The Long-Term Stock Trading Problem

by: Guy R. Fleury

The objective is simple: build a long-term investment fund to provide a steady and meaningful income stream once you retire and leave a worthwhile legacy for your children.

You can do all that by building a long-term stock portfolio. Such an endeavor can take decades. However, you are not limited to only using stocks to do the job; you could use other long-term appreciating assets such as real estate, building businesses, amassing collectibles, or whatever you like, including doing your job.

This article will only discuss self-managed stock portfolios as a tool for creating a multipurpose and long-lasting investment and retirement fund.

For this, we need knowledge and plan for the many years ahead. We need a sound investment strategy with acceptable risks and the assurance that we will reach our goals.

A stock trading strategy presents a set of challenges. It's not necessary to tackle all of them at once. Some may be better addressed once your portfolio has grown in size. However, depending on your investment choices, many of these issues can be resolved and planned for from the start.

Furthermore, some of these challenges can be easily overcome with basic knowledge. We have readily available, common-sense solutions to many of these problems, reassuring us that we will emerge as winners in this game.

While your job may have a fixed retirement date at age 65, the same does not apply to your stock portfolio. Even after retirement, a self-managed stock portfolio will use more time sitting on your bunnies than anything else.

But foremost, you need to decide whether to do it or not. It is not afterward that you should realize you should have done it. You do not need much expertise to determine that you need a retirement plan and that it should be substantial enough to afford you your desired future lifestyle. Barely getting by once you retire should not be enough. You should aspire for more.

It will not be the first few years that will matter the most; it will be the last few. Delaying for years to start building your retirement fund can be very expensive.

My previous articles have consistently suggested that investing in QQQ shares over the years for your retirement fund can potentially lead to a substantial retirement fund. The QQQ strategy allowed you to sell some shares once you're retired, providing you with a growing income stream for your living expenses while your stock portfolio continues to grow. This approach offers a promising path toward financial freedom and security in your retirement years.

It could be a no-hassle approach, totally self-managed, and would only take up very little of your time (like 5 minutes a week, even less). And yet, you would still reap all its rewards. (See the list of references at the end of my last article: **The MoonPhaser Stock Trading Program**). Buying the QQQs requires a single decision and should be considered as the bare minimum you can do, and it requires no skills.

The prior article: **Anticipating A Stock Portfolio's Long-Term Outcome** made the same point showing that investing in QQQ over the last 20 years, greatly exceeded investing in SPY or DIA, all proxies for market indexes ($NDX, S&P 500, $INDU).

A single decision to solve most of the potential problems that require no time while telling you that you will make it, you will win, and you will do better than the market average.

Instead of contributing to some outside managed retirement fund, your contributions would go to your self-managed fund, where you control everything. You can contribute to it at will without restrictions, use some of your growing funds for emergencies or other purposes, and later put the money back toward the realization of your initial goals, that is, building that retirement for its future income stream and building a legacy fund for your children.

No matter your age, building a retirement fund is not for immediate gratification. It will take years and years. Depending on your current age, you might have years before reaching 65 and many more before you die. Even 105+ sounds reasonable for an optimist; on the caveat, you still have your head. For a 25-year-old, you have 40 years to build that retirement fund and another 30+ years to enjoy its rewards. You will be planning for some 70+ years ahead. Less and less as you approach 65, but still left with planning your 30+ retirement years.

You will get to a point where you will have more than enough to enjoy life, depending on how much you need to do so. Having a 50-room mansion or a 10-car garage might be an overkill. Nobody needs to have lunch 20 times a day. Nonetheless, some 40 to 70 years of compounding can do wonders. It might depend on your investment skills and opportunities. But in the end, it will all depend on you and your choices.

For starters, **The $120,000 Duct Taped Banana on The Wall Thing** should not be considered an investment for obvious reasons. You want your investments to last, to stand the test of time, even in this changing world.

The primary interest should be the future value function: $F(t) = F_0 \cdot (1 + \bar{g})^t$ where $\bar{g}$ is the average growth rate applied to your initial capital F_0 over so many years t. You could also view it as with multiple investments, each over their time intervals, growth rates, and initial capital: $\sum^n F_i(t_i) = \sum^n (F_{0_i} \cdot (1 + \bar{g}_i)^{t_i})$ where each investment (for $i = 1$ to n) would contribute to the total. However, such an equation is hardly predictable since each investment might be independent of the others and will deal with a potential future outcome where the variables are unknown. Nonetheless, your trading strategy should account for this and adapt.

