

Matarin Capital Management, LLC aspires to be a symbol of stewardship within the investment management industry. We are dedicated to delivering above benchmark risk adjusted investment returns through insight, passion, and diligence. We aim to build strategic alliances with our clients based on the highest ethical standards.

Please refer to the last page for important disclaimers.

The Opioid Epidemic —A Social Crisis Creating a Financial Risk

From 1999 to mid-2018, the number of opioid-involved overdose fatalities occurring annually rose by 495 percent, or 10 percent per year. This tragic loss of life has led to broken families and societal strains. In addition to its devastating personal effects, the opioid crisis also introduces risks for investors, both macroeconomic and in the selection of individual stocks.

From a macro perspective, consider the core drivers of real Gross Domestic Product (GDP) Growth:

- Participation Rate: The percentage of the working age population actually working
- Intensity: Hours worked
- Labor Productivity: Output per unit of labor input
- Demographics: The proportion of the working-age population to the total population

According to a study from the American Action Forum, a nonprofit think tank, the opioid epidemic has impacted all four of these factors, leading to an estimated annual impact on Real GDP Growth of -0.6%.

Impact of Opioid Addiction on U.S. Workforce and Economic Growth (1999-2015)¹

Labor Force Participation Rate	Numbers of Workers	Work Hours, Cumulative	Real Output, Cumulative	Real GDP Growth Rate, Annual
-1.6%	-2.0 million	-27.0 billion	-\$1.6 trillion	-0.6%

While the economic and financial market impacts of the opioid crisis are significant, at Matarin, we are most concerned with beating the markets, *whatever* the markets do. In our actively managed portfolios this means controlling our exposure to opioid risk on a company by company basis. We believe that the opioid crisis has the potential to cause stocks to move together, due to the risks associated with litigation, or in the extreme, as companies are forced to declare bankruptcy.

One opioid drug maker, INSYS Therapeutics, which we did not hold in our clients' portfolios, already declared bankruptcy. This name had been flagged in our process due to its exposure to opioid lawsuits and its high percentage of opioid-related revenues. On May 13, 2019, INSYS announced that opioid lawsuits may force them to declare bankruptcy, and the stock declined 74%. On June 10, they did file for bankruptcy, and the stock declined another 50%.

Importantly, opioid risks are forces that traditional financial risk models may not explain, because these models are backward looking whereas much of the potential for opioid investment risk is forward looking. In order to make our investment process responsive to this material risk, we had to design a new customized, proprietary approach. At Matarin, we have a number of ways in which we can quantitatively create custom risk factors in our process. But we actually believe that a part of our edge is the ability to blend qualitative and quantitative analysis in our work.

All of our research starts in conversation. Commonsensically in terms of opioid risk, we looked for companies:

- Whose stocks have moved in tandem on opioid news events.
- With significant outstanding lawsuits.
- With current or prior business exposure all along the opioid supply chain (not just the drug companies).

Based upon this analysis, we generated a custom list of companies bearing opioid risk, and then subdivided the list into three categories: Drug Distributors, Drug Stores, and Opioid Producers. Finally, we were ready to quantitatively express this new idea. We designed a specialized risk constraint on portfolio exposure in each of these three business categories. The constraint allows our portfolios to own opioid risk companies, but only up to a pre-specified, tightly constrained total limit for exposure within each group. When our portfolios take risk in these groups, it is with a focused estimation of the excess returns that these decisions generate, relative to the amount of risk that it creates – and one of those risks is the opioid risk factor. Across strategies we trimmed exposure in Endo Pharmaceuticals and Assentio and bought less of Amerisource Bergen than we would have otherwise bought.

There is no doubt that the opioid epidemic has wreaked havoc on the lives of countless Americans. At Matarin, our goal is to avoid it doing further damage to their hard earned pensions as well.

¹American Action Forum (AAF) Congressional Testimony to the House Small Business Committee, September 13, 2018