



April 15, 2023

## **Risk Management and Investment Discipline**

Dear Friend:

The most significant event in the first quarter of 2023 was the failure of two U.S. banks on March 9 and the subsequent panic in the U.S. regional banks. Fortunately, the Federal Reserve, the Treasury Department, and the Federal Deposit Insurance Corporation (FDIC) took swift action to calm the market and depositors. The main reasons these banks failed were the concentrated client base, the duration mismatch between short-term liquidity needs and longer-term investment assets, and the rise in interest rates. In this newsletter, we discuss how similar it is to manage these risks in investing and dive into another headline from the first quarter: the rise in popularity of artificial intelligence.

### **Risk Management**

**Concentration risk** is something we always remind clients of. One example is that we pay attention to the Information Technology (IT) sector weightings in clients' portfolios if they are IT professionals since their human capital and stock compensation are highly related to the health of the IT industry. In other cases, the clients have too much in one position either because of low-cost basis consideration or the stock has done well for them, hence the overconfidence bias. We recommend diversified portfolios so that one area of weakness will not result in a tremendous loss in the overall value. Also, the best time to diversify a concentrated position is when everything still looks good, not when problems appear.

The second risk is **liquidity mismatch**. Silicon Valley Bank might have survived if it had enough funds to cover the demand for withdrawals without the fire-sale of its investment. As part of the onboarding process, we always ask clients questions regarding liquidity needs. The market in the short term is unpredictable, so we must know the timeline of cash flow needs as early as possible. Portfolio managers rely on such information to choose securities and arrange liquidation trades.

The third is **interest rate risk**. When interest rates rise, longer-duration bonds incur more losses than shorter-duration bonds. To avoid a liquidity crunch, Silicon Valley Bank had to prematurely sell those longer-duration bonds at a considerable loss, which triggered an even bigger fear among investors and depositors. Our top priority in managing income-focused portfolios is always capital preservation then cash flow management. We closely monitor the exposure to credit and interest rate risks and ensure we do not sacrifice safety for yield.

As for the safety of clients' assets at the **custodians**, we have included a detailed disclosure from our main custodians here:

[www.schwab.com/legal/account-protection](http://www.schwab.com/legal/account-protection)

[www.interactivebrokers.com/en/general/financial-strength.php](http://www.interactivebrokers.com/en/general/financial-strength.php)

Unlike traditional retail banks, our custodians separate their broker-dealer's business from the banking business, if there is any. They invest funds from the broker-dealer side conservatively and mostly in treasury bonds and short-term securities. FDIC protects clients' cash deposits of up to \$250,000 per depositor, per FDIC-insured bank, and per ownership category such as single accounts or retirement accounts. Clients' security positions have a loss coverage of \$500,000 per account from the Securities Investor Protection Corporation (SIPC). Our custodians also purchase excess SIPC coverage from Lloyd's of London and other London-based underwriters to an aggregate protection of at least \$150 million.

### **Artificial Intelligence (AI)**

Another significant event in the first quarter was the sudden popularity of ChatGPT, a generative robotic chat powered by artificial intelligence. According to our research, the technology behind ChatGPT was not all that new. However, a vastly improved input interface increased its usability and made it appear ready for the mainstream. Suddenly, artificial intelligence was the hottest topic in the investment community, and investors were eager to know whether their portfolios would benefit or miss out on this new development. We feel it is our responsibility to share our thoughts with you.

We conduct thorough research before drawing any investment conclusions, spending as much effort on the behind-the-scenes enablers as on the front-page players. Today's IT products are too complicated for one company to master or create from scratch. Any advances in emerging technologies require the simultaneous improvement of other supporting technologies. Many essential tools and products are developed first to form the foundation for new innovation. The best example was the introduction of smartphones in 2007 with the support from many underlying technologies, e.g., mobile chips, ARM-based application processors, small-form-factor cameras, and many others. The same applies to generative chat robots.

AI requires massive **computing power** to rapidly process vast data and produce results. Products responsible for this task include central processing units (CPU), graphics processing units (GPU), accelerators, connections, and switches. Headline discussions on CPU and GPU are bountiful. Both are oligopoly markets with only a handful of competitors. The attention to **connections and switches** is less prevalent, but they are equally important because the total processing speed depends on every segment of the data's path. Newer **communication protocols** have also been invented to manage the data traffic, so data for various purposes can follow different protocols to produce a much higher network throughput.

