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Play the Center Square – and Dominate!

"The first rule is not to lose. The second rule is not to forget the first rule." – Warren Buffett

Game theory[1] is the study of "mathematical models of strategic interaction among rational decision-makers." For a given set of circumstances or events, game theory attempts to identify optimal strategies for future decisions. Game theory concepts can figure prominently in a diverse range of subjects, like dating, military simulations, computer programming – and even games, like basketball.

A prominent aspect of game theory is identifying a dominant strategy, one that has the greatest likelihood of success regardless of how other players act or what happens next.

Game theory processes can be extremely complex; even simple game theory decisions like going for it on fourth down in football or shooting a corner three in basketball, require sophisticated number-crunching. That's why most introductions to game theory begin with tic-tac-toe.

In This Issue…

The Dominant Strategy for Tic-Tac-Toe

Tic-tac-toe is a simple game: two players, only nine possible moves. Players alternate turns placing their mark in one of nine spaces, with the objective of winning by occupying three spaces in a row – horizontally, vertically or diagonally – or preventing one's opponent from doing the same.

In short order, most players learn that occupying the center square is a critical move.

- If the first player selects the center square and the second responds with a mark in any of the middle spaces along the edges, the first player can win in the two next moves by creating two possible winning sequences. The second player can block one three-in-a-row attempt, but not both.
- If the first player selects the center square and the second responds with a mark in any corner space, and players continue to play rationally, blocking any 2-in-a-row configurations of their opponents, the game will end in a draw.
- If the first player selects a corner space, the second player can block any attempt to create two winning configurations by occupying the center square. At the very least, occupying the center square will result in a draw.

Occupying the center square is a dominant strategy for tic-tac-toe. Once both players understand the value of the center square, the only way to win at tic-tac-toe is to hope for an opponent's mistake. Otherwise, if both players act intelligently every game will be a draw.

The dominant strategy is boring, always choosing the center space turns the tic-tac-toe into a game no one wins. But remember: the purpose of a dominant strategy is to identify the greatest likelihood of success regardless of how other players act or what happens next. A dominant strategy may not be a ***winning*** strategy. Rather, explained Saul I. Gass, professor emeritus at the University of Maryland, “Sticking to that (center square) strategy ensures that you will not lose.” And in some aspects of life, any strategy that ensures you will not lose can often be a winner.

Differentiating Between Dominant and “Winning” Strategies in Personal Finance

Depending on the asset class and period selected, it is possible to find historical results to make a case for any number of “winning” financial strategies which, in terms of returns, stability, etc., have out-performed a dominant strategy. But while past results from these alternatives may have been higher than those achieved by the dominant strategy, the ***probability*** of success with these approaches is lower, and the risk of loss is greater.

Further, the past (and future) success of these strategies are often conditional on the occurrence of specific events. For example: real assets, like property and precious metals, often rise in value during periods of inflation. No inflation, no outsized returns.

If you understand the role of conditional elements in many of these strategies, it’s easy to see why new “winning” strategies pop up all the time: conditions are always changing.

In contrast, a dominant strategy seeks the best option, ***regardless of external conditions***. While a dominant strategy may not produce out-sized winners over a specific period, it still offers the greatest chance for some success, combined with the lowest risk of loss.

The Dominant Strategies in a Covid-19 World? The Same as Always.

For many Americans, 2020 has been the most disruptive and life-altering year of their lives – socially, emotionally, financially. And it isn’t over. So, in the midst of things that have never happened before, are there really dominant strategies for personal finance? There are reasons to think there are at least two.

Dominant Strategy #1: Continue Saving Money.

Seriously, can you think of a circumstance where saving money isn’t a dominant strategy? Sure, interest rates are at historic lows, making the returns from savings accounts miniscule. But adding to *saving* is never a loss. And right now, when other things are so uncertain, building cash reserves is like selecting the center square in tic-tac-toe; it’s a no-lose play.

Dominant Strategy #2: Protect income.

Of the events that can negatively impact household finances, losing one’s income tops the list for most Americans. The magnitude and swiftness of income loss due to Covid-19 has been stunning. While some sectors of the economy are slowly returning to normal, a wave of permanent layoffs and downsizings is swelling; three-month furloughs are becoming terminations. And it’s not just happening to low-wage employees in the retail sector; business owners, managers and professionals in “non-essential” sectors are losing their incomes, too.

