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*"The Use of Markets as a Tool for
Upward Mobility and Generational
Wealth"*

Author(s):

Amitai Ilan, 2020-2021
Undergraduate Research Fellow

Faculty Advisor: Thomas Garr

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Abstract:

This paper will explore how financial markets and investment products can build generational wealth for members of society. The research will answer the question: “can anyone, regardless of initial income, use the financial markets to build and preserve generational wealth and, if so, how can they best utilize it to do so?” It will provide examples to fully show how workers of varying income levels and of different ages can build and preserve accumulated wealth in retirement. This will be done by looking at different case studies with various incomes, compounding interest, and back tested invested principles. It will also touch on what prevents people from doing this effectively, as well as flaws in our current system. The paper will also focus on preserving wealth in retirement, and other alternatives if not enough wealth was generated to do this, or peace of mind is a factor. While this topic is often touched on in other papers, the discussion rarely contains information on an indefinite time, the use of cash, or other various alternatives.

Introduction:

Too often it is said that the Stock Market is simply a tool for the rich, a means by which the rich get richer. This perception is somewhat untrue. As noted by Parker and Fry (2020), 52% of the country has direct or indirect investments in the stock market with a median amount of \$40,000. As shown by Mottalo (2015) 53% of those own a brokerage account while 47% of people with exposure are getting it strictly through IRA's. That being said as Parker and Fry also note, high-income white families are much more likely to have investments. 61% of white households invest, compared to 31% of African Americans and 28% of Hispanics. Only 19% of Families making less than \$35,000 invest, whereas 88% of families making over \$100,000 invest.

Although White high-income families are the most likely to invest directly or indirectly in the stock market, that in no way means they are the only ones who should. In terms of upward class mobility and creation of generational wealth, few things are as promising as the stock market. To illustrate the point, someone who saved 50% of their income in cash for 47 years, a likely impossible task would only have enough money to last 23.5 years. However, someone who invested less than a tenth of that (4.5%) in an index fund that mimicked the S&P500 would have a sum large enough to live off a fixed withdrawal of 3%, which would give them their yearly salary while maintaining their principal and usually growing it.

Although the concept of investing in a diverse portfolio over a long period of time is largely agreed on by most professionals as the most efficient way to build wealth, the exact amount needed to create generational wealth and how much an individual would need to save to achieve this is not discussed as much. In addition to this, the benefits and performance of active

versus passive investing – and the true cons in our current social security system – are not well understood. The issue of preserving wealth is also far less researched or discussed. Little research touches on making a retirement savings last forever, so that the principal (or the principal plus interest) is passed on, and little research touches on how much cash on hand it is ideal to have in retirement.

The Creation of Wealth

Even a minimum wage employee can create generational wealth. How can this be done? First, it is important to calculate the actual average return on an investment. Since its inception in 1926 through the end of 2020 the S&P500 (which is what will be used to describe the returns on equities) has produced an average annualized return of 12.12%. This was calculated by averaging the returns from Sick Chart's (2021) in excel. This is about 2% higher than is typically seen due to including dividends from the S&P500, which is an important part of returns that is often neglected.

Another important factor is inflation. Since 1926 inflation has averaged 2.88% according to the bureau of labor statistics (2021). So, this 2.88% will be subtracted from the 12.12% to provide a real annualized return of 9.24%. Now that the real return is 9.24%, let's look at a case study of a worker who makes \$7.25 an hour. Let's say this worker saved 10% of their income of \$7.25 an hour for the time they worked which assuming a minimum wage employee starts work at 18 and retires at age 65 is a time period of 47 years. Working a 40-hour week, 50 weeks a year (two weeks' vacation), this would be \$14,500 a year which. So, 10% would be \$1,450 a year.

\$1,450 compounded at 9.24% interest for 47 years would be \$ 1,074,340.95 by the time they retire at age 65. Using a 3% withdrawal rule (which will later be shown as optimal) if possible, they would in retirement (not even considering Social Security) have access to \$32,304.72 of pretax “income” annually, more than double what they made while working.