Some might say they do not care about the math. Who needs it? A reply might be: do not worry; the math does not care about you either. The future value equation will take a central stage in the development of your retirement fund, setting objectives, milestones, and monitoring. No matter your investment choices, there will be an outcome that will comply with the future value equation that you have won or lost.

There are only so many variables in the future value equation. You already know some of them, such as F_0, the initial capital you have on hand, and t, which will determine how long you have before retirement. These two are determined outside any trading strategy, leaving you with only one unknown: $\bar{g}$.

Your retirement fund has two phases to consider: your growing portfolio value before retirement and after. It will all depend on $\bar{g}$ your average growth rate, which is somewhat unknown until you reach retirement age. For equation, we have:

$$F(t) = [F_0 \cdot (1 + \bar{g}_{t<65})^t] \cdot (1 + \bar{g}_{t>65} - \bar{w}_{t>65})^{t-65}$$

where $w_{t>65}$ is the withdrawal rate while in retirement such as taking 5% per year for living expenses.

Withdrawals would not stop the portfolio from growing unless the growth rate were less or equal to the 5% withdrawal rate ($\bar{g}_{t>65} \leq 0.05$). Also, that 5% withdrawal per year should be more than sufficient to cover all your living expenses and lifestyle, helping you determine how much your investment fund should grow to provide you with the desired income stream.

Your fund $F(t)$ is not only your portfolio's ongoing value but also will end up being your legacy. If you are 25, t can reach 70 to 80+ years. That is a lot of compounding. But whatever you do to build your retirement fund will depend on the growth rate you can achieve. There could be a big difference between the growth rate you desire and what you will actually get.

The Growth Rate

The main issue at hand is the rate of return on your capital over the long term. It's crucial to consider the potential risks and rewards. Merely achieving a partial return might not be sufficient to meet your financial goals.

First, your average rate of return $\bar{g}$ has to be positive. Second, it must last for up to 80+ years. Third, it has to be large enough to fulfill your aspirations. Having your portfolio increase, on average, by 2% net per year would give you after 40 years: $F(t) = F_0 \cdot (1 + 0.02)^{40} = 2.21 \cdot F_0$. Clearly, it is not enough to sustain any lifestyle.

Remember that, in recent years, we had places managing funds for negative returns, leaving you with even less than what you put in. If you get a 5% return with 3% inflation, you are only doing 2% net per year. And if you add 2% in management fees, you are down to having only preserved your capital at best.

It is not just a question of preserving your capital. It is more about how you will make it grow at a better average rate than average. We could write: $F(t) = F_0 \cdot \prod^n (1 + r_i)$ as a series of yearly returns. It is the same as writing:

$$F(t) = F_0 \cdot (1 + r_1) \cdot (1 + r_2) \cdot \cdots \cdot (1 + r_{n-1}) \cdot (1 + r_n)$$

where each return r_i is somewhat independent of the next and n could reach 80+ years. Viewed in this fashion, every single yearly return becomes important and will have its impact propagated to a future that is yet to unfold. If one year you have a 50% drawdown, it will not matter which year it was; it will reverberate til the end.

$$F(t) = F_0 \cdot (1 + r_1) \cdot (1 + r_2) \cdot (1 - 0.50) \cdot \cdots \cdot (1 + r_{n-1}) \cdot (1 + r_n)$$

That big 50% drawdown becomes more expensive as the years go by.

You cannot consider your investments as if dealing with a savings account with low return rates. You have to do better than that. It must be much better; otherwise, inflation, fees, and taxes will have the better of your savings.

You have to invest in something that will increase in value with time for years on end. You can resume the above equation to $F(t) = F_0 \cdot (1 + \bar{g})^t$ where $\bar{g}$ is the average return over all those years. Or, if you want to be more explicit:

$$\left[\frac{F_0 \cdot (1 + r_1) \cdot (1 + r_2) \cdot (1 - 0.50) \cdot \cdots \cdot (1 + r_{n-1}) \cdot (1 + r_n)}{F_0}\right]^{\frac{1}{n}} - 1 = \bar{g}$$

and this again no matter where in the series the 50% drawdown occurred. If you have more of these drawdowns, it will weigh you down.