One way to develop dominant strategies to protect income is to address the events than can disrupt it. For example, some financial professionals use the “Five Interruptions” as a checklist for income protection.

The Five Interruptions are:

- **Involuntary Unemployment**
- **Voluntary Unemployment**
- **Lawsuits/legal problems**
- **Disability**
- **Death**

There’s nothing controversial on this list. Yet despite being absolutely essential to preserving their incomes under any circumstances, many (if not most) American households aren’t protected against the Five Interruptions.

Even if one is eligible for government unemployment or disability benefits, the amount of income received is a fraction of previous earnings. That’s because full replacement of lost income could create a moral hazard; some people might find it more profitable to remain unemployed or disabled. Full replacement of lost income can only come from personal saving or individually owned insurance.

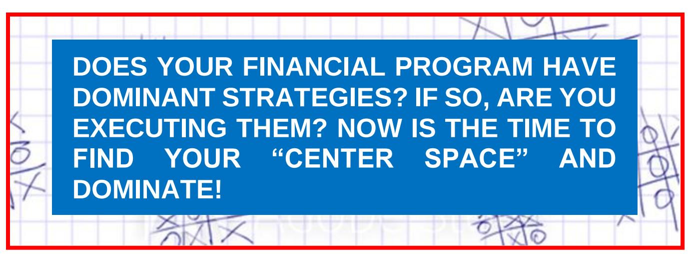
Some may dismiss income loss from legal issues as unlikely or trivial. But a suspended driver’s license, or loss of professional credentials can instantly stop income. A malpractice judgment, an at-fault accident, an alimony agreement, a misstep with the IRS, can mean years of garnished wages. When a family member dies without a valid will or trust, heirs can be deprived of inheritances if other interested parties contest the distribution of estate assets. Personal and professional liability insurance is essential, as are updated legal documents. Yet most Americans don’t even have a will.

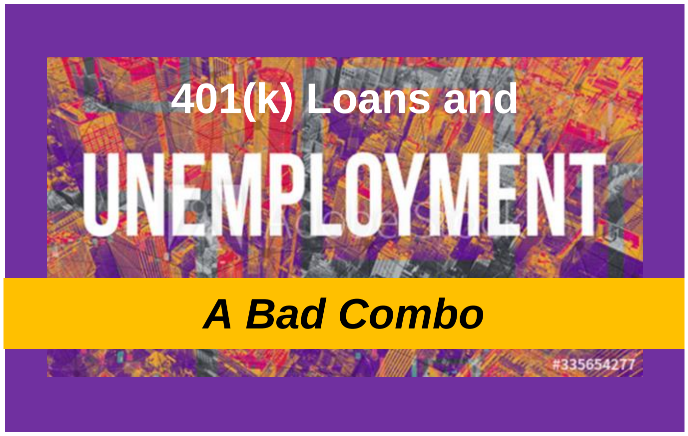
And when it comes to being insured for their full economic value in the event of a permanent disability or early death, a huge segment of the population is woefully under-insured. Instead of protecting one’s anticipated lifetime income, they either forgo life and disability insurance, or limit their protection to minimal standards of income replacement.

Remember the First Rule

Saving and protecting income might not seem like “winning strategies” when compared to historical best-case-scenarios. But those wins are from the past. As much as you might want a best-case winner for today, we’re a lot closer to a worst-case situation, one that is yet to be resolved. In times like these, you want a dominant strategy, one that gives you the best chance of success, however the future plays out.

When someone comes along with the latest “winning” strategy based on today’s circumstances, the FOMO (fear of missing out) can be strong. But remember Warren Buffet’s words: **The first rule is not to lose.** Pursuing dominant strategies today should leave you well-positioned to act when winning strategies can be identified in the future. ❖



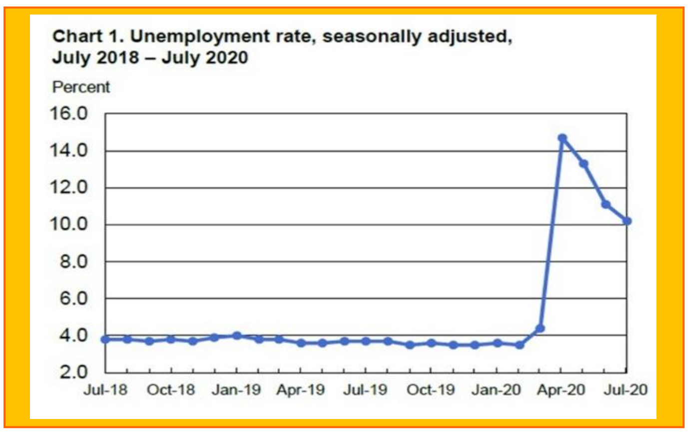


Losing income due to a layoff or termination can be a financial gut punch. It's even worse when you don't see it coming.

