is a fair deal[12], capturing all of the changing bond interest rates over the long run.

Kind regards,

Rob Rienzo

[12] Of course, getting a fair deal from a bond fund is also premised on selecting one with low fees, the lower the better.

Chapter 3: Historical Investment Perspectives

To know what to expect of investments going forward it is helpful to know what they've done in the past. This essay is a compilation of historical data to assist with this undertaking.

Bond/Stock Portfolio Returns: 1900 to 2020

Here are the *real* (i.e. inflation-adjusted) compound returns achieved by various allocations to Canadian mid-term bonds and global equities over the period 1900 to 2020. Because inflation over this period averaged 2.7%/annum, to obtain the approximate *nominal* returns simply add 2.7% to the real return figures shown below (e.g. the nominal compound return for a 50/50 bond/stock portolio was 4.3% + 2.7% = 7.0%/annum):

	100% Bonds	92% Bonds	70% Bonds	50% Bonds	25% Bonds	100% Stocks
Real Return	**2.1%**	**2.5%**	**3.5%**	**4.3%**	**5.1%**	**5.9%**
Std. Deviation	**6.4%**	**6.1%**	**6.6%**	**8.3%**	**11.2%**	**14.6%**
Best Result	28% (1921)	25% (1921)	20% (1982)	26% (1933)	35% (1933)	44% (1933)
Worst result	-18% (1915)	-15% (in 1915)	-18% (1974)	-23% (1974)	-29% (1974)	-36% (1974)

Key Observations

1. **As the percentage allocation to stocks increases, so does the compound return**, this due to the fact that stocks, because of their higher risk, are *expected* (though not guaranteed) to earn a higher long-term return than bonds (of course, were this not the case, no sane investor would allocate any of their money to stocks).

   On a related point, note that the increase in return between each subsequent portfolio is measured in *tenths-of-a-percent*, not multiples of a percent. Given these small differentials, we prudently conclude that wealth accumulation through stock investing happens over *decades*, not a handful of years. As a result, **patience and fortitude to weather the inevitable bad years are essential**.

2. **Risk**, as measured by the standard deviation of annual returns, **increases as the percentage of a portfolio allocated to stocks increases**, this due to the fact that stock returns are more volatile than bond returns (14.6% for stocks vs. 6.4% for bonds as shown in the table).

3. Beyond about 30% stocks in a portfolio, the **risk increases at a much greater rate than does the increase in return**. In other words, to garner higher returns you must accept *much greater risk*.

4. Note that a 70/30 bond/stock portfolio was superior to a 100% bond portfolio; it's return was greater (3.5%/annum vs. 2.1%/annum) with virtually no increase in risk (6.6% vs. 6.4%). Therefore, based on these 120 years of market history, this indicates that no investor, no matter how conservative, should be 100% in bonds because they can most likely achieve a better return with no increase in risk by holding up to 30% stocks in their portfolio.

   The reason for this fortuitous outcome is the low correlation of returns between bonds and stocks. By performing differently at different times, they combine to increase portfolio efficiency – more return per unit of risk.

Loss Probability vs. Holding Period

The next two tables highlight the probability[13] of losing money over different holding periods for differing bond/stock allocations. The first table shows *nominal* returns (i.e. *before* inflation is accounted for), while the second table shows *real* returns (i.e. *after* inflation is accounted for).

Risk of Loss *Before* Inflation

	100% Bonds	50% Bonds	100% Stocks
1 Year	**23%** (1 chance in 4)	**20%** (1 chance in 5)	**28%** (1 chance in 4)
5 Years	**3%** (1 chance in 33)	**2%** (1 chance in 50)	**6%** (1 chance in 17)
10 Years	**0.1%** (1 chance in 1000)	**0.01%** (1 chance in 10,000)	**0.2%** (1 chance in 500)
15 Years	**<0.01%** (<1 chance in 10,000)	**<0.01%** (<1 chance in 10,000)	**<0.01%** (<1 chance in 10,000)
20 Years	**<0.01%** (<1 chance in 10,000)	**<0.01%** (<1 chance in 10,000)	**<0.01%** (<1 chance in 10,000)

[13] These probabilities are based on historical returns and the standard deviation of those returns over the period 1900 to 2020 as well as the assumption that the returns follow a normal probability distribution, this being a very reasonable assumption.

Risk of Loss *After* Inflation

	100% Bonds	50% Bonds	100% Stocks
1 Year	**37%** (1 chance in 3)	**30%** (1 chance in 3)	**34%** (1 chance in 3)
5 Years	**22%** (1 chance in 5)	**10%** (1 chance in 10)	**15%** (1 chance in 7)
10 Years	**13%** (1 chance in 8)	**2%** (1 chance in 50)	**5%** (1 chance in 20)
15 Years	**7%** (1 chance in 14)	**0.3%** (1 chance in 333)	**0.7%** (1 chance in 143)
20 Years	**4%** (1 chance in 25)	**0.02%** (1 chance in 5000)	**0.05%** (1 chance in 2000)

Key Observations

1. As the holding period increases, the probability of loss decreases.

2. Diversifying into stocks *and* bonds (as opposed to holding just bonds or just stocks) reduces the probability of loss.

3. Before taking inflation into account, bonds are slightly less likely to post losses than are stocks (of course, as highlighted in the previous section, the downside for stocks is materially greater than the downside for bonds).

4. However, once we take inflation into account, the risk of bonds posting negative *real* returns is actually *greater than for stocks across every time period*. In other words, stocks have been a better hedge against inflation than bonds have been.

   This comes as no surprise because any investment paying a fixed rate of return (like bonds do) is going to fare poorly during periods of high inflation.

   For example, think of a $1000 10-year bond that pays 3% interest at a time when inflation is running at 5%. At maturity, you will get your $1000 back, but what cost $1000 ten years prior now costs $1,629, this due to inflation.

   In addition, the 3% interest rate doesn't fully compensate you for inflation; the cost of goods and services are going up at 5%/year but your investment is only providing a 3% return. In other words, after taking inflation into account, you are losing money in purchasing-power terms – 2%/year in fact.

5. For diversified bond/stock or all-stock portfolios It takes an investment holding period of about 15 years to reduce the real risk of loss below one-chance-in-100. As shown, even over holding periods of twenty years, an all-bond portfolio still runs a one-in-twenty-five chance of posting a real loss.

World Stock Markets: Country Composition[14]

The country composition of the global stock market has changed dramatically over time, the table below highlighting country weightings in the world equity index in 1900 versus 2015 (Note: if a country has a blank beside its name, it is part of the "Smaller markets" category).

	1900	2015
Australia	4%	2%
Austria	5%	
Belgium	4%	
Canada		3%
China		2%
France	12%	3%
Germany	13%	3%
Italy	2%	
Japan		9%
Netherlands	3%	
Russia	6%	
S. Africa	3%	
Smaller markets	8%	7%
Switzerland		3%
U.K.	25%	7%
U.S.A.	15%	52%

As shown, the size of the U.S. and Japanese stock markets increased dramatically relative to those of the U.K. and European countries.

It is important to keep in mind that these are *relative* valuations and do not indicate better returns for one country versus another. Market value can increase due to returns but also due to the number of listed companies. In fact, **there is no particular reason any country's stocks should do consistently better than those of any other country after adjusting for risk**.

[14] In 2016 the CFA Institute Research Foundation published a book titled, "*Financial Market History – Reflections on the Past for Investors Today*". This and the remaining sections in this Chapter are taken from that book.

U.S. Industry Weightings – 1900 vs. 2015

This table highlights the changing fortunes of the U.S. economy's key industries over time, the decline of Rail's importance being the most obvious.

The "Others" category in 2015, with a weighting of 12%, is indicative of the number of new, important industries that have come into existence since 1900, such as the Entertainment industry:

	1900	2015
Banks	7%	10%
Drinks		3%
Food	2%	2%
Health		11%
Insurance		5%
Iron, Coal, Steel	7%	
Media		5%
Oil & Gas		10%
Other Industrials	6%	13%
Other transportation	4%	
Others	2%	12%
Rail	62%	
Retail		9%
Technology		13%
Telecommunications **	3%	2%
Tobacco	3%	1%
Utilities	4%	4%

** Telegraph only in 1900.

World Equity Real Returns – 1900 to 2015

	Real Return	Standard Deviation	Low	High
Australia	6.7	17.7	-43% (2008)	52% (1983)
Canada	5.6	17.0	-34% (2008)	55% (1933)
France	3.2	23.1	-42% (2008)	66% (1954)
Germany	3.3	31.7	-91% (1948)	155% (1949)
Japan	4.2	29.6	-86% (1946)	121% (1952)
Switzerland	4.5	19.5	-38% (1974)	59% (1922)
U.K.	5.4	19.7	-57% (1974)	97% (1975)
U.S.A.	6.4	20.1	-38% (1931)	56% (1933)
World	**5.0**	**17.5**	**-41% (2008)**	**68% (1933)**

Key Observations

1. There is a benefit to diversifying a portfolio in order to avoid having most, or even all, of one's money in what, in hindsight, turns out to be a low-return country (e.g., France at 3.2%/year vs. Australia at 6.7%/year). This is particularly pertinent guidance because most investors tend to place far too much emphasis on stocks and bonds from their own country. For example, while Canadian stocks represent only about 3% of the world total, many Canadian investors' stock portfolios consist almost entirely of Canadian companies.

2. There is a risk-reduction benefit to diversification (i.e. reduced portfolio volatility) as evidenced by the World Index return standard deviation of 17.5% being lower than all but one of the twenty-two countries in the study.

3. It is painfully evident from the table that stock markets can go down a LONNNNNNGGGG way, even if globally diversified (e.g. the 41% loss in 2008).

4. One note of caution, this being that U.S. equities, the most extensively studied market and the one whose returns are the most often cited in the financial press, ***do not appear to be representative of what to expect from stocks***. Indeed, they likely *overstate* expected returns and so may mistakenly inflate investors' return expectations.

5. The benefit of global diversification is also evident in the fact that the world equity average real return of 5.0%/annum beat the return experienced by half of the eight countries listed. The lesson here is that, rather than trying to guess which country's stocks are likely to do best and risk being wrong, better to simply *buy them all and forget about it*. While you will never end up with the highest return possible, you will definitely avoid ending up with the lowest return possible.