One drawdown will reduce the outcome by 50%, two will take away 75% of your potential retirement fund, and three such drawdowns will leave you with a portfolio worth 12.5% of what it should have been without those disastrous drawdowns.

Mr. Buffett, over his long career, has had four such drawdowns and still managed to recuperate and more. Without those four drawdowns, his fund would be 16 times larger.

You would be better off having your 50% drawdown early in the series, giving you more time to recuperate. Nonetheless, a 50% drawdown will require a 100% rebound just to get even $(1-0.5)\cdot(1+1.0)=1.0$. If it occurs late in the series, you might have too few years to spread out the added effort and recuperate.

You are in charge of your self-managed investment/retirement fund. Your portfolio decisions are the ones to prevail. You do not have to be right all the time, but you might need to be right most of the time. And that is sufficient.

So, the job becomes seeking the highest possible returns while avoiding as much as possible those dreadful drawdowns that are dragging you down and delaying your potential achievement.

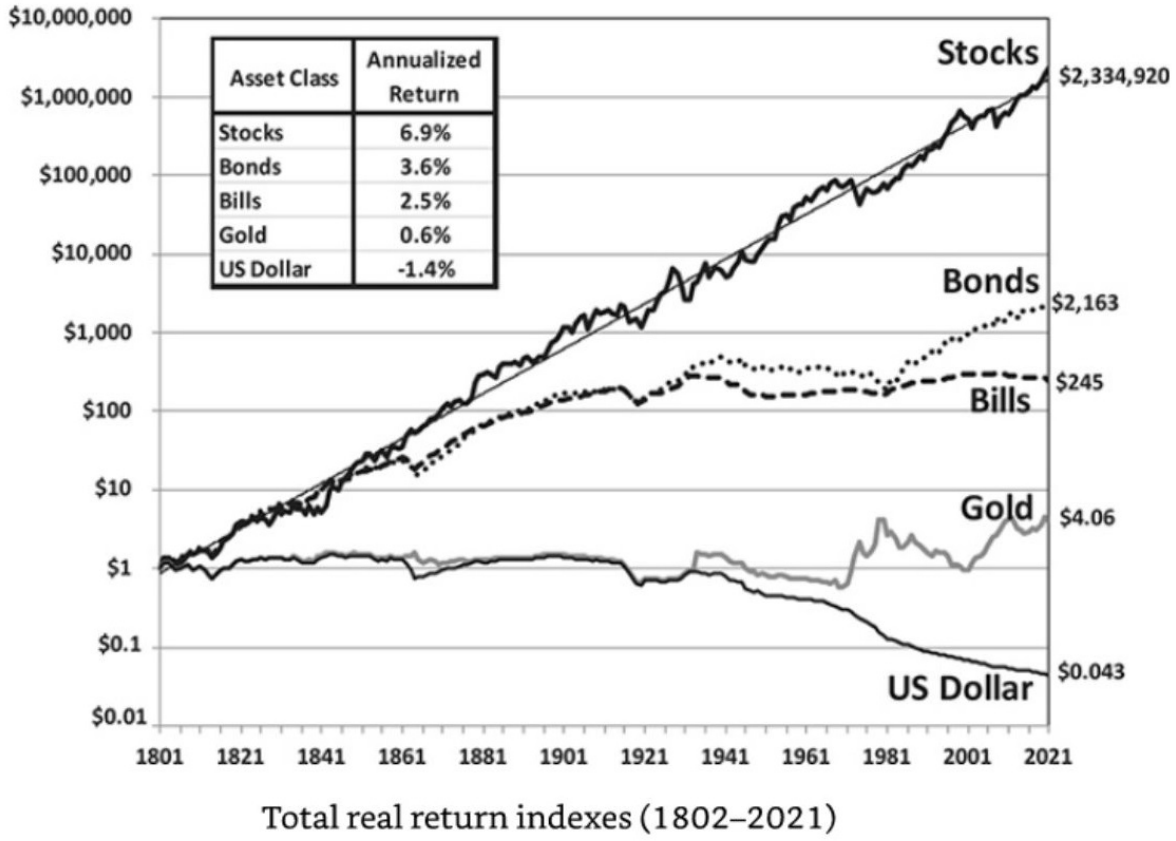

Figure 1: Total Real Returns Indexes (1802 – 2021)

The chart above shows the average return for a few asset classes over the last two centuries. Which asset class came on top? Selecting stocks is the easiest decision

to make by far. Notice that you are on a log scale and that the regression line is a good approximation for the market's average growth rate.