This illustrates that even investing 10% of a minimum wage employee’s pre-tax salary for their working lifespan would make them a millionaire (inflation adjusted) with a retirement income of more than double their working income, all while preserving and even growing their principal (3% withdrawal rate will preserve and grow your principal as shown later). The worker would not need to invest 10% of their pre-tax salary to keep their same income in retirement while building and protecting the principal to pass on. The next calculation will illustrate the bare minimum someone who works from age 18 to age 65 needs to invest to preserve their same income. To make the same \$14,500 in retirement with a 3% withdrawal rate they would need to have a principal of \$483,330. To achieve this, they would need to invest \$652.74 for 47 years. This would only be 4.5% of their salary. This illustrates that if a minimum wage employee invested 4.5% of their salary in the S&P500 from ages 18 to 65, they would be able to retire with the same income while preserving and growing their principal for future generations (again, still not factoring in Social Security).

It’s important to note that if you start working later than age 18 (which many Americans do), you will need to save more than 4.5%. So, let us look at a case study of this. In the U.S. in 219, about 80% of citizens aged 25 were employed, and by this age a person would have had a chance to go to complete college and even get a Master’s degree. However, by waiting to start saving for retirement until age 25 instead of age 18, (while keeping the retirement age at 65,

having the same income in retirement, and preserving and even growing your principal) you would need to save roughly 8.47% of your pre- tax salary a year (again, assuming two weeks unpaid vacation). If you it took you even longer to start working say you went to medical school and you did not start till age 30 you would need to save 13.40% of your salary to achieve the same goal with the same two weeks unpaid leave.

These examples illustrate two main points. The first is that even a minimum wage employee, by regularly investing 4.5% of their wage into an S&p500 index fund, could have the same pretax income without Social Security (52% more than working income with Social Security) and would leave the next generation better off than them due to a principal that remained intact and even grew. The second is that not only can they do this but by starting earlier, they gain the benefit of compounding and can save a much smaller percentage then a doctor who starts at investing at 30 would have to. That being said, it is likely much harder for a minimum wage employee to save 4.5% of their income then it is for a doctor to save 13.40%, and since the amount they would get in retirement would be equal to their pre-retirement income the doctor would get a substantial amount more a year in retirement as well as pass more on.

Barriers to Stock Market Investing

If it is truly this easy for anyone to create generational wealth, why are we all not millionaires, passing off seven figure fortunes? What is stopping virtually anyone from doing just this? In the Introduction it was touched on how although 61% of white households invest, only 31% of African Americans and only 28% of Hispanics do so. If the stock market is the best

method for upwards mobility and the creation of wealth, why do so few minorities invest in equities?

One major reason behind a lack of investing is a lack of trust. In the article by Choe (2020) it was said that many African Americans don't trust the stock market and believe it is "For the White Man." In addition to this, with their older relatives not owning stocks no one is there to tell them what to invest in or to pass down financial knowledge. While the reasoning behind this is because of the unfairness and lack of opportunity of the last several centuries and the disadvantage many minorities faced in history, one practical reason this persists is far simpler: a lack of financial education.

In public school education, basic principles like regularly investing in an index fund are not taught. My high school economics teacher did not know an S&P500 index fund existed, much less taught us about it. The fact that this is not taught in high school is a key reason the more post-high school education someone has had, the more likely they are to invest. This puts those who cannot afford or do not wish to attend College at a severe disadvantage, even though they could be the ones who would benefit the most from financial education. According to the New York Times (2020) currently only 21 states require financial education classes in High School, and investing is not one of the key curriculum items.

The combination of lack of education on financial investments and lack of trust and history of investing all contribute to many minorities sticking to safer investments which give them a much smaller return and many low-income earners thinking they are too poor to make use of traditional financial markets. To add on to this problem, with a lack of financial education young adults are more likely to heed bad financial advice or fall victim to financial schemes,

especially with the rise of social media. According to Dickler (2021) nearly half of teenagers are learning about investing from social media, including 38% of teenagers listening to YouTube, 33% turning to Tik Tok, and 25% learning from Instagram. This unfiltered information can confuse young minds about investing and contribute to a lack of trust down the line.