World Bond Real Returns – 1900 to 2015

	Real Return	Standard Deviation	Low	High
Australia	1.7	13.2	-27% (1951)	62% (1932)
Canada	2.3	10.4	-26% (1915)	42% (1921)
France	0.2	13.0	-44% (1947)	30% (1921)
Germany	-1.4	15.8	-100% (1923)	63% (1932)
Japan	-0.9	19.7	-78% (1946)	70% (1954)
Switzerland	2.4	9.4	-21% (1918)	56% (1922)
U.K.	1.7	13.7	-31% (1974)	59% (1921)
U.S.A.	2.0	10.4	-18% (1917)	35% (1982)
World	**1.8**	**11.3**	**-32% (1919)**	**47% (1933)**

Key Observations

1. Geographic diversification ensures an investor avoids having all their money in one country that, in hindsight, turns out to be a poor performer (e.g., Germany with a negative 1.4%/annum return vs. Switzerland at 2.4%/annum).

2. Global diversification reduces bond portfolio volatility as evidenced by the fact that the volatility of the World Bond Index at 11.3% was less than all but five of the twenty-two countries in the full study.

3. Bonds are less volatile than stocks as evidenced by the 11.3% standard deviation for global bonds versus the 17.5% figure quoted for stocks in the previous table. This represents a 35% reduction in risk.

4. Under extreme conditions, bond markets too can go down a LONNNNNNGGGG way, even if globally diversified.

5. World Wars are bad, but particularly bad for the losers!

World Hard Asset Real Returns – 1900 to 2014 (in U.S. dollars)

	Real Return	Standard Deviation	Low	High
U.S. stocks	6.4	20.1	-38% (1931)	56% (1933)
World stocks **	5.0	17.5	-41% (2008)	68% (1933)
Wine	4.1	26.3	-37% (1949)	146% (1942)
Stamps	2.9	12.2	-19% (1915)	56% (1979)
Violins	2.7	25.4	-48% (1970)	105% (2009)
Art	2.2	12.3	-30% (1914)	38% (1967)
U.S. bonds	2.0	2.5	-18% (1917)	35% (1982)
U.S. farmland	0.9	1.2	-14% (1984)	16% (2004)
U.S. Treasury bills	0.9	1.0	-15% (1914)	20% (1921)
U.S. houses	0.3	6.2	-14% (1904)	21% (1945)
Gold	0.7	16.2	-33% (1980)	76% (1979)
Silver	0.1	22.7	-55% (1980)	88% (1979)
Diamonds	0.0	13.9	-33% (1946)	42% (1941)
Hard Assets Average	1.5	15.1		

Key Observations

1. Equities provided the highest real return by a wide margin.

2. For wine, the highest returns were observed for young, high-quality vintages still maturing. The return on older wines was in-line with other collectibles such as art, stamps, and violins.

3. While slightly out-performing bonds, collectibles had considerably-greater volatility (which, even then, is likely understated due to the use of appraisal values in the return database).

4. The correlation of returns among the collectibles were all under 22%, so diversification among collectibles proved beneficial.

5. The returns of collectibles are *before* storage and insurance costs and also *before* buy/sell transaction costs that can easily exceed 25% of value.

6. Illiquidity is a major factor with collectibles.

7. The nominal price of gold was fixed at $35 USD from 1934 to 1971 (and the private ownership of gold was illegal in the U.S. from 1933 to 1974). As a result, both the return and volatility figures shown are not representative for gold under current conditions. Looking at data from 1975 through 2020, the real return for gold was 2.2%/annum with a standard deviation of 23.4%.

8. Gold, silver, and diamonds combine low returns with high volatility – a terrible combination.

9. It will surprise most investors to learn that the long-term return on personal residences and land is very low; on-par with lowly treasury bills, the safest investment available. In fact, between the 1940s and 1990s, *U.S. housing prices barely increased in real terms*. Low returns for housing have also been documented in other countries. This finding runs counter to most investor's current perception of real estate, perhaps to their eventual peril.

Are Collectibles Suitable Investments?

In my personal opinion, assets that do not generate income (e.g., collectibles like wine, stamps, violins, art, gold, silver, and diamonds (as well as exotica like Bitcoin)) **should not be considered suitable investments for a portfolio** because, in the absence of an income stream, *there is no way to reasonably determine their value*.

Lacking an income stream, such assets are prime candidates for the "Greater Fool Theory", meaning that they are worth whatever the next fool is willing to pay for them. *This puts them firmly in the realm of speculations, not investments*.

While it may perhaps be reasonable for such assets to grow on par with inflation, it is difficult to make the case that their expected returns should be anywhere remotely competitive with a diversified equity portfolio.

However, when lowly Treasury Bills have achieved inflation-matching returns with immensely lower volatility, much greater safety, and considerably easier accessibility and ongoing management, it remains difficult to make a case for collectibles as part of a prudent portfolio.

Kind regards,

Rob Rienzo

Chapter 4: Why Performance Discussions are a Waste of Time

There is a widespread misconception that higher mutual fund returns are due to better, smarter, more-skillful investment managers. This is false[15].

"Talk about beating markets is irrelevant and extremely boring. There is no evidence that managers can beat markets."

Rex Sinquefield, co-author of "Stocks, Bills, Bonds and Inflation: Historical Returns (1926 – 1987)"

But here's the thing, even if it *were* true, performance discussions would *still* be a waste of time. Let's find out why.

The Critical Role of Uncertainty

"If your broker or investment advisor is not familiar with the concept of standard deviation[16] of returns, get a new one."

William J. Bernstein, author of "The Intelligent Asset Allocator"

Mutual fund returns are characterized by inconsistent success; top-quartile managers in one period are randomly scattered among all four quartiles in a subsequent period[17].

Where else do we find inconsistent success? In games of luck, such as roulette or the purchase of lottery tickets, where outcomes are random.

This essay makes the point that performance discussions are really just discussions about luck, about randomness, *which is why they are a waste of time*.

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15 See "Suggested Reading".

16 Standard Deviation (SD) is a measure of uncertainty. The larger the SD, the greater the dispersion of results around the average result. An SD of zero means every outcome is the same. Over the period 1900 to 2020, global stock returns had an SD of 16 while Canadian bonds had an SD of 6, this indicating that stock returns are more dispersed, more uncertain, than bond returns.

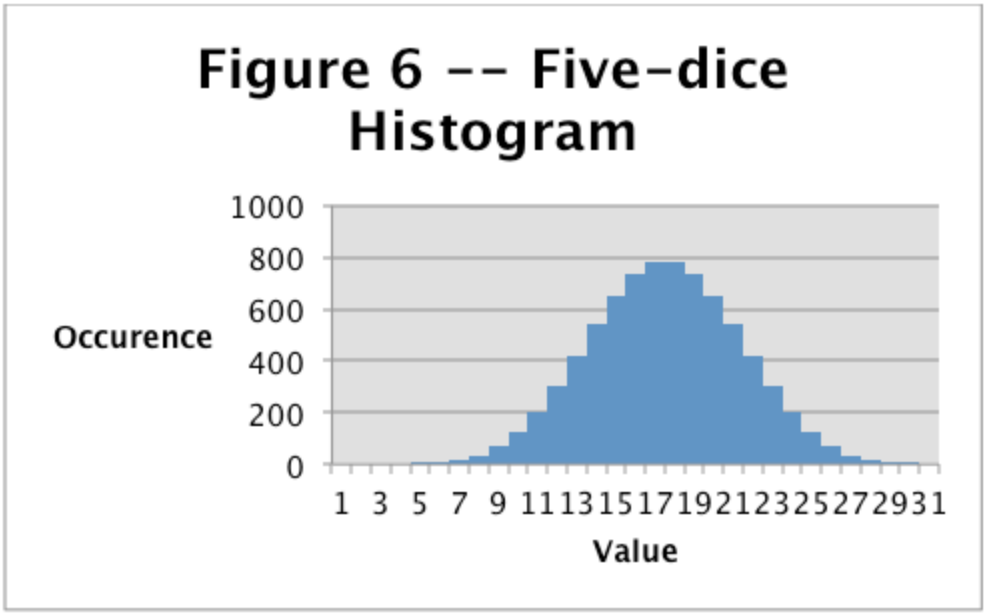
17 This is certainly true on a *pre-cost* basis. On an *after-cost* basis, the bottom quartile tends to have an over-representation of the highest-cost funds. Simply put, there is an inverse correlation between cost and after-fee performance: low-cost funds tend to out-perform high-cost funds

Exploring Randomness

Let's start our exploration of randomness by considering a simple experiment. Five dice are rolled 5000 times with the frequency of each resulting sum recorded and graphed (see Figure 6 below). Such a graph is referred to as a *histogram*.

As shown, the plot (aka 'frequency distribution') takes the shape of a bell[18] (and so is often referred to as a "bell curve"), with certain sums having a low chance of occurring (such as the sums of five or thirty which can only occur one way, this by rolling all ones or all sixes), and others having a greater chance of occurring.

The peak of the bell is the sum most likely to occur. In this instance, the sum of eighteen has the greatest number of dice combinations that sum to this amount.



A frequency distribution that follows such a bell-shaped pattern is what statisticians call a *Gaussian* or *Normal Probability Distribution* (NPD) and **is indicative of a process that is random**. The fact that stock returns and mutual fund returns closely follow such a distribution is a clear sign of their underlying random nature.

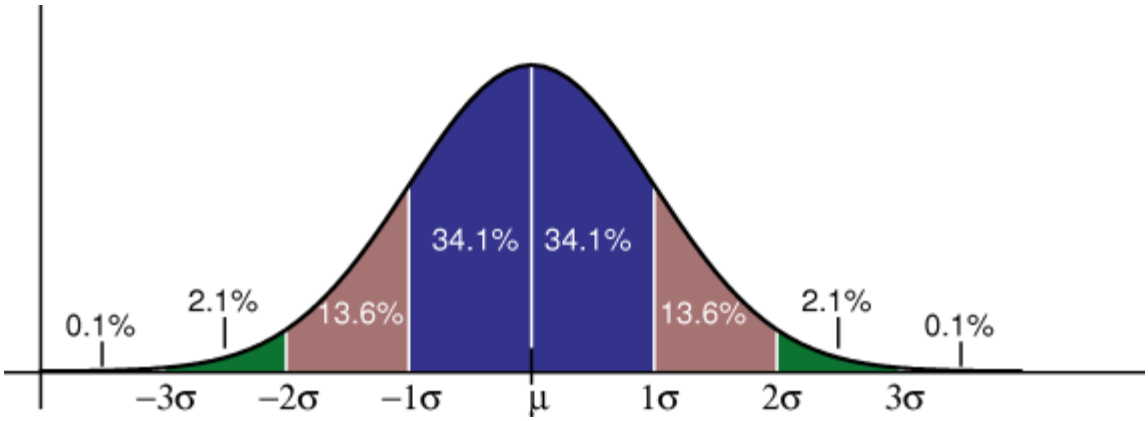
An NPD requires just two inputs to describe its range of values, the *average* outcome and the *standard deviation* of the outcomes.