The big question is: Will those trends continue? We have 200+ years of history telling us what those averages were. Returns on savings accounts are about the same as T-Bills, which have kept about the same level for the past 80 years. If you want to select assets that will behave similarly over the following decades, reconsider. Real estate returns have been, historically, between stocks and bonds.

Even the average long-term return on stocks is not enough. What you should seek is $F(t) = F_0 \cdot (1 + \bar{r}_m + \bar{\alpha})^t$ where $\bar{r}_m$ is the average market return, and $\bar{\alpha}$ is the average long-term alpha, an expression for the know-how and expertise you will bring to the game.

From the above equation, $\bar{r}_m$ is the easiest to get. You can buy SPY (which is tracking the S&P 500) and hold for the duration and get $\bar{r}_m$. There is not even a need for expertise. It is a ready-made solution, and it will work for decades. However, by doing that, it is also all you will get, that is $\bar{r}_m$. SPY has no alpha; it is considered a benchmark tracking the S&P 500, a proxy for the market average. It is a one-to-one relationship.

Where will you get your long-term alpha from? And how much of it can you get?

The Alpha Thing

In modern financial literature, some have reduced alpha to any source of positive return, no matter its origin. They make no separation such that even r_m is considered an alpha source. I use alpha in the same sense as Jensen intended it in his 1969 paper, and as expressed in the equation: $F(t) = F_0 \cdot (1 + \bar{r}_m + \bar{\alpha})^t$, meaning the alpha is a premium return above the average market return. A negative alpha would reduce overall return, while a positive alpha would increase it.

Since the alpha is part of a compounding equation, it will also be compounding. In his paper, Jensen determined that the average alpha was negative for the average managed fund part of his study, meaning they hardly covered fees and expenses.

The individual investor would be better off going after an index fund. You want to go for the positive alpha. You do not need anyone to lose your money on your behalf.

Some of the alpha is easy to get. For instance, you could buy some.

In **Anticipating A Stock Portfolio's Long-Term Outcome**, the QQQ vs SPY vs DIA chart showed that over the last 20 years, QQQ easily exceeded market index proxies such as SPY or DIA. QQQ and SPY are value-weighted, while DIA is price-weighted.

Nonetheless, QQQ will continue to outpace SPY. The reason is simple and has nothing to do with better forecasting or understanding market forces. Picking the top 100 of a 500 list from the same group where stocks are ordered by value will result in the top 100 having a better average worth than the 500 in the listing. It does not matter which stocks make the top 100; they will represent the top 100 out of the 500 in the index. That is why QQQ outpaces SPY in the above-cited chart, and it will continue to do so for many years to come.

Selecting QQQ over SPY or DIA will not eliminate drawdowns. You will still have them. However, long-term trading or investing aims to hold stocks, participate in the market, and reap its long-term rewards. In this case, it would be QQQ's long-term average return.

Backtests help estimate whether a trading strategy might stand a chance in the future. The minimum it should do is outperform using its past market data. If your assumptions were reasonable and you did not make every effort to fit the data to your way of thinking, then your trading strategy might also survive going forward, like the MoonPhaser strategy described in my last article, which outperformed SPY over the last twenty years.

One More Thing

We can work at it, putting time, capital, and know-how into this retirement fund-building process, but we still need a general game plan.