Even with a good understanding of the stock market and the benefits behind investing in something like an S&P500 index fund, people still face a major barrier to investing: discipline. As shown above, even a minimum wage employee could save less than 5% of their income and create generational wealth. However, for this to happen they would have had to invest 4.5% of their earnings for 47 years. To create this wealth, you need to continually invest this amount whether the market is going down, up, or sideways. Whether there was a 50% pullback or extreme gain you would need to keep contributing this percent regardless, which is much easier said than done.

According to the Decision Lab (2020) the pain of losing is twice as strong as the joy of winning. This pain caused by losing often makes investors to do irrational things, such as selling or stopping contributions when the market goes down (when in fact this is the worst time to do so). It also forces investors to choose investments that offer a much lower return, including CD's and bonds, which greatly hurt their ability to benefit from compounding interest. Not only do investors fear and deal with temporary loses in the wrong way, which causes them to make irrational decisions, but our brains are wired for the short term. Coming from societies where we ate what we had on hand to survive, we are not wired to put away money for decades. Rather, we are wired to get the immediate satisfaction that comes from spending. This major barrier is a factor even high-income earners face, whereby listening to instincts and our satisfaction we see a

paycheck and spend a paycheck and think we will deal with tomorrow's problems tomorrow. It takes extreme discipline to not spend the money you have and instead set it aside for decades – it is not flashy, exciting, and goes against human nature. In addition to the discipline required to not spend a paycheck on luxury items, or the discipline to not do something irrational in the market, it is also a feasibility issue for some Americans. Living on a minimum wage salary is hard enough, making the sacrifice to put aside even as little as 4.5% (especially when the market seems like it's only going down) is even more difficult, not to mention the discipline to not spend what little you have. Add to this the lack of financial education, and it is clear why, despite the benefits everyone can achieve from the markets, only about half of people have an investment of some kind.

Active versus Passive Management

In examining an efficient way to build generational wealth an important topic to cover is whether hiring an active manager would be more efficient than doing something like owning an index or mutual fund. Assume the person had the risk tolerance and understanding to buy something like an index or mutual fund that mimicked the S&P500 and not sell it during a downturn or stop contributing to it during a downturn. Also assume the person understands how much to contribute (as described above). Investors are generally better off owning an index fund, as it is clear from a performance standpoint that most active managers lag the index specifically after fees. According to Perry and the 2018 Mid-Year SPIVA US Scorecard (2018) over a 15-year period, 92.43% of large cap, 95.13% of mid-cap, and 97.70% of small-cap managers

underperformed the S&P500. In addition to this underperformance, active managers will take a fee for managing assets.

However active management is not all bad. As previously mentioned, with between a 7.53% to 2.3% chance of beating the market if you are comfortable and knowledgeable enough to invest in an index fund over a long period of time you are most of the time better off doing so. However, that is a big “if.” As previously mentioned, many people do not know the benefits of investing in an S&P500 index fund, do not know how much they need to contribute for their goals, cannot plan effectively do this, or lack the discipline to follow through with their plan. This is where an active manager would be key. If someone did not have an interest in finance, might sell or stop contributing during a downturn, or lack the knowledge and desire to learn on how to invest in a low-cost index fund that mimics the S&P500, then they would be better off hiring an active manager to fight these barriers to solid investing. For such a person, the lower expected return plus the relatively small fees would be more than worth it.

Social Security

When examining the major problems most people face in using the markets to the best of their advantage, discipline, education, and feasibility are the three main issues. However, when examining feasibility, it's important to note that all workers put aside 6% towards “their” future through Social Security. This program also takes away the discipline aspect, as you do not have a choice on whether you contribute or not, and as far as education it would be reasonable to

assume that those working for the Social Security office and those in charge of the program would have a strong enough education to overcome this hurdle.

So, if all workers are contributing this 6% (which is even more than the 4.5%) why is every worker not getting an amount large enough to not only be equal to their working salary but have so much that a principal could be passed on? The simple answer to this is that a program which was perfectly set up to overcome the issues faced with retirement planning also fell victim to human nature and the discipline to not use money that is currently available again got in the way. Instead of having a program where the government took the 6% given for person A and invested that money for person A – letting it build and then giving it back to person A yearly as an income and as a final distribution to their heirs as a lump sum as someone who invested the 6% themselves could – Social Security borrows the money from person A through invested treasuries (which yield a much smaller return than an index fund would) and repays Person A's money as a much smaller amount than it could be with contributions from new investors into the system.