After two years of record-low unemployment, the US economy suddenly shed jobs at an astonishing rate in March 2020 when the coronavirus reached America. "Depending on how you count it, you're talking about something like a quarter of all U.S. jobs being disrupted by the pandemic," Erica Groshen, a former Bureau of Labor Statistics (BLS) official told the *Wall Street Journal* in June 2020.[2]

It Happened So Fast…

Source: Bureau of Labor Statistics, August 7, 2020.



As states have relaxed their lockdowns, there has been some bounce-back, but BLS numbers through July 2020 still put unemployment at over 10 percent (see Chart 1). And while lower-paid workers make up the majority of those newly unemployed, an August 2020 *Politico* article[3] says even highly paid workers with the ability to telework could expect significant job losses:

"(T)he drop in overall employment in white-collar industries like real estate, information and professional and technology services in five months is already on par with or worse than the hits they took during the Great Recession."

…But It Isn't Unprecedented.

Economic downturns, and subsequent periods of high unemployment are fairly common. A July 2020 *Employee Benefit News* (EBN) commentary[4] included the following observations:

- **The United States has now experienced three major recessions in the past twenty years.** Besides this year's Covid-19 pandemic, there was…
  - **The 2001 Dot-com bubble** which, along with the September 11, 2001, terrorist attacks plunged the economy into a one-year funk and pushed unemployment to 5.6%.
  - **The 2008 meltdown in the mortgage market** triggered a crisis that required hundreds of billions of taxpayer funds to keep the financial system afloat. In January 2010, at the depths of the Great Recession, the unemployment rate was 10.6%, almost what it was in July 2020.
- Citing a Forbes report, *EBN* noted that "Each year, about 20 million Americans (more than 1 in 10) lose their jobs through layoffs, restructurings or the company going out of business…(U)nemployment remains a constant threat and getting laid off is surprisingly common."

401(k) Loans: A Quick Fix That Can Go Sideways

Even though the stated purpose of qualified plans is to accumulate funds for retirement, many employees take millions in loans each year from these plans for a variety of non-retirement reasons, from home improvements to financial emergencies. Plan loans don't require bank approval, are a lower cost source of capital compared to credit cards or unsecured personal loans, and the convenience of automated payroll deductions makes repayment easy.

So, it's natural that many workers caught unprepared for a layoff or furlough would look to tap their 401(k)s. And with the Covid-induced unemployment shock so swift and widespread, it's understandable that Congress felt compelled to relax the loan provisions.[5] (Loan limits were increased to $100,000 from $50,000, and borrowers allowed to postpone repayments through December 31, 2020.)

Which is all fine – if you're still employed. But what happens to 401(k) loans if the job loss is permanent, if a layoff becomes a termination? It gets complicated.

EBN cites research from Deloitte that shows 86% of 401(k) loans default when workers leave jobs. Which makes sense, especially in these circumstances. If you have to borrow because you're temporarily not working, it's unlikely that you'll be able to repay the loan if you're permanently out of work.

The IRS states that "Generally, the employee must repay a plan loan within five years and must make payments at least quarterly." However, if you leave your job, the loan becomes due immediately. If the loan is not repaid, the retirement account balance will be reduced by the amount owed and considered a taxable distribution. If you are under age 59½, the distribution may be subject to an additional 10% penalty tax.

However, the CARES act allows for a three-year window to pay the tax on qualified distributions made because of Covid-19 and waives the 10% penalty.

Suppose a laid off employee borrowed $10,000 in April 2020, hoping it will tide him over until the virus subsides and he is called back to work. In September, he receives a notice of termination – and a deadline for repaying any outstanding loans in full. Most likely the loan will be reclassified as a taxable distribution.

Even with the relaxed distribution rules in the CARES Act, unpaid retirement plan loans are costly options for unemployment relief. The requirement to pay the loan balance in full at termination, the taxes if a loan becomes a distribution, the potential penalties, and the lost investment gains all make a 401(k) a less-than-ideal emergency fund.