	Init. Capital ($) 100,000	← Retirement Fund →									← Legacy Fund →					
	Age	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95
Potential With	Growth Rate	Start														
T-Bills	5.00%	100,000	127,628	162,889	207,893	265,330	338,635	432,194	551,602	703,999	898,501	1,146,740	1,463,563	1,867,919	2,383,990	3,042,643
Market Average	10.00%	100,000	161,051	259,374	417,725	672,750	1,083,471	1,744,940	2,810,244	4,525,926	7,289,048	11,739,085	18,905,914	30,448,164	49,037,073	78,974,696
QQQ	15.00%	100,000	201,136	404,656	813,706	1,636,654	3,291,895	6,621,177	13,317,652	26,786,355	53,876,927	108,365,744	217,962,218	438,399,875	881,778,739	1,773,572,004
QQQ+	20.00%	100,000	248,832	619,174	1,540,702	3,833,760	9,539,622	23,737,631	59,066,823	146,977,157	365,726,199	910,043,815	2,264,480,226	5,634,751,435	14,021,064,692	34,888,895,693
Better Strategy	25.00%	100,000	305,176	931,323	2,842,171	8,673,617	26,469,780	80,779,357	246,519,033	752,316,385	2,295,887,404	7,006,492,322	21,382,117,681	65,253,044,680	199,136,488,892	607,716,335,729
Higher Frequency+	30.00%	100,000	371,293	1,378,585	5,118,589	19,004,964	70,564,100	261,999,564	972,786,043	3,611,886,481	13,410,681,671	49,792,922,298	184,877,634,988	686,437,717,274	2,548,695,193,600	9,463,126,845,173
Business	35.00%	100,000	448,403	2,010,656	9,015,847	40,427,359	181,277,629	812,854,950	3,644,868,776	16,343,713,468	73,285,757,684	328,615,787,946	1,473,524,181,239	6,607,331,699,641	29,627,496,273,844	132,850,683,961,324
Business+	40.00%	100,000	537,824	2,892,547	15,556,810	83,668,255	449,987,958	2,420,143,236	13,016,111,155	70,003,769,659	376,497,074,131	2,024,891,623,976	10,890,353,127,735	58,570,932,805,709	315,008,533,652,978	1,694,191,496,033,790
	Fund Value	Minus the yearly 5% withdrawals														
	5.00%	The legacy for the children									703,999	703,999	703,999	703,999	703,999	703,999
	10.00%										5,776,355	7,372,256	9,409,074	12,008,628	15,326,390	19,560,789
Free Scenario	15.00%										43,139,692	69,476,905	111,893,251	180,205,199	290,222,276	467,405,877
Long-Term Objective	20.00%								Legacy Fund		295,623,561	594,604,574	1,195,962,183	2,405,507,133	4,838,334,061	9,731,617,989
With More Skills	25.00%										1,872,003,906	4,658,144,759	11,590,954,767	28,842,004,567	71,768,136,803	178,582,090,170
	30.00%										11,022,602,786	33,638,314,166	102,655,988,054	313,281,213,544	956,058,390,943	2,917,658,663,767
	35.00%										60,683,064,047	225,311,968,992	836,567,569,028	3,106,116,824,070	11,532,794,339,596	42,820,458,087,316
	40.00%										313,899,243,902	1,407,534,705,665	6,311,432,684,642	28,300,675,196,466	126,901,173,884,781	569,029,106,957,359
	Withdrawals	Withdrawals per 5 years														
	5.00%	based on portfolio average growth rates									176,000	176,000	176,000	176,000	176,000	176,000
	10.00%	and withdrawals at 5% per year									1,312,951	1,675,696	2,138,659	2,729,531	3,483,651	4,446,119
	15.00%	resulting in the total income stream for the 5 years.							Withdrawals		8,896,291	14,327,565	23,074,687	37,162,014	59,849,796	96,388,695
Income Stream	20.00%								for 5 previous		56,981,122	114,609,388	230,520,417	463,658,897	932,583,656	1,875,758,839
	25.00%								years		335,906,256	835,842,256	2,079,843,002	5,175,314,940	12,877,839,671	32,044,186,010
	30.00%										1,852,679,076	16,154,608,132	17,254,418,472	52,656,306,373	160,694,294,350	490,400,068,206
	35.00%										9,606,859,292	35,669,596,071	132,438,713,341	491,735,671,926	1,825,780,128,364	6,778,993,812,006
	40.00%										47,036,984,318	210,915,410,483	945,751,753,089	4,240,782,484,423	19,015,810,461,318	85,267,529,949,712
		© 2024. Guy R. Fleury														

Figure 2: Retirement and Legacy Fund

(**Click here to enlarge**)

The above table is all based on the future value formula: $F(t) = F_0 \cdot (1 + \bar{r}_m + \bar{\alpha})^t$ with $\bar{r}_m = 0.10$, the average long-term market return given by a market average proxy such as SPY. The average alpha in the table goes from -5% to +30%. It considers the two phases of a retirement fund:

$$F(t) = [F_0 \cdot (1 + \bar{g}_{t<65})^t] \cdot (1 + \bar{g}_{t>65} - \bar{w}_{t>65})^{t-65}$$

as expressed earlier where we applied a withdrawal rate after retiring at age 65 ($\bar{w}_{t>65}$).