**Infrastructure in the data centers** is the next beneficiary. The more computing power is used, the more heat is generated; thus, the power supply and the cooling technologies are as crucial as other technologies in the data centers. These products usually fall under industrial categories, which are not generally at the top of investors' minds when considering AI-related investments.

The backbone of AI is **big data**; data owners will be the primary beneficiaries in the value chain. However, raw data is rarely usable before it is summarized, analyzed, or interpreted. It is even more challenging if the raw data is stored in different formats, languages, or systems. Companies working on mending the gap between raw data and usable information are the crucial partners of AI engineers. Other peripheral data-related vendors like storage, backup, and security have also received much attention since the start of cloud computing.

**Emulation and simulation** must be completed before an AI system can be deployed. Consider how many tests are performed before a computer system can drive a car without a human. It is called an emulation if a test uses only virtual devices and software. On the other hand, a simulation examines a device's behavior in the physical environment. Only a handful of companies provide testing equipment and software to all end

markets. These companies usually enjoy a wide business moat since the switching cost is high for their customers.

**Applications** that use AI to perform real-life tasks are the ultimate goals for AI development. ChatGPT has shown the world that it can create content based on requests and answer questions with arguments and reasoning. Whether this capability can change the world for the better is up for debate, but there are tasks where AI can be a great help. For example, AI-assisted robots can fill the vacancy in a labor shortage situation. AI can process complex data and provide recommendations quickly, such as a skincare and cosmetic product list tailored to each customer's skin quality, tone, age, working environment, and budget.

**Risks** of investing in any new technology involve two things: First, whether it will be commercially successful, and second, whether it can defeat the competition in the long run. In short, the new technology must be excellent and unique to be investible. Therefore, we prefer not-so-well-known enablers with a history of success and diversified end markets in case the AI adventure fails. Other significant risks associated with adopting AI are copyright violations and the discouragement of originality, which are not minor issues and could have a sustained cultural and moral impact on our society. No wonder some of the largest IT corporations hesitate to introduce their newest AI inventions, and a growing group of scientists and IT entrepreneurs are requesting a training pause of advanced AI systems to develop and implement a set of shared safety protocols.