[18] With the bell becoming increasingly smooth as the number of observations (i.e. data points) increases.

This is very useful because it **permits an investor to know, *in advance*, the range of their portfolio's expected returns**: how much they could lose and how much they could gain, and the likelihood of each potential outcome.

Using the NPD to Assess Portfolio Risk

So, let's apply the NPD (see the example of one graphed below) to an investment portfolio that, say, over the past ten years, posted an **average arithmetical[19] return of 7%/annum** with a return **standard deviation of 8%** (these figures being roughly indicative of a 50/50 bond/stock portfolio over the period 1900 to 2020).



Here is what the NPD permits us to know:

1. The return with the greatest likelihood of occurring, the NPD peak, is the portfolio average return, in our case, 7% (designated in the graphic above by the Greek letter, *mu*).

2. Half of all possible returns for this portfolio are expected to fall below 7% and half to fall above 7% (i.e. the bell is symmetrical around the average[20]).

3. Roughly two-thirds (68.2% to be more precise) of all future returns in any given year are expected to fall within one standard deviation of the average (standard deviation signified by the Greek letter *sigma*). In our example, this means from minus 1% to plus15% (i.e. 7% *minus* 8% to 7% *plus* 8%).

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[19] We use the *arithmetical* average return and not the *compound* return in NPD calculations as it is the best estimator as to what *next year's return* is most likely to be.

[20] This isn't perfectly true for stock/bond portfolios (that actually follow what is known as a log-normal distribution) but such an assumption is close enough to be perfectly workable.

4. Roughly 95% (95.4% to be more precise) of all possible returns in any given year are expected to fall within *two* standard deviations of the average. In our example, this means from minus 9% to plus 23%.

5. Finally, about 99% (99.6% to be more precise) of all possible returns in any given year are expected to fall between -17% to +31%, this being within *three* standard deviations of the average.

   This leaves about a 0.4% chance that some year could still experience a return that falls *below* -17% or *above* 31%; possible, but not very likely (1 chance in a 250).

There are two important caveats when using the NPD:

1. The sample must be *representative*. For example, if we wanted to know the average height of a typical adult Canadian male, we have two choices. Choice One: we go and measure the height of *every* adult Canadian male. Obviously, this would be both costly and time consuming! So, Choice Two: we select a *sample* suitably representative of the entire population of adult Canadian males. Needless to say, choosing as our sample five players from the Canadian national basketball team would not be representative and so would produce a spurious estimate.

2. The sample size must be *large enough* to enhance the predictive power of the analysis and provide a reasonable degree of confidence in the results. For example, a sample size of 1000 adult Canadian males will obviously provide a better estimate of average height than would a sample size of ten, and 10,000 would be even better; it's always a trade-off between time, cost, and accuracy.

It is this latter point, *sample size*, that is the Achilles Heel of mutual fund performance comparisons. Simply put, *suitable sample size is rarely, if ever, met in the realm of mutual fund performance discussions*.

Comparing a Top-Quartile Mutual Fund to a Bottom-Quartile Mutual Fund

So, let's put the NPD to use by comparing the actual 23-year historical returns of two Canadian equity mutual funds (see Appendix A). One (let's call it "*Top Fund*") has a performance that puts it in the top 25% of all funds in its category, while the other's performance over the same time period (let's call it "*Bottom Fund*") places it in the bottom 25%.

There is little question that most investors (and advisors?!) would think that twenty-three years is more than enough time to definitively conclude that *Top Fund* is superior to *Bottom Fund*. "Surely", most would say, "its better return must be due to better, smarter, more skillful management". But, as we will see, *such a conclusion would be dead wrong*.

Here is the actual return data for our two funds over a 23-year investment period:

	Top Fund	***Bottom Fund***
Arithmetical Average Return	8.5%	6.6%
Return Standard Deviation	15.5%	15.2%
Compound Return	7.8%	6.0%

Note that the two funds have essentially identical standard deviations (~15%) and so are similar in risk profile. In addition, their returns were 92% correlated (100% correlation would mean their returns moved in perfect lock-step).

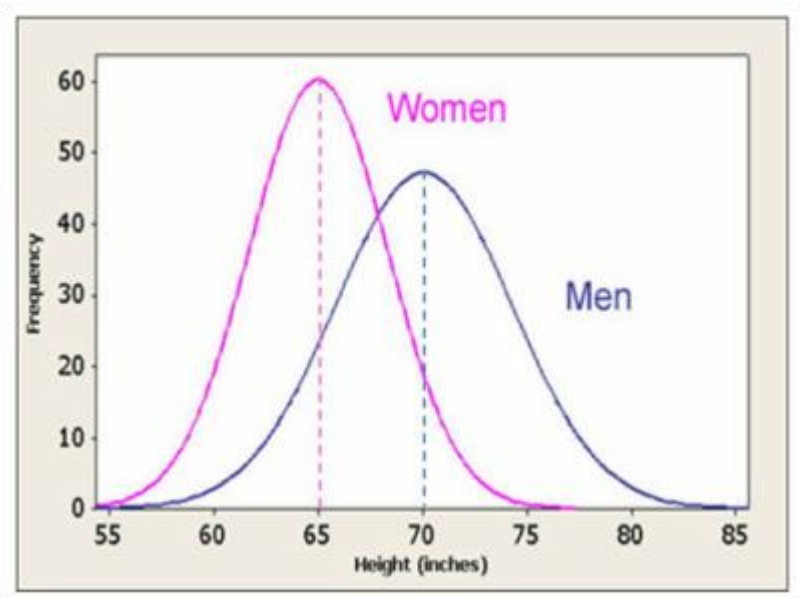
Both measures provide comfort that these two funds are sufficiently similar to be able to render a comparison reasonably valid. Had the standard deviations between materially different and/or the correlation of returns low, this would have been indicative of mutual funds with divergent mandates and so *not* comparable (such as comparing a bond fund to a stock fund or a Canadian equity fund to an International equity fund: both of these comparisons would both be totally invalid).

So, using what we now know about an NPD, we would predict that the returns for these two funds in any given year should fall somewhere within the ranges shown below 95 times out of 100 (i.e. within *two* standard deviations):

- *Top Fund*: 8.5% +/- (2 x 15%) = -21.5% to 38.5%
- *Bottom Fund*: 6.6% +/- (2 x 15%) = -23.4% to 36.6%

One obvious point stands out: that there is *considerable overlap* in the range of expected returns for these two funds. Indeed, the *Top Fund's* return distribution covers fully ***97%*** of the *Bottom Fund's* return distribution.

This type of situation is shown in the graph below, this illustrating the overlapping NPDs for male and female heights. What it shows is that, while the *average* height of males is greater than the *average* height of females (70" vs. 65"), *there is considerable overlap,* just like for our two mutual funds. This reflects the reality that not *all* men are taller than *all* women.



In cases like this, ***further statistical analysis is required to determine, with confidence, that the two averages are, in fact, different.***

This situation clearly applies to the *intelligent* comparison of mutual fund returns: ***statistical methods must be brought to bear to confirm if there is a <u>true</u> difference in mutual fund returns as, otherwise, <u>the resulting discussions are nothing more than useless piffle</u>***.

<u>Standard Error of the Mean</u>

Standard Error of the Mean can be thought of as the error implicit in a sample's measured average, the formula for which is:

Standard Error = (Sample Standard Deviation) / (Square Root of the sample size)

For example, according to Wikipedia, the standard deviation of female height is 2.5" while that for male height is 3.0" (this reflected in the slightly wider, more dispersed shape of the men's NPD vs. that for women).

Therefore, assuming the above graph was based on a sample size of 23 representative women and 23 representative men, the standard error of average height turns out to be:

- Women: 2.5″ / (23 ^ 0.5) = 0.5″
- Men: 3.0″ / (23 ^ 0.5) = 0.6″

We then use these standard errors to calculate the range within which the *actual*[21] average heights are expected to fall:

- Women: 65″ +/- (2 x 0.5″) = 64.0″ to 66.0″
- Men: 70″ +/- (2 x 0.6″) = 68.8″ to 71.2″

We interpret this as follows: *Given a sample size of 23 women and 23 men, the actual average height of a female (i.e. if we were able to measure the height of <u>every</u> woman) has a 95% chance of falling somewhere within the range from 64″ to 66″. Similarly, the actual average height of a male has a 95% chance of falling somewhere within the range from 68.8″ to 71.2″*.

Because there is *no overlap* of these two ranges, we can say that there is at least a 95% chance that the average male is, in fact, taller than the average female.

We can now use this methodology to determine if there is at least a 95% chance that the average return for *Top Fund* is, in fact, greater than that for *Bottom Fund*.

<u>Using Standard Error to Compare *Top Fund* to *Bottom Fund*</u>

We now apply this same process to our two mutual funds:

- Standard Error of the Mean = 15% / (23 ^ 0.5) = 3.1%

Therefore, the *true* average return for these two funds (were we to repeat this particular 23-year competition an infinite number of times) would be expected to fall within these ranges 95% of the time:

- *Top Fund*: 8.5% +/- (2 x 3.1%) = 2.3% to 14.7%
- *Bottom Fund*: 6.6% +/- (2 x 3.1%) = 0.4% to 12.8%

[21] Determining the *actual* average heights would necessitate that we measure *every* woman and *every* man, an enormous task. Instead, by using two standard errors in our calculation, we have 95% confidence that the *actual* average, if measured, would fall *somewhere* within our calculated ranges.

So, unlike the female-vs.-male average-height situation, **there is *considerable* overlap of the ranges for the true average return of these two funds**.

Because of this, **it is not possible to conclude, given even a 23-year sample size, that *Top Fund* is, in fact, superior to *Bottom Fund*** at 95% confidence. We simply do not have enough data to conclude that there is, in fact, *any difference at all* in the average returns of these two funds.

To use a medical analogy, would you trust your life to a drug that had only been tested on 23 people? Likely not. So, while 23 *years* seems like a long *time* over which to compare two managers, the length of time is actually irrelevant because we still only have a mere 23 *data points* from which to draw a relative-performance conclusion, and that's not nearly enough.

Given the high standard deviation of investment returns relative to the yearly returns being measured, this simply is insufficient data.