In the above table, we have a 25-year-old starting with $100,000 intending to retire at 65 and live off his or her 5% annual withdrawals. Their retirement fund will all depend on the average growth rate they can achieve. An average future growth rate does not come with guarantees. Nonetheless, we can estimate what one could achieve based on their methods of play and available historical market data. All these market return curves could be as erratic as shown in Figure (1).

We can use that chart's regression line to represent an average market growth rate (without loss of generalities). This way, even with all those up-and-down chaotic returns, they will still average out to a regression line of their own, even if those returns are currently unknown.

You could go for a savings account, CDs, bonds, or Treasuries and get close to a 5% growth rate, or invest in SPY and get about 10% over the long term, or go for QQQ and get about 15% over the same interval. Refer to article: **QQQ To The Rescue** for some simulated results.

By retiring at 65, you will have reached the numbers in the 65-year column. All for choosing one of those three options. In all three cases, you had only one decision: take action by investing the $100k. I suggest selecting QQQ; the reward is much higher and does not require more "work" than choosing SPY, DIA, or Treasuries.

Based on the above table, that single decision is worth $26 million. Nonetheless, it is a choice you have to make.

Consider aiming a little higher. For instance, targeting a 20% CAGR before retirement could propel you beyond the $100 million milestone. Imagine the financial security and freedom that could bring. It's as simple as adding 5% to your QQQ strategy. It will require some effort, but not that much. You could develop a trading/investment strategy to deliver that average 20% CAGR over the initial 40 years. The potential rewards are worth the extra work.

So, a question would be: Is it possible? The simple answer is yes. And it may not be that hard to do either. You could backtest your trading procedures to extract more from market swings. There are many ways to do this. The big problem there is to be consequential. Your trading strategy will have to last the first 40 years and maybe 30+ years after that. Therefore, your priority should be building a trading strategy that can last. If it were good enough for the first 40 years, it would have almost demonstrated it might be able to take on the next 30+ years.

The upper part of the table above shows the initial capital at the various applied growth rates from age 25 to 95, with no retirement withdrawals. It does show the

power of long-term compounding.

You could design a spreadsheet similar to Figure (2) using your numbers, starting with your age and growth rates. As for your applied growth rates, you should know how you could achieve them. In Figure (2), we have the growth rate going up to 40%. I know it is possible, but only a few achieve it.

The Desired Outcome

In Figure (2) above, the green highlighted line shows an average 20% CAGR over the period. It requires a little effort to achieve but is still easily within grasp.

As I often mentioned: it is the average CAGR obtained by Mr. Buffett over the last 50+ years. He started with $10 million, his future value equation could be $F(t) = \$10,000,000 \cdot (1+0.10+0.10)^{50} = \$91,004,381,500$, which is close enough and about right. So, it can be done. He had to do more to settle with an average CAGR of 20%. If Mr. Buffett had only performed at the average market level, the outcome would have been $F(t) = \$10,000,000 \cdot (1+0.10)^{50} = \$1,173,908,528$. That is 1.29% of what it realized. Mr. Buffett achieved 77 times what the average market would have produced.

You can aim for higher performance levels, but you will have to work at them. Those levels are not given away for free. Whatever the level you can achieve, know that there is a minimum given by the QQQ strategy, which requires hardly any work.

The middle part of the above table shows the impact of the 5% withdrawals on the retirement fund. For instance, at the 5% CAGR level, the 5% withdrawals keep the fund at the same value from age 65 to 95. You make the 5% return and take it out as your income stream. In reality, the fund might decrease in buying power due to inflation unless the 5% CAGR was net of inflation.