The two-prong issue of the people contributing to the system missing out on generational wealth, and a much larger retirement income, as well as the fact that this system relies on enough new payers to pay the old payers creates several problems with the current system. This system being reformed to what it was originally intended to be, with the money invested for the people who are investing it, as well as money being invested in an index fund or target date fund, would allow citizens to be much more financially stable. An alternative would be offering citizens the chance to opt out and invest this 6% themselves. As should be evident at this point, if the 6% was used to buy a low-cost index fund, the investor would be better off.

To illustrate this concept further it helps to look at a case study. The three Texas counties of Galveston, Matagorda, and Brazoria opted out of social security in the 1980's (by instead creating personal retirement savings accounts). Under this alternate system, many of the citizens of these counties experience much better benefits than those from Social Security. The alternative fund invests in bonds and annuities, which still lowers the return compared to an efficient retirement plan that involved investment in equities. However even this lowered return provides a much better return than Social Security. According to Zaki (2017), under the alternative plan a worker who made \$17,000 a year would receive 50% more than Social Security, those making \$26,000 would receive double, and those making \$75,000 or more would receive triple or more. This alternative strategy that is already in place illustrates the point that it makes much more sense for a retirement plan like Social Security to operate like a more traditional retirement plan rather than a system where the new payers pay then old payers with no true investments. A strategy like this that involved a strong equity allocation or the chance to opt out and invest in an index fund would provide citizens (especially low-income workers who rely on Social Security) with a much more significant retirement income and a much better standard of living in retirement than the current setup.

The preservation of wealth

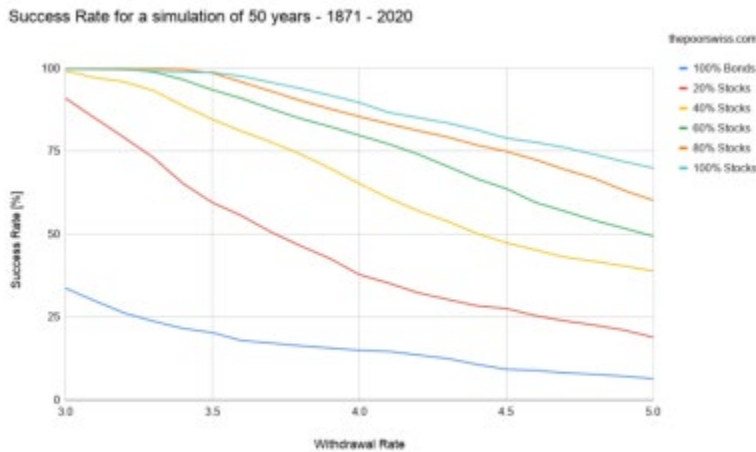
Since it's been thoroughly shown that anyone from a minimum wage employee investing 4.5% a year to a doctor who needs to invest 13.40% could optimally build generational wealth by investing in an S&P500 index fund, it's now important to discuss a far less talked about subject: preserving that wealth so that not only you could live off of it, but you could pass down the

principal and even more, leaving the next generation better off. There are a few main popular retirement withdrawal strategies. However, very few of these strategies or research discusses making a retirement last longer than 40 years or, equivalently, protecting the principal of the retirement savings in order to pass it down to the next generation. This research will focus on the optimal retirement plan that not only allows someone to live off its interest, but produces the maximal return in order to pass down the largest amount of principal to the next generation.