So, how many years of performance data would we need? Well, the difference in return between *Top Fund* and *Bottom Fund* is 1.9 percentage points. Therefore, at 95% confidence (i.e. within two standard errors), we would need the standard error to be less than 1.9 / 2 = 0.95.

Therefore, solving for "X" in the standard error equation (i.e. 15% / (X ^ 0.5) < 0.95) we find that we would, in fact, need **250 years of data**! Needless to say, few mutual funds, let alone their managers, are going to be around this long! 😊

Refinement of the Standard Error of the Mean Method

While useful for illustrative purposes, the prior method requires one refinement if it is to be used properly for analysis, this due to the fact that, unlike female and male height measurements that would not be expected to be highly correlated (i.e. the height of Peter in Ottawa should bear little, if any, relationship to the height of Karen in Winnipeg), mutual funds of similar mandates are usually highly correlated. In our example, *Top Fund* and *Bottom Fund* are 92% correlated, this due to the fact *they are both impacted by the same market conditions*.

Therefore, to eliminate the common factors and isolate what the managers can actually control, it is the *average of the differential in annual returns* and the *volatility of this annual differential* that is of interest.

We previously mentioned that the return differential was 1.9%/year in favor of *Top Fund*. However, the standard deviation of the annual return differences between these two funds came to 6.4%.

Therefore, based on our 23-year sample, the *true* average return differential between these two funds (i.e. were we able to measure the returns of these two managers over an infinite time period) would be expected to fall within the following range roughly 95% of the time:

- Standard Error of the Mean = 6.4% / (23 ^ 0.5) = 1.3%
- Range for the *true* average return differential = 1.9% +/- (2 x 1.3%) = -0.7% to +4.5%

Because this range enters <u>negative</u> territory, it is entirely possible that, were these managers to "compete" over an infinite period of time, it is *Bottom Fund*, and *not Top Fund*, that is actually the better performer.

In other words, at 95% confidence we cannot rule out this possibility, due mainly to the fact that our sample size, 23 data points, is simply too small to arrive at a *statistically-meaningful* conclusion.

Again, as previously mentioned, ***in the absence of a <u>statistically-meaningful conclusion</u>, any discussion about relative performance is meaningless piffle and a waste of everyone's time***.

<u>Years of Return Data Required</u>

While the Standard Error method is useful for illustration purposes, scientific inquiry typically relies on something known as a "t-test"[22] to determine if the difference between two averages is statistically meaningful (again, typically at a 95% confidence level).

While this article will not go into the details of how to perform a t-test (check out any introductory statistics text), the relevant equation to determine how many years of return data is required to be able to say with at least 95% confidence that there is, in fact, a true difference between averages is:

[22] See the Appendix at the back of this book for a t-Distribution table.

Minimum number of data points required = [(A x B) / C] ^2

Applying this to our mutual fund comparison:

- **A** = the standard deviation of the year-by-year fund return differentials. In our example, this worked out to be 6.4%.
- **B** = the minimum t-statistic required to be able to declare that there is, in fact, a difference between the two funds' average return at the desired degree of confidence. This is found in a standard t-distribution table (see Appendix). For our example, the relevant t-statistic is 2.074.
- **C** = the difference between the two funds' arithmetic average return. In our example this worked out to be 1.9%.

Therefore, the minimum number of years of performance data we need in order to assert with 95% confidence that *Top Fund* is, in fact, superior to *Bottom Fund* is:

Minimum years of return data required = [(6.4% x 2.074) / 1.9%] ^2

= <u>49 years</u>

In other words, ***Top Fund*** **would have to out-perform** ***Bottom Fund*** **by an average of 1.9%/year** ***for 49 years*** **before we could conclude, with 95% confidence, that there is, in fact, a true difference between Top Fund's 8.5%/year average return and Bottom Fund's 6.6%/year average return**.

Given that we only have 23 years of return data, luck, and not skill, could easily explain the 1.9%/year return differential.[23]

However, even if this differential *were* based on 49 years of return data, there would *still* be a 1 in 20 chance that there is zero difference between the *true* average return for these two funds (again, *true* average return being the one we would observe were we able to re-wind history and re-run this 23-year "competition" an infinite number of times).

[23] This conclusion is consistent with the vast majority of academic studies that find inconsistency of superior performance; top funds in one period are *not* top funds in a subsequent period, ***beyond what one would expect of a totally random process***.

So, what we observe here is an inability, *even armed with 23 years of performance data*, to *intelligently* confirm that there is, in fact, a statistically-meaningful difference in average return between a top-quartile fund and a bottom-quartile fund.

This is the key reason why mutual fund performance discussions are an utter waste of time for all concerned – even if skill differential *did* translate into return differential (which it doesn't)!

Kind regards,

Rob Rienzo

P.S. A quick peek at the year-by-year returns of *Top Fund* and *Bottom Fund* on the next page makes it doubly clear that trying to pick a "winning" fund is a futile quest. While *Top Fund* has the greater long-term return, it's easy enough to spot significant stretches of time where it materially lagged *Bottom Fund*. Another reason why past performance is a useless guide to predicting future performance.

Appendix: *Top Fund* & *Bottom Fund* Return Data

	Calendar Year	*Top Quartile* ***Top Fund***	*Bottom Quartile* ***Bottom Fund***	**Difference**
1	2011	-11.3	-11.5	0.2
2	2010	16.1	9.3	6.8
3	2009	30.1	22.7	7.4
4	2008	-33.8	-29.4	-4.4
5	2007	9.4	4.8	4.6
6	2006	17.5	14.2	3.3
7	2005	23.0	17.0	6.0
8	2004	12.3	6.9	5.4
9	2003	21.1	23	-1.9
10	2002	-7.0	-17.7	10.7
11	2001	-5.7	-13.3	7.6
12	2000	10.3	14.2	-3.9
13	1999	24.0	32.7	-8.7
14	1998	-0.6	-6.5	5.9
15	1997	12.9	1.8	11.1
16	1996	21.9	25.7	-3.8
17	1995	13.2	15.7	-2.5
18	1994	-0.4	-1	0.6
19	1993	31.8	24.5	7.3
20	1992	2.8	1.0	1.8
21	1991	1.7	11.2	-9.5
22	1990	-14.7	-5.7	-9.0
23	1989	20.9	11.5	9.4
	Arithmetic. Avg Return:	8.5%	6.6%	1.93%
	Compound Return:	7.8%	6.0%	1.85%
	Standard Deviation:	15.5%	15.2%	6.4%

Correlation of Returns: **92%**

Chapter 5: Portfolio Depletion Risk During Retirement

Unlike younger investors in the asset-accumulation stage of life who benefit from falling stock markets (as this increases their *future* returns), retirees have limited time to recoup losses and so run the risk of running out of money.

Lucky vs. Unlucky Retirees

We only get one crack at retirement – there are no "do-overs". As a result, retirees are either lucky and experience normal or above-average market returns during their retirement years, or they're unlucky and experience poor returns (or ill-timed returns). Such is the nature of investment markets – there's *always* a degree of uncertainty.

While luck is out of a retiree's hands, they do have control over these factors:

1. Their **portfolio asset allocation** – how much they put into stocks versus bonds. This decision, in turn, dictates their *expected* rate of return and the *expected* volatility of those returns year to year. The greater the allocation to bonds, the lower the expected return, but also the lower the volatility and uncertainty of those returns from year to year.

2. **The rate at which they withdraw money** from their portfolio. The faster it's spent, the sooner it's *likely* depleted.

Factor #1: Portfolio Asset Allocation

Using historical returns and volatility, computer simulation can provide insight into what various portfolios are *capable of*. In this instance, I simulated ten retirements (think of it as ten retirement 'do-overs'), each one 40-years long, using three different bonds/stocks ratios:

1. *70/30 bonds/stocks*: 6.3%/year average return with a standard deviation of 6.4%.

2. *50/50 bonds/stocks*: 7.2%/year average return with a standard deviation of 8.6%.

3. *25/75 bonds/stocks*: 8.9%/year average return with a standard deviation of 11.0%.

The table on the next page summarizes the results of the ten simulations.

	70/30 bonds/stocks	50/50 bonds/stocks	25/75 bonds/stocks
Historical return +/- S.D.	*6.3% +/- 6.4%*	*7.2% +/- 8.6%*	*8.9% +/- 11%*
Best of the 10 simulations	8.5%/annum	10.0%/annum	11.8%/annum
Worst of the 10 simulations	5.1%/annum	5.2%/annum	5.4%/annum
S.D. of the ten returns	1.0%	1.5%	1.7%
S.D. of the ten S.D.s	0.6%	0.7%	1.9%

Note: S.D. = Standard Deviation

Key Observations

1. **As the allocation to stocks increases**, the "Best return" increases. In other words, there is **greater upside** should a retiree be lucky and experience above-average stock returns over their retirement period.

2. **As the allocation to stocks increases**, the shortfall of the "Worst return" relative to the historical return increases. For example, the 70/30 b/s mix's worst return of 5.1% falls 19% below its historical average of 6.3%. However, the 5.4% worst return for the 25/75 b/s mix falls 39% below its historical average of 8.9%. In other words, there is **greater downside** *relative to what was expected* should a retiree be unlucky with market returns over their retirement period.

3. **As the allocation to stocks increases**, the **greater the variability of possible retirement return outcomes**. This is evidenced both by the higher standard deviation of returns for the 75% stock portfolio (11%) as well as the higher standard deviation of the standard deviations for the ten 40-year simulations (1.7%).

   In other words, *a greater allocation to stocks reduces our confidence that the return we experience will be somewhat close to the historical norm*.

4. **As the allocation to stocks increases**, the **greater the possibility of deviating from historical *volatility* norms** (as evidenced by the 1.9% standard deviation for the 75% stock portfolio). What this means is that year-to-year returns could prove to be much more volatile than historical results would otherwise lead us to expect.

5. **The worst returns for the three asset allocations are very similar**. However, as covered in the next section, this does *not* mean a retiree with high stock exposure isn't taking on a greater chance of running out of money, *because they are*.

Factor #2: Portfolio Draw Rate

The table on Page 44 shows the impact of *draw rate* from a retirement portfolio as well as the impact of *asset allocation* for each draw rate. It does so by highlighting ***the age at which a 65-year-old retiree runs out of money*** in the various scenarios.

The simulations assume that a retiree takes a fixed percentage from their portfolio in their first year of retirement and then increases that initial dollar amount at the rate of inflation for each subsequent year[24] (this so they may continue to purchase the same amount of goods and services each and every year despite such expenses going up in price each year due to inflation).