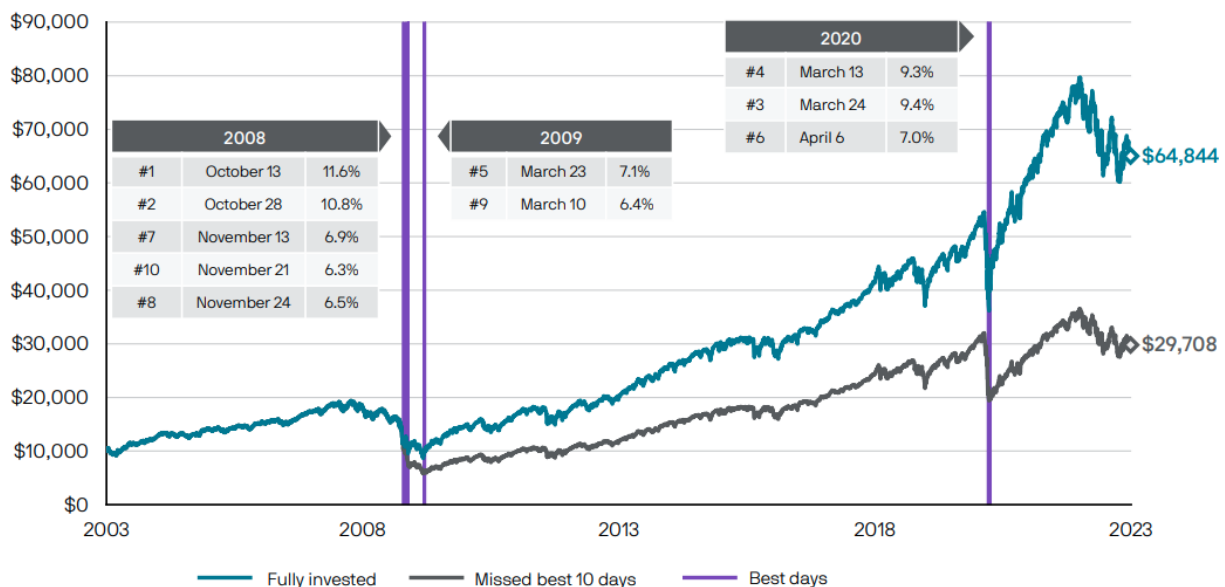
**Investment Disciplines**

We communicate our thoughts on the macro environment and investment strategies each quarter, but sometimes we want to bring your focus back to the planning process. Proper planning and understanding of one's behavior are as important as the investment choices to have a successful financial life. The market has always surprised investors and given opportunities to test investors' disciplines. Market volatility can result in emotional decision-making. As shown in the following graph, investors who fled the market at the worst time and missed the best days saw their portfolios underperform the market by a wide margin because often, one of the best days occurred immediately after the worst days.

**Impact of missing the best 10 days in the market**

**Returns of the S&P 500**

Performance of a \$10,000 investment between January 1, 2003 and December 30, 2022

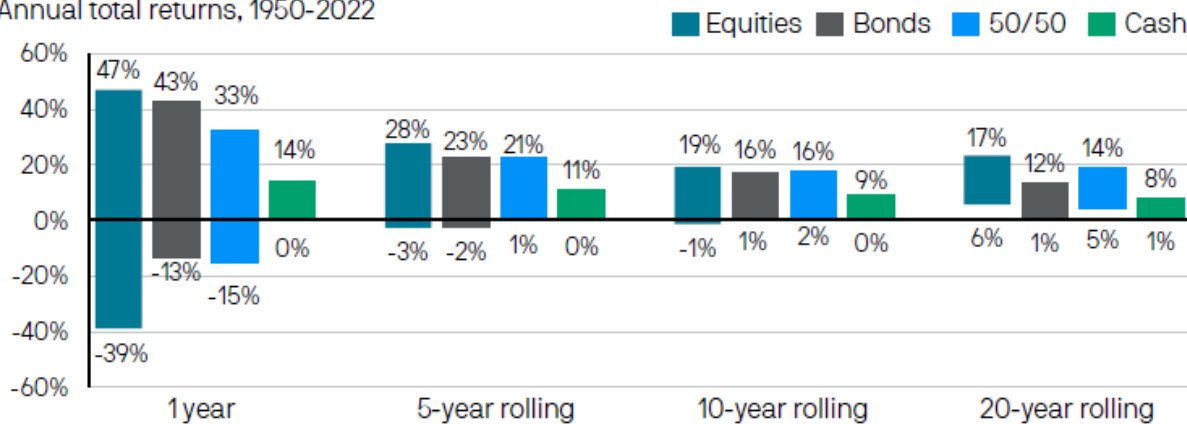


Source: J.P. Morgan

Below is another helpful chart that shows the range of possible returns over a rolling period of years based on asset allocation. During the period of 1950-2022, a portfolio with 50% invested in equities and 50% in bonds (the light blue bar) will have a range of annualized returns from 5%-14% on a rolling 20-year basis. Pick an arbitrary ten-year timeframe; the minimum annualized return is 2%. This chart shows that short-term performance could be anywhere, whereas the longer-term returns converge into narrower possible outcomes. As discussed previously, short-term volatility might cause panic and irrational behavior. Investors should learn from these statistics and gain confidence in their long-term return by staying calm in volatile times.

### Range of stock, bond and blended total returns

Annual total returns, 1950-2022



Source: J.P. Morgan

This chart also provides a guideline to measure one's tolerance for volatility on different time horizons. For example, as seen in the dark blue bar, an equity-only investor who plans to retire in five years and needs to withdraw from the portfolio after retirement should ask: "Can I tolerate the risk in the worst scenario of losing 3% per year for the next five years?" Or should the portfolios start to have some bond investment to reduce the possible worst outcome? Another message drawn from this chart is the apparent benefit of equity investment for longer time horizons. As indicated above, 100% equity and 50/50 portfolios outperformed the bond-only and cash-only portfolios by a wide margin on a rolling 20-year basis.

Mark Twain once said, "History doesn't repeat itself, but it often rhymes." There will be other future events posing challenges to our financial behavior. We are here to help you exercise discipline and manage risk in the face of those events. Please do not hesitate to contact us with any questions or comments.

Sincerely yours,

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