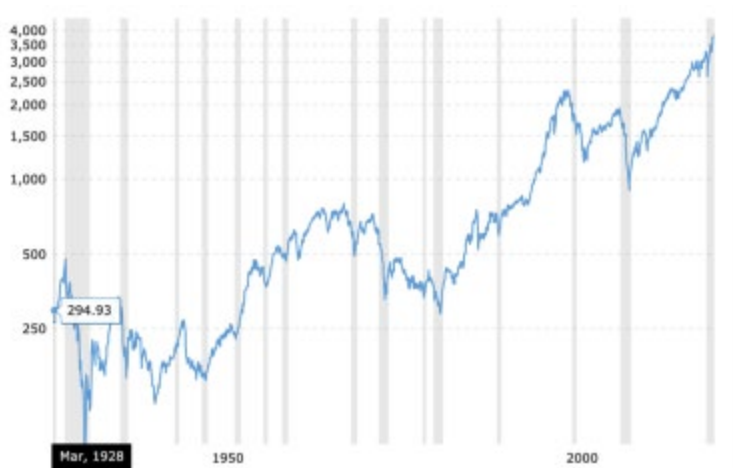
In the broad sense there's two retirement themes that would work for a retiree who wants to take get a fixed amount of money from their retirement savings, which would provide a stable retirement income in-line with what most retirees would want. This is either a withdrawal percentage based on an initial amount, as in if you retire with \$1,000,000 and you are doing a 3% withdrawal you would take \$30,000 every year. The most famous withdrawal like this is the 4% withdrawal which was based off a 50/50 stock bond allocation popularized by William Bengen in the 1990's, which showed this was safe for a 33-year time frame at the time of the research in the 1990's. This is slightly different in 2021, since with bonds not being where they were in 1994 a different allocation (one that is more stock heavy) is necessary. Also, this research focuses on an indefinite timeframe. The second main strategy is keeping a portion of your retirement savings in cash, so you don't have to withdraw during a bear market. The amount of cash varies, but one of the most common strategies is a 10-year rule with the reasoning being that over a 10-year rolling period a 70/30 equity bond allocation has never lost money.

This then begs the question, which is better: utilizing cash in combination with a fixed withdrawal or just using the fixed withdrawal? And, related, what percent would you need to take in a fixed withdrawal so that the principal remains intact long term, and with what

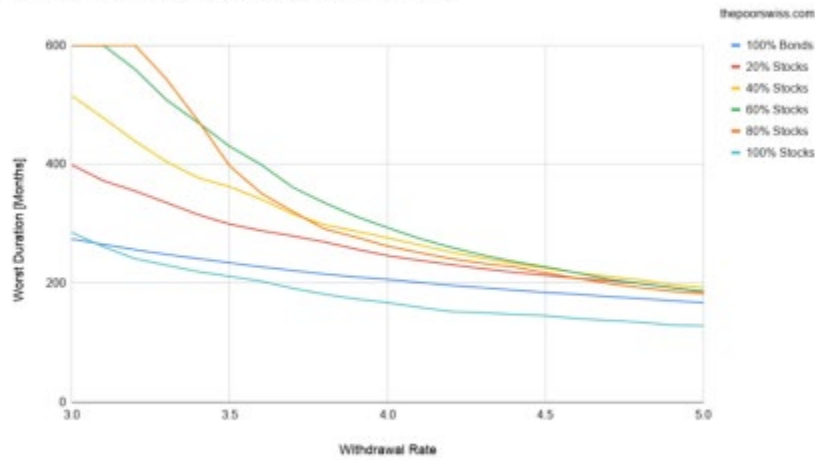
allocation? The research on an ideal percent, along with allocation for a series of timeframes, was done in 2020 by Poor Swiss. To summarize the results, a 3% (up to 3.25%) withdrawal rate with an allocation of 80% stocks 20% bonds performed the best and had a 100% success rate over any 50-year timespan in 1871 to 2020 as well as had the best duration. This can be applied to an indefinite time span simply by looking at a S&P500 chart since 1926 and seeing that if this 3% portfolio withdrawal could withstand a time period from 1929 through 1979 (which would include the two worst bear markets in history) that same portfolio easily would have made it through 1979 through 2020. An S&P500 chart, as well as the two key graphs from the updated trinity study in 2020 are shown below.