The bottom panel shows the value of the withdraws over 5-year periods. For the 5% CAGR, the withdrawals remain stable at the same value for each 5-year period. The $176,000 would have to be divided over the five years. That would be $35,200 per year for the next 30+ years.

The scenario changes with higher CAGRs. The portfolio could increase at a higher rate than the withdrawal rate, thereby making both the retirement fund and the withdrawals grow with time as if you had indexed your own fund. However, the withdrawals will no longer impact the fund's value. They will reduce the fund's average growth rate. The impact is compounding just like the rest and will be more visible as you near age 95 and the spread increases in value.

This table provides a comprehensive overview of your retirement based on the CAGR you could achieve over the years. It empowers you to decide at which level you want

to participate and find strategies and trading methods to reach those goals. You have a blueprint, a roadmap of what could be. How far do you aspire to go? What level do you believe you can reach?

Waiting To Start

What is the impact if you delay the start of your retirement plan? In the immediate, not much. But when you look at the numbers, the difference becomes huge over time. In the top panel, all the numbers would stay the same. Only the age line would change to account for the added five years. So, delaying five years and starting at age 30 will be the difference between columns 30 and 25. For the QQQ line, that is ($201,136 - $100,000 = $101,136). That is only a small difference on a retirement fund scale.

This 5-year delay will travel the entire interval, so the 90-column will now be your 95-year-old column. And here, this 5-year delay is much more expensive: ($1,773,572,004 - $881,778,738 = $891,793,265). That is what is thrown away ($800 million+) before you even start. The decision to delay is very expensive compared to a starting capital of $100k.

Consider the impact on your legacy. Instead of leaving your children with a substantial inheritance of $467,405,877, you're reducing it to $290,222,275, a difference of $177,183,601. This significant reduction is solely due to a five-year delay in starting your retirement fund. It's not just about your financial stability; it's about the future you're leaving for your loved ones.

There is also an impact on your withdraws to consider, again referring to the QQQ line we have ($96,388,694 - $59,849,795 = $36,538,898), which you would not get because you stopped receiving withdrawals at 90 with $59,849,795 over the five previous years.

However, the 5-year delay is even more impactful since the old 60-column becomes your new 65-column, making the base for all the calculations on the legacy fund and the withdrawals a lot less valuable. I have not done those calculations but just looking at the numbers, the impact would be more than half of what is given in the table.

Delaying 10 or 15 years in building your retirement fund will tremendously impact your fund. Time is not compressible, and you have only one timeline. Make the best of it while you can.

I would push and say: find ways to get that initial $100k and do not delay. Time might be on your side, as the old saying says, but delaying the start of your retirement fund is very expensive, just like making the wrong choices.

Buying either SPY, DIA, or QQQ is a single decision. The initial investment is not

that high. The difference in expected return is not that high either (5%).

Over the first five years (see column 30), we have for QQQ minus SPY ($201,135 - $161,051 = $40,084). Not that dramatic. But, at retirement age 65, the difference becomes ($26,786,354 - $4,525,925 = $22,260,429). It is almost nothing compared to age 95, which gives ($1,773,572,004 - $78,974,695 = $1,694,597,308). It is still all based on the $100k you started with. The difference gets even more significant when you delay 10 or 15 years and choose SPY over QQQ.

There are millions of millionaires out there with children. Loan your kid that $100k and boost their journey. From Figure (2) above, you know they will be able to pay you back, and they, in turn, could do the same for their children. A parent with the means should also consider starting their child on such a program as early as possible. The impact of starting at birth is simply phenomenal. At age 65, the child, using QQQ, would have something like $\$100,000 \cdot (1+0.15)^{65} = \$881,778,738$. And if you managed the 20% CAGR, it would give $\$100,000 \cdot (1+0.20)^{65} = \$14,021,064,691$ for his or her retirement. Make the calculations for up to age 95 to see the legacy they could leave their children. As a parent, you could make it happen.

Keep the above chart handy, or design your own. It is a roadmap to where you should want to go. The QQQ route is easy and should provide more than enough for an easygoing retirement. As stated in the beginning, your interest in all this becomes $\bar{g}$, equal to $\bar{r}_m + \bar{\alpha}$, and it is the alpha you seek with your trading/investment programs. The $\bar{r}_m$ is given away free as your gift for participating in the game.

Again, it is all up to you and your choices.

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