Key Observations

1. To no surprise, **as draw rate increases, our 65-year-old retiree's money runs out sooner**:

   - **3.5% draw**: $ runs out on average at age **99**
   - **4.5% draw**: $ runs out on average at age **92**
   - **5.5% draw**: $ runs out on average at age **86**
   - **6.5% draw**: $ runs out on average at age **82**

2. **Asset mix has little impact on when the money runs out**, although a greater allocation to stocks *marginally* increases the average lifespan of a retirement portfolio.

3. However, further to Point 2, **as the allocation to stocks increases, there is greater uncertainty as to when the money may run out**. This is evidenced by the higher standard deviation for age of depletion as well as the greater difference between the worst outcome ("Low") and best outcome ("High").

   For example, using figures for the 5.5% initial draw rate, we can predict with 95% confidence (i.e. within two standard deviations) that the age at which the portfolio depletes should fall somewhere within these ranges:

   30% stocks: 85 +/- (2 x 3.7) = **78 to 92**

   80% stocks: 88 +/- (2 x 8.5) = **71 to 105**

[24] For example, let's assume a retiree draws 4.5% out of a $1 million retirement portfolio in Year 1 of their retirement (i.e. $45,000) and that inflation in that year is 3%. Then, in Year 2, they withdraw $46,350 (i.e. $45,000 x 1.03 = $46,350). In other words, what cost $45,000 in Year 1 now costs $46,350 due to inflation.

So, while a higher allocation to stocks is *likely* to increase the longevity of a retirement portfolio, *it also increases the likelihood that the exact opposite occurs* – that the money runs out sooner, possibly *much* sooner. As mentioned above, retirees don't get a retirement do-over, so caution is warranted.

During my time as an advisor, the majority of my clients opted for a balanced retirement portfolio, anywhere from 40% stocks to 60% stocks, with few choosing to go below or above these figures.

Sequence of Returns

As mentioned above, a greater allocation to stocks increases uncertainty on several fronts:

- Uncertainty of portfolio average return.
- Uncertainty of portfolio return volatility.
- Uncertainty regarding when a portfolio may run out of money.

However, there is an additional factor, the ***sequence of returns***, that also matters. In short, *bad years early in retirement are much more devastating than bad years later in retirement*.

To illustrate this point, let's assume a portfolio posts a consistent return of 5% each and every year *except for one year when it goes down 25%*. Here are three scenarios, the only difference being *when* this 25% loss occurs:

- **Loss occurs in Year 1 (age 65):** $ runs out at **81**
- **Loss occurs in Year 13 (age 77):** $ runs out at **86**
- **Loss occurs in Year 26 (age 90):** $ runs out at **90**

Because stocks can go down much further than bonds, a high allocation to stocks increases *Sequence-of-Return* risk by increasing the magnitude of a loss when a bad year occurs.

Conclusions

The main threat to a retirement portfolio is, to no surprise, *spending too much*. Fortunately, most retirees (other than those struggling to cover life's bare essentials), have plenty of control over this.

Next in importance is Sequence-of-Return risk, one that can be ameliorated by avoiding an over-emphasis on stocks.

For those retirees fortunate enough to have materially more than they will need to live on, a greater allocation to stocks will *likely* enhance the value of their estate, thus leaving more for beneficiaries and charities of choice.

For most other retirees, a balanced approach from 40% to 60% stocks (depending on one's personal risk comfort level) appears to be a reasonable compromise.

Kind regards,

Rob Rienzo

Impact of Draw Rate & Asset Allocation on Retirement Portfolio Longevity

3.5% initial draw	Average Age $ Gone	S.D.	Low		High
70/30 b/s	**98**	**5.3**	93.1		103.7
60/40 b/s	**98**	**5.8**	92.5		104.1
50/50 b/s	**100**	**5.4**	94.1		104.9
40/60 b/s	**99**	**6.0**	92.7		104.7
30/70 b/s	**99**	**6.1**	92.7		104.9
20/80 b/s	**98**	**7.5**	90.3		105.3
	99				

4.5% initial draw			Low		High
70/30 b/s	**91**	**5.3**	85.5		96.1
60/40 b/s	**92**	**6.7**	85.0		98.4
50/50 b/s	**92**	**6.9**	85.0		98.8
40/60 b/s	**93**	**7.6**	85.1		100.3
30/70 b/s	**93**	**7.8**	84.9		100.5
20/80 b/s	**94**	**8.7**	85.0		102.4
	92				

5.5% initial draw			Low		High
70/30 b/s	**85**	**3.7**	81.2		88.6
60/40 b/s	**85**	**4.1**	81.1		89.3
50/50 b/s	**85**	**5.4**	79.6		90.4
40/60 b/s	**87**	**6.4**	80.2		93.0
30/70 b/s	**87**	**7.8**	79.3		94.9
20/80 b/s	**88**	**8.5**	79.0		96.0
	86				

6.5% initial draw			Low		High
70/30 b/s	**81**	**2.2**	78.5		82.9
60/40 b/s	**81**	**2.9**	78.2		84.0
50/50 b/s	**81**	**3.8**	77.6		85.2
40/60 b/s	**82**	**4.2**	77.8		86.2
30/70 b/s	**83**	**5.9**	76.6		88.4
20/80 b/s	**83**	**6.4**	76.7		89.5
	82				

Notes: 1. S.D. = Standard Deviation. 2. The red numbers are the average age at which the money is depleted for each draw rate across all six asset allocations.

Chapter 6: Logical Equity Portfolio Allocation

Canada, the U.S., Europe, Asia, ... so many choices when it comes to buying stocks! How does one decide how much of an equity portfolio to allocate to each one?

Actually, it turns out that this is pretty simple. But first, some background.

Market Efficiency

The stock prices found in the business news are those arrived at between millions of willing buyers and willing sellers[25]. In other words, **the prices arrived at are deemed fair by all market participants**.

A key observation confirming fairness is the fact that *even professional investment managers consistently fail to produce risk-adjusted returns greater than those of the overall market*.

Sure, some do better, sometimes much better, and sometimes over extended periods of time. *But this doesn't mean they're prescient or more skillful;* it just means they're *lucky*.

In this regard, the correct question to ask is not whether some managers do better than others (or better than the overall market) but, rather, *whether the distribution of winners and losers differs from what one would expect if the entire process were completely* ***random***.

And as it turns out, this is exactly what studies find: the distribution of winners and losers among professional money managers is, in fact, random[26]. **And this is exactly what we would expect to find if stock prices represent a fair reflection of value given all that is knowable and guessable**.

---

[25] Investors base their hunches about fair price on all that is known and all that is guessed about each company, their respective industries, the respective countries where they each do business, the overall global economy, the estimated impact of government policies, etc., etc. Because over-estimates are as likely as under-estimates, the average of all this guessing produces a fair price for each stock (often referred to as "the wisdom of the crowd").

[26] Performance rankings are random when measured on a *pre-cost* basis, meaning before taking into account the fees investors pay to the manager. On an *after-cost* basis, some randomness is lost in that high-cost funds tend to be perennial losers, unable to overcome their high fees.

Scaling Up Fairness

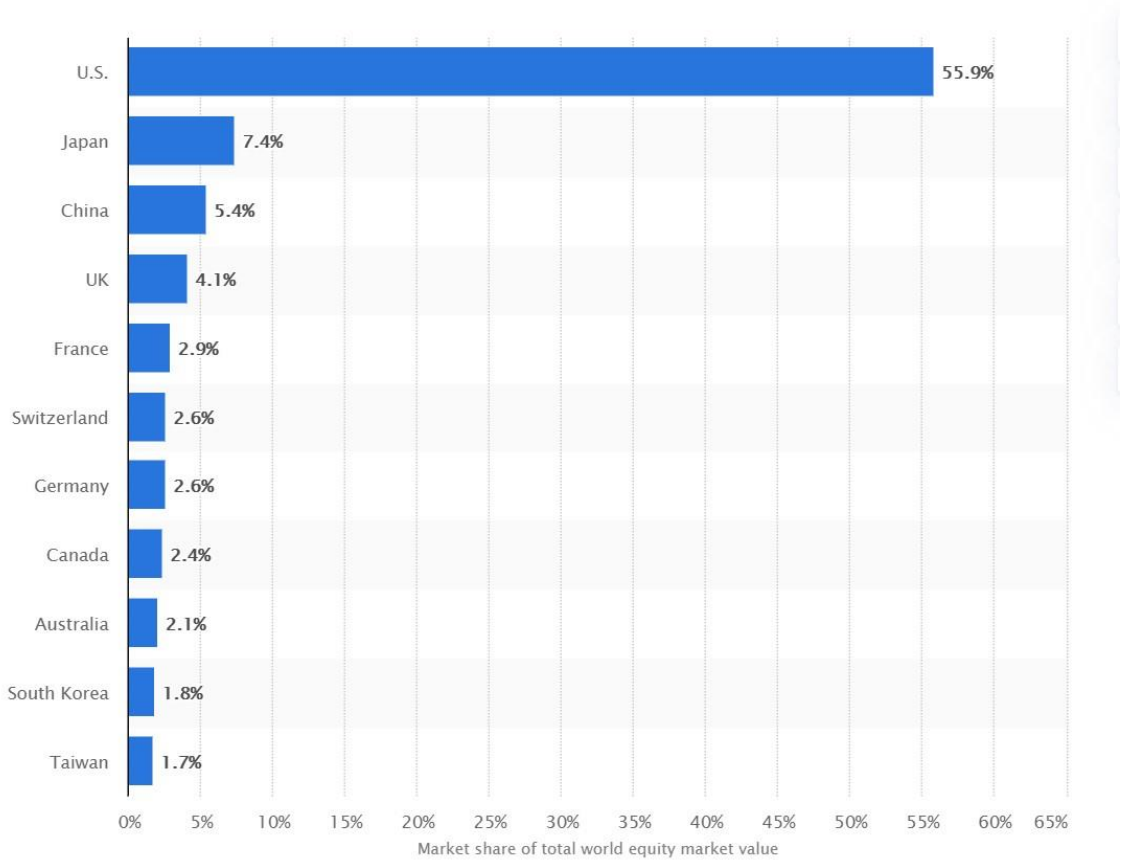
So, if individual stock prices are fair, it necessarily follows that *the value of each country's total stock market, comprising all its publicly-listed companies, must also be fair*.

For example, the total value of all publicly-listed Canadian stocks is roughly C$2.5 trillion while that of the U.S. stock market is about C$40 trilllion.

As of this writing, these represent the fair value of all stocks traded in these two countries.