Success Rate for a simulation of 50 years - 1871 - 2020



Worst Duration for a simulation of 50 years - 1871 - 2020



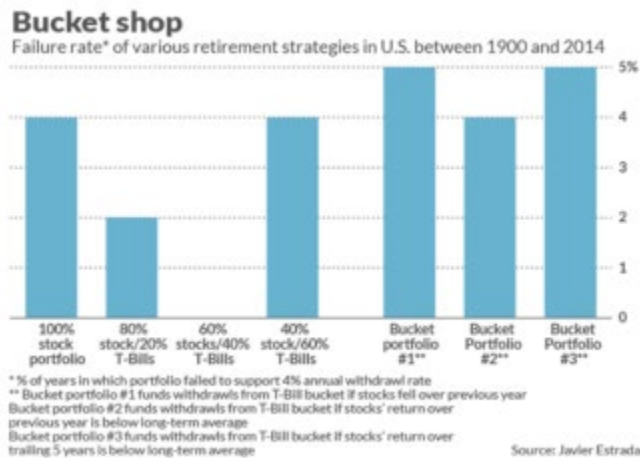
Worst Duration for a simulation of 50 years - 1871 - 2020

The Impact of Cash

With the discussion above showing that the optimal withdrawal rate that would let you protect and grow the principal through retirement is roughly 3%, the only question remaining is would the use of cash in a retirement portfolio help. The primary cash strategy is a 10-year rule,

meaning you set aside 10 years' worth of needed cash and invest the rest. The science behind this boils down to the fact that a 70/30 Portfolio never lost money over any 10-year rolling period.

Although this 10-year rule is very simple to understand and allows you to not worry about liquidity, it's been shown that this style of investing is not optimal. One key reason a bucket approach underperforms is the lack of rebalancing. Where an 80/20 allocation or similar approach would incorporate rebalancing, you would automatically be buying low and selling high just to rebalance. The bucket approach does not participate in the buying low aspect that rebalancing does, since the only change is raising liquidity to cover the cash you are using. The largest study ever done on this was by Javier Estrada, which showed that withdrawing a fixed amount significantly outperforms bucket investing over the periods since 1900 through 2014. Thus, the most efficient way to maintain wealth is through the fixed withdrawal method described prior with an 80/20 allocation and a 3% withdrawal for income if possible.



The Use of Annuities

Although the question of how to build and preserve wealth in the most efficient manor has overall been answered with the most efficient way through an index fund that mimics the S&P500 and preservation through a fixed withdrawal in an 80/20 portfolio, like active management there are situations where individuals could consider an alternative such as an annuity in the preservation aspect. The first situation is if the principal invested was not enough to withdraw only 3% – for instance, if in retirement the individual needed a higher percentage for their needs – an annuity could offer a return closer to 5% for most individuals around retirement age.

The second situation stems from a peace of mind standpoint. It is already a difficult task for an individual to be comfortable contributing to an index fund over a long period of time, especially during bear markets. However, living off a fixed withdrawal during a bear market with such a high equity allocation is likely to be even more mentally challenging. Continuing to trust the method and feel comfortable with your living coming from a volatile fund is difficult, and this is where an annuity could come into play even if an individual had enough for the 3% withdrawal. If the individual was around a normal retirement age, then they could get a return of closer to 5% from an annuity. They could invest the amount they needed into the annuity for their retirement income and the rest could be invested carefree for generational wealth. An individual would also want to split the annuities up across various annuities if necessary, so that they were insured up to the amount in each annuity.

Conclusion

The original question of, “can anyone, regardless of initial income, use the financial markets to build and preserve generational wealth and, if so, how can they best utilize it do so?” has been answered in the affirmative. Anyone, regardless of income, who invests 4.5%, 8.47%, and 13.4% in an S&P500 index or mutual fund (more efficient than active management) for 47, 40, and 35 years respectively would have a principal large enough to generate their same income in retirement. This is most efficiently done by withdrawing 3% annually, with the optimal allocation in retirement of 80% equities 20% bonds, with a more peace of mind approach made possible through annuities and investing the surplus. In addition to this, the research pointed out the flaws in our current Social Security system and how these flaws most hurt those who rely primarily on Social Security for retirement. This is due to the fact that if there aren’t enough new payers in Social Security, then it can’t work. Moreover, since the current Social Security system does not make actual investments, other systems have proven their superiority by providing 50-300% more retirement income than Social Security. However, even these alternative systems could be enhanced by an equity allocation.

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