Recognize the Risks, Allocate Accordingly

Under some scenarios, 401(k) loans may be viable financial options. But using them to cushion the blow of a job loss is problematic. If there is a termination, the cost of defaulting on payments is steep, both to your immediate and future financial well-being. ❖

A pandemic-induced unemployment spike might be a one-time event. But more than we might want to admit, unemployment remains a constant threat. And loans from a retirement plan are a poor response.

- If you wouldn't be able to survive a period of unemployment without resorting to a withdrawal from your 401(k), it might be time to reassess your savings allocations. And…
- If you have outstanding 401(k) loans and a permanent job loss, you should consult with a tax professional about the financial consequences that will need to be addressed in the near future.

If there's an award for the most overused cliché in personal finance, the winner is…

The Magic of Compound Interest!

You know about the Magic of Compound Interest. Everybody does; that's why it's a cliché. Compounding is the process by which earnings are added to existing deposits to produce ever larger earnings. Given enough time, compounding can grow a modest principal into an enormous fortune. Einstein supposedly declared compounding "the eighth wonder of the world."

Graphing the Magic

You can see the compounding magic in the following graphs. In these two accumulation scenarios, the blue portion of each bar represents cumulative annual deposits, while the orange shows the compounded earnings.

SCENARIO 1:

$5,000 annual deposits for 30 years, earning 5% each year.

Deposits:	$150,000
Earnings:	$198,803
Total Accumulation:	$348,803

SCENARIO 1

SCENARIO 2:

$2,500 annual deposits for 30 years, earning 8.75% each year.

Deposits:	$75,000
Earnings:	$278,732
Total Accumulation:	$353,732

SCENARIO 2

The cumulative totals from each scenario are similar. But the composition of the two accumulations is drastically different.

- In Scenario 1, earnings comprise **57%** of the accumulation. It takes twice as much in deposits to equal the results of Scenario 2; where compounded earnings are **79%** of the balance.
- The crossover point, where earnings exceed deposits occurs in **Year 15** for Scenario 2. It doesn't happen until **Year 25** for Scenario 1.

From these hypothetical illustrations you might conclude that maximizing the rate of return is the key to successful compounding. Mathematically, this is correct: an increase in rate of return has a geometric impact on total accumulation.

But these scenarios are mathematical exercises in a make-believe world. In real life, the most important factor is the volume of deposits, i.e., how much you save.

The Saving Rate Makes the Magic

In the real world, a 30-year rate of return cannot be selected like a candy bar from a vending machine. Rates of return will fluctuate, and higher rates, the kinds that make compounding happen quickly, typically come with greater risk. The combination of annual deposits and fluctuating returns mean compounding will not occur in a neat geometric progression. Just like high rates of return accelerate compounding, low returns can significantly flatten growth.

And remember, the magic of compounding – at any rate of return – takes time. Look at the first decade in each scenario. Earnings (the orange), are a small percentage of the total balance; the bulk of the accumulation comes from deposits.

Given the variability in rates of return and the minimal impact of compounding early on, the amount you save is the most important real-life factor for accumulation success. In an August 2019 article at thesimpledollar.com, CFP Matt Becker[6] cites studies from retirement researcher Wade Pfau, which determined that "your investment return over the first eight or nine years of investing, accounts for less than 1% of your final outcome…In other words, good or bad, your early returns won't have much of an impact on how much money you end up with."

Becker concludes:

"This basically means you can spend the first decade of your investment life worrying less about your returns and more about your savings rate. Because even if you don't make the best investment decisions, it simply doesn't matter that much. Your savings rate will far outweigh the returns you earn."

One other observation: A 30-year time frame really gives you just a sneak peek at compounding. If you projected these scenarios out another 30 years, the hypothetical results would be astonishing, indeed, almost magical.

Alas, most of us don't have 60-year accumulation periods. We either didn't start saving soon enough or will have to stop saving earlier. Which reinforces Becker's conclusion: In terms of financial success, "your savings rate will far outweigh the returns you earn." ❖

The Household CFO: Efficient or Risky?

The division of labor is an economic principle that says higher productivity can be achieved by having workers concentrate on one aspect of production rather than having each worker perform every task. Originally articulated by Adam Smith in his 1776 treatise '*A Wealth of Nations*', Smith used a pin factory as an example; one person cut the wire, another straightened it, and another ground the top to a head. Three people doing one task produced far more pins than if the same three workers had to do all three tasks.