Using Fairness for Equity Portfolio Construction

Here, then, is a graphic showing how much of the world's total value in publicly-traded stocks is found in the eleven largest markets:



Because individual stocks are fairly priced, the value of each country's total stock market is also fairly priced, which means that the total global equity market must also be fairly priced.

Therefore, *to build an equity portfolio that reflects this fair pricing one need only mimic the percentage representation of each country in one's equity portfolio*.

For example, given that the value of U.S. stocks represents 56% of the world total, an equity portfolio would allocate 56% of its cash to a broadly-diversified basket of U.S. stocks. Canadian stocks, by way of contrast, only make up about 2-3% of the world total and so would only receive this allocation in an investor's equity portfolio.

This, then, is how to logically construct a globally-diversified equity portfolio and the process is known as following a capitalization-weighting allocation.

The Implication of Over-Weighting or Under-Weighting

There is a tendency among investors to over-weight their equity portfolios with stocks from their own country, a phenomenon known as "Home-Country Bias". Put it down to feeling more comfortable investing in companies they're familiar with.

However, there is an underlying assertion in doing so that simply doesn't hold up to scrutiny. For example, let's say a Canadian investor allocates 25% of their stock portfolio to Canadian stocks. In doing so, **what they are essentially saying is this**:

"*I believe Canadian stocks are worth 10x more than what the rest of the world believes them to be worth*."

Needless to say, this is a bold assertion (even if made unwittingly), and one that is almost assuredly *wrong*.

Conclusion

I have made the case that stock prices are fair. If correct, allocating an equity portfolio in a logical manner becomes a straightforward process – simply follow country weightings in the global equity index.

Fortunately, there are low-cost mutual funds and exchange-traded funds that mirror the All-Country global index, thus making this entire process a simple one-step undertaking.

Kind regards,

Rob Rienzo

Chapter 7: Why Stock Diversification is Essential

There are four main reasons investors should broadly diversify[27] their stock portfolio:

1. It materially **reduces portfolio volatility** (i.e. the standard deviation of returns).

2. It renders the portfolio "efficient", **maximizing return per unit of risk**. After all, why take on additional risk if no additional return is expected?

3. It **captures the risk rewarded by the markets** and avoids the risk not rewarded by the markets.

4. It **minimizes the risk of holding the "wrong" stocks**.

Portfolio Volatility Reduction

The table below shows how the variability of year-to-year returns (as measured by standard deviation) varies as the number of stocks held in a portfolio increases:

Number of Stocks Held[28]	Yearly variability (std. deviation)	Variability reduction as % of potential	Diversifiable variability[29]
1	40%	0	34%
5	27%	75%	15%
10	24%	85%	11%
20	23%	93%	8%
50	22%	97%	5%
100	22%	98%	4%
All stocks	22%	100%	0%

[27] Ideally, broad diversification means holding *every single one* of the world's publicly-traded stocks. Fortunately, there are investment products, particularly among exchange-traded funds, that render this task completely straightforward.

[28] This analysis assumes diversity in the stock holdings, meaning stocks are selected from different industries to minimize correlation of returns.

[29] "Diversifiable variability" is a measure of how much a portfolio's return could vary from the overall market in any given year. For example, the diversifiable variability of 5% for the fifty-stock portfolio means that it's return in any given year has about one chance in three of deviating by +/- 5% from the "All stocks" scenario (e.g. if the total market is up 3%, there is one chance in three the fifty-stock portfolio could be up as much as 8% or down as much as -2%).

Key Observations

1. As the number of stocks held increases, the year-to-year variability in returns decreases, quickly at first and then slowing materially after about twenty stocks are held. The reason for this reduction in variability is that stocks in different industries and countries do not move in perfect unison because they are impacted by different factors (e.g. the factors that impact the profitability of an oil company are not the same as those impacting, say, a clothing retailer).

2. The variability of returns year-to-year for a one-stock portfolio is almost double that of a twenty-stock portfolio (i.e. 40% vs. 23%).

3. A fifty-stock portfolio achieves roughly 97% of all possible reduction in portfolio-return variability.

4. Even a portfolio holding 100 stocks, although generally considered well-diversified, is still capable of posting a return in any given year that differs materially from that of the overall market.

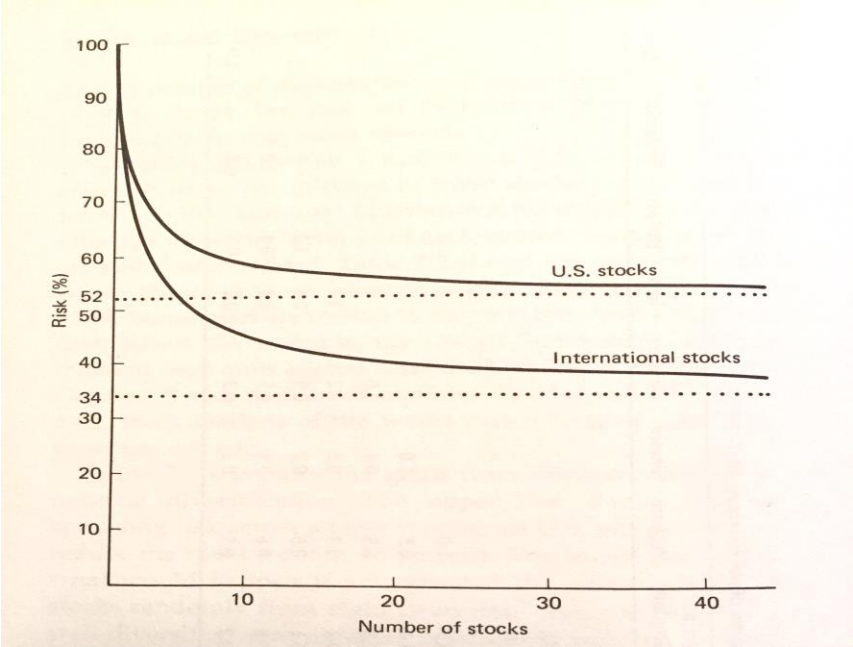
   Specifically, we interpret its 4% "Diversifiable Variability" figure as follows:

   - It has 1 chance in 3 (33% odds) of posting a return that differs from that of the overall market by +/- 4% (i.e. one standard deviation).
   - It has 1 chance in 20 (5% odds) of posting a return that differs from that of the overall market by +/- 8% (i.e. two standard-deviations).

   So, if the overall market goes up 3% one year, a 100-stock portfolio, being not fully diversified (this can only be achieved by holding *every* available stock), could potentially post a return ranging anywhere from -5% to +11%, and this due to nothing more than lack of full diversification.[30]

[30] This, of course, casts considerable doubt on any assertion that one mutual fund manager is better than another; clearly the difference could be due to nothing more than the random impact of imperfect diversification. Of course, full diversification means a total-market index fund and, therefore, no need for a manager because there are no stocks to select – such a fund holds them all (or, at the very least, a sub-set specifically chosen to track the total index very closely).

The graph below[31] visually conveys this same concept:



Key Observations

1. Once again, as the number of stocks held increases, risk[32] decreases.

2. The benefit of global diversification is evident. When non-U.S. stocks are added to a U.S. stock portfolio, risk is reduced. Again, the reason for this is that international stocks do not move in lock-step with U.S. stocks. In other words, combining assets with non-perfect correlation reduces risk.

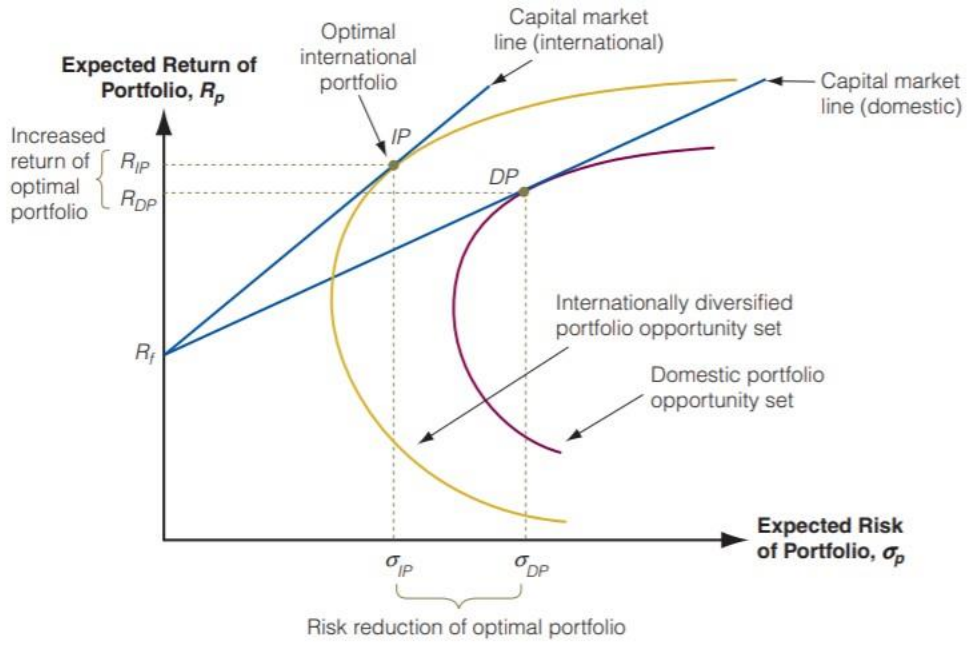
3. Adding more and more stocks does not materially reduce portfolio volatility. Beyond about fifty globally-diversified stocks, portfolio volatility is reduced to roughly that of the total global equity market. However, as mentioned in Point 4 on the previous page, the return of such a portfolio can still diverge materially from the overall market from time to time, this due to incomplete diversification (i.e. not holding ALL publicly-traded stocks worldwide).

[31] Taken from "*An Introduction to Risk and Return from Common Stocks*", by Richard A. Brealey.

[32] Here risk is defined as portfolio volatility and is measured by the standard deviation of annual returns.

Maximizing Return Per Unit of Risk

The chart below plots yearly returns against risk (as measured by standard deviation).



Glossary

- **R_f** = the risk-free rate of return, for a Canadian investor typically the interest rate offered on Government of Canada 30-day treasury bills (i.e. an IOU they sell to investors that has a maturity date 30 days from the date of issue). Such a security is considered risk-free because it is backed by the full taxation powers of the Federal Government and is has a very short period to full repayment, thus minimizing the chance of something awful happening in the interim.

- **IP** (optimal global portfolio). This is the globally-diversified portfolio that maximizes return per unit of risk. In other words, there is no other combination of global stocks that provides a better trade-off of risk and return than this particular mix of stocks.