But while division of labor can make a group of workers more productive, it may also result in a decrease in overall skill or knowledge. In Smith's example, the worker who cuts the wire may no longer be proficient in straightening it or shaping the pinhead.

A recent study confirms this loss of knowledge and skill often occurs in household economies when one person specializes in handling the finances. And while having one person manage household finances may be a productive division of labor, there are some long-term perils.

Division of Financial Management in Household Economies

For most couples, household finances aren't a group project. While each partner may have their own money, the bulk of financial responsibility for managing joint assets and obligations usually falls to one person. And as a 2018 study found out, it may not be the one who is most financially savvy who takes on this duty.

The report, "On a Need-to-Know Basis: How the Distribution of Responsibility Between Couples Shapes Financial Literacy and Financial Outcomes," by Adrian Ward and John Lynch[7], found the division of financial responsibilities often goes to the person who's most available, not most qualified.

This is not necessarily a bad thing. Ward and Lynch found that as they gained experience, "less-qualified" household CFOs often got better at the job. But there was a flip side to specialization. Derek Tharp, in an April 2019 commentary[8], elaborates:

"Long-term, the assignment of financial responsibility appears to influence financial knowledge, with spouses who take on 100% of the responsibility becoming the most knowledgeable, whereas those who take no financial responsibility (i.e., delegate those responsibilities to their partner), actually experience a reduction in their financial knowledge over time."

The study also found the disparity in financial knowledge between the partners became larger the longer one person specialized in managing the money and the other stayed out of it.

What Happens If the CFO Is No Longer the CFO?

This concentration of financial knowledge in one partner can be especially perilous for older couples. If the household CFO is incapacitated, a surviving partner may not be capable of assuming these duties, leaving them financially vulnerable.

At some point, both partners must recognize the need to rebalance the collective financial knowledge in the partnership. This doesn't require a complete role reversal, where the other partner now assumes all financial responsibilities, but there should be attempts to integrate and inform the "junior partner."

Division of labor makes sense. But it is not good for one member of a financial partnership – whether it be a business, a marriage, or any other relationship where monies are mingled – to become less knowledgeable about the partnership's joint finances. Especially in long-term relationships, it is imperative that both partners remain sufficiently informed about household finances.

Consider these questions:

- ***Do both partners attend meetings with financial professionals?***
- ***Do both partners review account statements?***
- ***Can either partner identify and retrieve important documents?***
- ***Can both partners access financial data that is stored electronically, on the Internet or in the cloud?***
- ***Is there a written "succession plan" to guide a surviving partner if the household CFO is incapacitated?*** ❖

The answers to these questions can be telling indicators of gaps in financial knowledge within a partnership. Don't let a division of financial labor get to the point of financial ignorance for one half of the household.

FOOTNOTES:

1 "What is game theory and what are some of its applications?" Scientific American, June 2, 2003. https://www.scientificamerican.com/article/what-is-game-theory-and-w/

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3 "'Not just a low-wage recession': White-collar workers feel coronavirus squeeze," *Politico*, August 23, 2020. https://www.politico.com/news/2020/08/23/white-collar-unemployment-coronavirus-400130

4 "Views protecting 401(k) borrowers from default regardless of the economic environment, *Employee Benefit News*, July 29, 2020. https://www.employeebenefitadviser.com/opinion/protecting-401k-borrowers-from-default-regardless-of-the-economic-environment

5 Retirement Topics - Plan Loans, irs.gov https://www.irs.gov/retirement-plans/plan-participant-employee/retirement-topics-loans

6 "The Five Most Important Factors For Investment Success," Matt Becker, thesimpledollar.com, August 19, 2019. https://www.thesimpledollar.com/investing/blog/five-most-important-factors-for-investment-success/

7 "On a Need-to-Know Basis: How the Distribution of Responsibility Between Couples Shapes Financial Literacy and Financial Outcomes," by Adrian Ward and John Lynch, *Journal of Consumer Research*, Volume 45, Issue 5, February 2019 https://academic.oup.com/jcr/article/45/5/1013/4985189

8 "How Divvying Up Household Financial Responsibility Impacts Financial Knowledge Over Time," kitces.com, April 10, 2019 https://www.kitces.com/blog/ward-lynch-household-financial-responsibility-knowledge-over-time/