  Given what we learned in Chapter 6 about the fairness of stock prices, it follows that the optimal global portfolio is the one that holds *all available publicly-traded stocks worldwide* (such as represented by the MSCI All-Country World Index).

- **DP** (optimal domestic portfolio). If one restricts their stock portfolio to just their own country, this is the portfolio of domestic stocks that maximizes return per unit of risk. Each country has its own optimal portfolio. Again, referencing Chapter 6, the optimal domestic portfolio is the one that holds all publicly-traded domestic stocks. In Canada this is roughly the TSX Composite Index (but lacks small-company stocks).

- **Capital Market Line**. The CML is a graphical representation of all portfolios consisting of differing combinations of the risk-free asset and the optimal global or domestic portfolio. Those portfolios to the right of the optimal portfolios can only be obtained by borrowing to invest in the optimal portfolio (borrowing increases the risk of investing).

- **Opportunity set**. This is a graphical representation of the outer boundary of the risk/return measures for all possible combinations of global stocks (for the global opportunity set) or domestic stocks (for the domestic opportunity set). There are no combinations of stocks that produce risk/return measures to the left of or above the global opportunity set.

Key Observations

1. The optimal global portfolio (IP) maximizes return per unit of risk and so is referred to as "efficient". Any deviation from this portfolio either increases risk without a suitably-commensurate increase in return or decreases risk but with too great a decrease in return. In both instances, return per unit of risk is compromised, leading to a portfolio referred to as "inefficient".

2. Diversifying globally reduces portfolio risk (as measured by portfolio volatility).

3. By expanding the range of investment opportunities, global investing also has the *potential* to increase return, although there is no particular reason that the returns of any given country should prove, *in foresight*, better than any other. In other words, the benefit of global diversification lies mainly with risk reduction, not greater return.

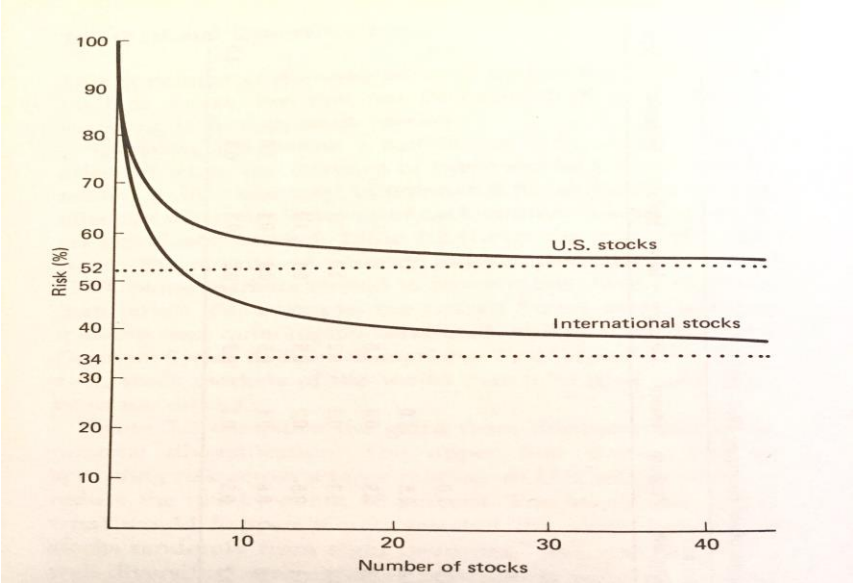
Rewarded Risk vs. Unrewarded Risk

A stock investor is only rewarded for taking on risk that *cannot be diversified away*. For example, we've seen that holding just one stock is roughly twice as risky as holding a portfolio of twenty stocks. The market does not reward this extra risk because it's so simple to diversify away.

Risk that cannot be diversified away is referred to as 'market risk', this being the risk that most stocks worldwide go down at the same time. This was experienced during the 2008 Financial Crisis that sent virtually all stocks around the world tumbling in tandem. No matter how many stocks an investor held at that time, they could not avoid taking a pummeling.

Market risk, then, is simply the unavoidable risk of investing in stocks. On the upside, *it's the sole reason stocks provide a better long-term return than bonds* – **because they're riskier than bonds**. If they weren't, there would be zero expectation of a better return.

The concept of rewarded and unrewarded risk is illustrated below in the graph we've already seen:



Key Observations

1. Global portfolio risk levels off at about 34% of that of a one-stock portfolio. Therefore, even owning every publicly-traded stock in the world cannot reduce portfolio volatility below this level of risk. This unavoidable risk is referred to as 'market risk' and is the risk that an investor fully expects to be rewarded for.

   Because the higher risk of an undiversified portfolio has no expectation of higher return, such portfolios should be avoided. After all, why take on greater risk if there's no additional reward for doing so? Imperfectly-diversified portfolios are said to be *inefficient* in that they do not optimize return per unit of risk.

2. Market risk of a globally-diversified portfolio is less than that of a domestic-only portfolio. This is why Home Country bias should be avoided; it results in an inefficient portfolio, taking on risk that has no expectation of reward.

Risk of Holding the Wrong Stocks

The table below shows the results of a study that looked at the difference in returns between U.S. stocks in the bottom-quartile of returns and those in the second-quartile:

Year	Bottom-Quartile Return	Second-Quartile Return	Return Differential
1929	-54%	-5%	49%
1939	-25%	+15%	40%
1949	+4%	+35%	31%
1959	-3%	+27%	30%
1969	-37%	-6%	31%
1979	+5%	+53%	48%
1989	-5%	+39%	44%
AVERAGE			**39%**

Key Observations

1. On average, there was a thirty-nine-percentage-point difference in return between a portfolio of stocks in the bottom-quartile versus the second quartile. In other words, holding the wrong bunch of stocks can have an enormous impact on portfolio return. For example, the study found that the median return in 1959 was 9%, a good year for stock returns. However, the bottom quartile of stocks returned -3%. In other words, lack of diversification can result in a return that is materially different from that of the overall market.

2. The return differential over the decades held fairly stable, meaning there is no reason to expect that lack of diversification won't continue to be punished going forward.

Conclusions

Broad global diversification of a stock portfolio is essential to **reduce portfolio volatility, maximize return per unit of risk, avoid unrewarded risk,** and **minimize the risk of holding the "wrong" stocks**.

Kind regards,

Rob Rienzo

Chapter 8: Naming a Loved-One as Your Executor? Don't!!!

In May of 2016 my dear father-in-law, Russell, died at the age of 98. I, along with my step-mom Elsie, were named as co-executors.

Feeling a duty to fulfill Russ's wishes, and seeing this as an opportunity to augment my professional knowledge through first-hand experience of being an executor, I decided to take on the role. Little did I know what a learning experience this would prove to be!

Caution – Danger Ahead!

This essay is a cautionary tale about naming a friend or family member as your executor (or personally taking on an executorship). My message is clear: ***don't do this to someone you care about, and don't do this to yourself***.

Simply put, being an executor is *not* an honor. What it is, in fact, is a whole lot of mentally- and physically-taxing work. It is time-consuming, nit-picking, frustrating, emotionally-fraught and, at times, both time-sensitive and technically demanding.

And one more thing – *an executor is personally financially responsible for any mistakes they make*! Ouch!

Now, it's not that a lay executor is not *capable* of fulfilling the executor role – for many estates a friend or relative can likely stumble their way through the administration. The question is, ***do you really want to do this to someone you care about*?**

In my opinion, you really don't – ***appoint a trust company instead***. (see Appendix A)

Of course, the typical reaction to this suggestion is that naming a child or friend saves money by not having to pay a trust company.

Yes, that's likely true, ***but only if you completely discount the value of your executor's personal time and ignore the potential impact on their mental and physical well-being***.

Certainly, a trust company is going to cost money, usually 5% (or less) of the probatable[33] value your estate. But what you should ponder is this: ***is there really a meaningful, life-changing difference between a beneficiary inheriting, say, a million dollars instead of $950,000*****?** Really?

Consider these points:

1. **There is no magical "correct" inheritance amount**. You could die next week or decades from now – the value your estate is not set in stone. Your beneficiaries will get more, or less, depending on when you die. And if it's less due to hiring a trust company as executor, how is this any different?

2. **A balanced portfolio can easily decline 5% in value or gain 5% in value, often in a week or less**. Such a decline is equivalent to paying out part of your estate to a trust company. And such a gain could easily pay for a trust company's expertise and time with no diminishment in the pre-gain estate value.

3. Lastly, by the time of your death, **if the quality of *your beneficaries' lives* hinge on the size of *your* estate, who exactly is to blame for that?**

In short, in the big scheme of things, a trust company's executor fee is immaterial.

Russ's Estate

My father-in-law's estate was about as simple as they come, consisting of the following assets:

- Joint ownership of a condo with Elsie.
- GICs.
- A mutual fund.
- A few RRIFs.
- A pension from his former employer.

Now keep in mind that this was a *first-death* situation which is far simpler and much less work than a last-death situation because, in most instances, the primary task is simply to re-register assets in the name of the surviving spouse. Yes, there was a second-marriage complication with children from both sides of the family having an interest in the estate, but other than this wrinkle, Russ's estate was about as straightforward as they come.

[33] In Canada, each Provincial government charges a 'probate fee', this to guarantee that the deceased's will is their official and final one. Once obtained, no other will can challenge its authority. Assets that have named beneficiaries (such as life insurance and RRSPs) bypass probate and so do not attract a probate fee. So, only assets without named beneficiaries (such as an investment account or a house) enter into the probate fee calculation.

In addition, because Russ and Elsie lived about a six-hour drive from where I do, Elsie had to take on some of the administrative tasks such as dealing with the nursing home, visiting the bank and funeral home on a few occasions, meeting the lawyer a handful of times, contacting Russ's pension plan administrator, among other tasks. ***Her hours are not logged here.*** However, had I been sole executor, the time spent on Russ's estate would have been even greater than what I document below.

My Life as an Executor

As executor, I kept a log of the time I spent on the various estate administrative tasks, both out of professional curiosity and as a means of periodically reporting to the beneficiaries about what I was up to on their behalf.

Here, then, is a summary of the hours I put in (excluding my multiple 12-hour round-trips to and from Russ's home town):

• **Communicate with Elsie and the estate beneficiaries**:	10
• **Prepare for the funeral service**:	4
• **Review the estate assets and liabilities**:	5
• **Prepare and file tax documents**[34]:	12
• **Meet with financial institutions**:	5
• **Meet and communicate with the lawyer**:	5
• **Deal with non-tax-related government documents**:	3
• **Prepare for the distribution of the estate**:	3
TOTAL TIME LOST OUT OF MY LIFE, FOREVER	**47 HOURS**

Of course, these 47 hours weren't completed in one go. No, they were spread over many, many days, weeks, and months, thus serving as a long-standing, ever-present obligation and interruption to a normal life.

[34] While I was a financial advisor for 33 years, I had never before been an executor, and so almost missed a tax-filing deadline that would have entailed penalties and interest being applied by the CRA – ***for which I would have been personally liable***.

And a Further Caution!

My dad passed away in late 2020, age 95, leaving my brother Dale and I to serve as our mom's Power of Attorney for Property (she has advanced dementia).

Thus, aside from transitioning mom to a nursing home, we had to take on the task of preparing mom's house for sale, **a duty often falling to an executor**. Here is what we encountered:

- Against all safety sense, my dad had mounted a 50-lb furnace blower into the peak of his garage attic, suspended in place only by two rather thin, bowing pieces of plywood! With a fair degree of danger involved, Dale managed to scale some fifteen feet to the peak of the attic, rig a thick rope around the blower, removed its supporting planks, and then we both gingerly lowered it to the ground.

- We discovered a large stash of industrial chemicals (mostly paint thinners and lubricants) that even the City hazardous waste disposal site would not take! We ultimately had to contact the Provincial Ministry of the Environment for guidance, the end result being a hefty bill to a specialist chemical-removal company and the house being registered as a toxic waste site!

- Our dad had managed to cut up and store in the attic of the garage a large cherry tree, in its entirety, this purportedly to be used as emergency heating in case of an extended power failure, a scenario that never actually played out during the fifty-plus years that tree was in the attic! Dale and I had to remove and dispose of every branch and twig.

- Also in the garage attic was an abundance of very heavy, very thick scaffolding boards he used for periodically painting the house exterior. Being too large to get down safely if left intact, each one had to be cut into segments before we could get them out of the attic (to say nothing of the heavy angle-iron scaffolding bracing also stored in the attic).

- All our parents' household effects had to be sorted into four piles: 1) Items the family may want. 2) Items that could be sold. 3) Items that could be donated. 4) Garbage. We ended up donating about thirty large garbage bags of their belongings and filled five "Got-Junk" trucks with garbage.

- A full-sized chest freezer in their basement had to be drained of refrigerant by a specialist company and then cut in half before it could be taken away by a metal recycling company.

- Wood posts supporting their back porch had to be replaced as they were rotting and so posed a significant safety risk.

- Cleaning and painting the place took hours, and hours, and hours, and hours, …….

- Old carpet hiding original wood floors in the three bedrooms had to be removed, staples lifted, and the wood flooring repaired and cleaned.

- Old carpeting in the basement had to be removed, parts of the old underpadding scraped off the cement, and the cement repaired and painted.

- Our dad never threw anything of potential value away. As a result, the studs in his garage hosted hundreds of nails, each one holding obscure items that he *may* need at some point (but never did)! Every item had to be removed and the nails pulled.

There was so much more; final bill payments, asset re-registrations, official notifications, but you get the picture.

Without doubt, being an executor is hard work, decidedly time-consuming, a personal financial liability, and sometimes, if your dad is like ours, even dangerous!

Do you really want to do this to someone you care about?

CONCLUSION

In my opinion, **most people should give serious thought to appointing a trust company as their executor**, this to spare friends and family from having to take on this decidedly-onerous task.

In this regard, my wife and I have taken this guidance to heart and have a trust company named in our wills to serve as our eventual executor. No doubt our friends and family will breathe a sigh of relief when our time comes!

Best regards,

Rob Rienzo

Appendix A: Estate Complexity Questionnaire

Estate Complexity Questionnaire

The following issues tend to pose challenges for a lay executor. To help assess the complexity of your estate, tally your answers to the following points:

Family Dynamics	**Yes**	**Possibly**	**No**
• Second marriage?	____	_____	____
• Blended family?	____	_____	____
• History of acrimony among family members?	____	_____	____
• Financial distress among any beneficiaries?	____	_____	____
• Health or drug concerns among any beneficiaries?	____	_____	____
• Are you planning an unequal distribution?	____	_____	____
• Are there any estranged family members?	____	_____	____
• Have any beneficiaries played a major care-giving role and expect monetary recognition?	____	_____	____
• Do any beneficiaries have sentimental attachment to specific assets?	____	_____	____
Executor Specific			
• Do you currently name multiple executors? If so, do you foresee any disagreements over how to manage your estate?	____	_____	____
• Are there any potential conflicts of interest?	____	_____	____
Estate Issues			
• Does your estate hold any complex assets such as rental real estate or private corporations?	____	_____	____
• Do you own any assets overseas?	____	_____	____
• Are there any debts to manage?	____	_____	____
• Do you own a cottage?	____	_____	____
• Are you part-owner of any family-owned assets?	____	_____	____

Will Structure

• Did you draft your own will?	____	_____	____
• Are all will directives absolutely clear as to your wishes?	____	_____	____
• Do you specify the use of trusts?	____	_____	____
• Are any charities listed as significant beneficiaries?	____	_____	____
TOTALS:	____	_____	____

If you marked two or more issues in the "Yes" or "Possibly" columns, a lay executor may struggle to serve as your executor. You may wish to consider a trust company as a better alternative.

SUGGESTED READING

1. A Random Walk Down Wall Street, Burton Malkiel
2. Index Funds – The 12-Step Program for Active Investors, Mark Hebner
3. Common Sense on Mutual Funds, John Bogle
4. The Quest for Alpha, Larry Swedroe
5. The Wall Street Self-Defense Manual – A Consumer's Guide to Intelligent Investing, Henry Blodget
6. Unconventional Success – A Fundamental Approach to Personal Investment, David Swenson
7. Investment Management: Portfolio Diversification, Risk, and Timing – Fact and Fiction, Robert L. Hagin
8. An Introduction to Risk and Return from Common Stocks, Richard A. Brealey
9. Investment Markets, Roger Ibbotson & Gary Brinson
10. Head First Statistics, Dawn Griffiths (*this is an excellent introduction to statistics and probability*)

Appendix: t-Distribution Table

t-distribution

	Confidence Level									
	60%	70%	80%	85%	90%	95%	98%	99%	99.8%	99.9%
	Level of Significance									
2 Tailed	0.40	0.30	0.20	0.15	0.10	0.05	0.02	0.01	0.002	0.001
1 Tailed	0.20	0.15	0.10	0.075	0.05	0.025	0.01	0.005	0.001	0.0005
df										
1	1.376	1.963	3.133	4.195	6.320	12.69	31.81	63.67	—	—
2	1.060	1.385	1.883	2.278	2.912	4.271	6.816	9.520	19.65	26.30
3	0.978	1.250	1.637	1.924	2.352	3.179	4.525	5.797	9.937	12.39
4	0.941	1.190	1.533	1.778	2.132	2.776	3.744	4.596	7.115	8.499
5	0.919	1.156	1.476	1.699	2.015	2.570	3.365	4.030	5.876	6.835
6	0.906	1.134	1.440	1.650	1.943	2.447	3.143	3.707	5.201	5.946
7	0.896	1.119	1.415	1.617	1.895	2.365	2.999	3.500	4.783	5.403
8	0.889	1.108	1.397	1.592	1.860	2.306	2.897	3.356	4.500	5.039
9	0.883	1.100	1.383	1.574	1.833	2.262	2.822	3.250	4.297	4.780
10	0.879	1.093	1.372	1.559	1.813	2.228	2.764	3.170	4.144	4.586
11	0.875	1.088	1.363	1.548	1.796	2.201	2.719	3.106	4.025	4.437
12	0.873	1.083	1.356	1.538	1.782	2.179	2.682	3.055	3.930	4.318
13	0.870	1.079	1.350	1.530	1.771	2.160	2.651	3.013	3.852	4.221
14	0.868	1.076	1.345	1.523	1.761	2.145	2.625	2.977	3.788	4.141
15	0.866	1.074	1.341	1.517	1.753	2.131	2.603	2.947	3.733	4.073
16	0.865	1.071	1.337	1.512	1.746	2.120	2.584	2.921	3.687	4.015
17	0.863	1.069	1.333	1.508	1.740	2.110	2.567	2.899	3.646	3.965
18	0.862	1.067	1.330	1.504	1.734	2.101	2.553	2.879	3.611	3.922
19	0.861	1.066	1.328	1.500	1.729	2.093	2.540	2.861	3.580	3.884
20	0.860	1.064	1.325	1.497	1.725	2.086	2.529	2.846	3.552	3.850
21	0.859	1.063	1.323	1.494	1.721	2.080	2.518	2.832	3.528	3.820
22	0.858	1.061	1.321	1.492	1.717	2.074	2.509	2.819	3.505	3.792
23	0.857	1.060	1.319	1.489	1.714	2.069	2.500	2.808	3.485	3.768
24	0.857	1.059	1.318	1.487	1.711	2.064	2.493	2.797	3.467	3.746
25	0.856	1.058	1.316	1.485	1.708	2.060	2.486	2.788	3.451	3.725
26	0.856	1.058	1.315	1.483	1.706	2.056	2.479	2.779	3.435	3.707
27	0.855	1.057	1.314	1.482	1.703	2.052	2.473	2.771	3.421	3.690
28	0.855	1.056	1.313	1.480	1.701	2.048	2.468	2.764	3.409	3.674
29	0.854	1.055	1.311	1.479	1.699	2.045	2.463	2.757	3.397	3.660
30	0.854	1.055	1.310	1.477	1.697	2.042	2.458	2.750	3.386	3.646
40	0.851	1.050	1.303	1.468	1.684	2.021	2.424	2.705	3.307	3.551
50	0.849	1.047	1.299	1.462	1.676	2.009	2.404	2.678	3.262	3.496
60	0.848	1.045	1.296	1.458	1.671	2.000	2.391	2.661	3.232	3.460
70	0.847	1.044	1.294	1.456	1.667	1.994	2.381	2.648	3.211	3.435
80	0.846	1.043	1.292	1.453	1.664	1.990	2.374	2.639	3.196	3.417
90	0.846	1.042	1.291	1.452	1.662	1.987	2.369	2.632	3.184	3.402
100	0.845	1.042	1.290	1.451	1.660	1.984	2.365	2.626	3.174	3.391
∞	0.842	1.036	1.282	1.440	1.645	1.960	2.327	2.576	3.091	3.291

Note: df = "Degrees of Freedom" = Number of data points minus 1