Numerai Outperforms Market Neutral Hedge Funds by 26%, Raises Up To $150m

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Numerai

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[Numerai

](https://numer.ai)is a quant hedge fund built by thousands of data scientists around the world. We have quietly been beating the most prestigious hedge funds in the industry but have never published our performance. Today, we're excited to share the performance of our hedge fund for the first time with the data scientist community who built it.

**This blog post was updated 2/3/2022 to reflect Numerai performance through 12/31/21 as well as to update the fee methodology used in calculating net performance.

What is Numerai's performance?

We started the current version of Numerai's hedge fund in September 2019. Around this time we changed the dataset, the optimizer, leverage and the way Numerai's tournament works (see Achieving Meta Model Supremacy). This was an unbelievably challenging time to start building a track record for a quantitative hedge fund. Within a few months, Covid-19 caused massive volatility in global markets and led the worst period on record for many quant hedge funds including Renaissance's RIDA fund which was down -32% by the end of 2020.

Yet Numerai's market neutral hedge fund performed unusually well. Although 2020 was challenging, it allowed Numerai to differentiate itself from the blue chip quant hedge funds. It highlighted how risk exposed some of these older funds are. Many of these funds take large factor exposures which Numerai's fund avoids.

Since strategy launch in September 2019, Numerai is beatingAurum's Quant Equity Market Neutral Index by 26.46% and AQR's Market Neutral Fund by 29.61%***. Not bad for the last two years.

The correlation between Numerai's return stream and AQR's is also an extremely low 0.01

demonstrating Numerai really is doing something completely different to traditional quant.

Why is your return so low? Almost everything is up 50% or more from Apple to Bitcoin to Tesla.

Market neutral hedge funds are unlike any other investment product. Most funds have an agreement with investors to take on risks (their "mandate"). A venture capitalist has a mandate to risk the money on technology startups. Cathie Wood has a mandate to risk the money on innovation stocks. A market neutral fund on the other hand has a mandate with the investor to be neutral to stock market risk

i.e. to hold portfolios which do not contain that risk. It is this mandate to run the portfolio with very low risk which can lead to much lower return than the market when it is going up but much higher relative returns in market crashes.

How can a fund which trades stocks be neutral to stock market risk?

The key idea with a market neutral fund is to be short $100 of stocks for every $100 of stocks the fund buys. If this is maintained, the net effect is that the hedge fund has ~$0 of market risk. Roughly this is what is meant by a portfolio having a beta of zero

which is what market neutral funds run.

Of course, many portfolios of stocks which have a beta of 0 can still be risky. For example, if a hedge fund bought $100 of American stocks and went short $100 of Japanese stocks then that portfolio would be very exposed to country risk.

(In particular, the risk of American stocks dramatically underperforming Japanese stocks). Buying $100 of Apple and shorting $100 of Microsoft might be a safer portfolio because at least both stocks are in the same country and the same sector. This portfolio of long Apple and short Microsoft would be considered country and sector neutral

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A hedge fund like Numerai is trying to stay neutral to things like the market, country, sector, and hundreds of other risk factors. The more risks a portfolio is neutral to, the lower the volatility of the portfolio and the more we believe that the risk of using leverage is reduced.

So yes, it's confusing to read about a hedge fund with 50 PhDs that only earned 5% in year where everything went up but when you consider how little risk the hedge fund took and how low the volatility was, 5% can be impressive. 5% is a lot more yield than many corporate bonds pay and maybe the risk and volatility profile of the hedge fund is lower than bonds too.

What if you ignored the shorts and leverage in Numerai's portfolio and you only bought stocks? How would that do?

Good question. Very well. If a hedge fund can earn money with a beta of 0 (where we have to go short something every time we go long something), that almost always means the stocks we went long would beat the market.

One of the reasons Numerai started with a market neutral fund is exactly because it's the hardest game on Wall Street. It's hard because the only way to make money is by being good at selecting stocks and managing risk. There is no free money to earn from taking market risk because of the market neutral mandate. So we figured Numerai data scientists can win on the Hard Mode of Wall Street

then we can build any kind of fund in the future after that. It took many years but we're now getting really good at Hard Mode and because Numerai is growing so fast, we're getting better at an accelerating rate which is very rare for a hedge fund business model.

So here's what Numerai's performance would look like if you ignored all the shorts and just built a portfolio out of our long positions.

9/9/2019–10/01/2021

Numerai US Long Only: +98.25%

iShares Russell 2000: +51.93%

Numerai Outperformance: +46.32%

Numerai's US Long only portfolio earned 98.25% vs the Russell 2000's 51.93%. It's important to note that this isn't a backtest or simulation. These are the stocks Numerai actually bought at the price we actually paid for them according to our audited track record. Of course, the fund above isn't a real fund (our real fund has lots of offsetting shorts and leverage) but this is just an illustration of how Numerai's US longs faired against a stock market benchmark which most people are familiar with. We chose the Russell 2000 instead of the S&P 500 because the Russell 2000 has smaller stocks which match Numerai's US long holdings better. (We beat the S&P 500 too fwiw which was "only" up about +43% over the period vs Numerai's 98.25%.)

None of this is definitive

evidence that Numerai's fund performance is driven by skill and not luck but it is suggestive. So is this:

If a fund is lucky, it typically has long periods of outperformance and long periods of underperformance due to its risk exposures. Here vs the Russell 2000, Numerai appears to have a strong and consistent relative outperformance which gets stronger as the number of data scientists staking models on Numerai increases. Numerai beats the index on 54.36% of trading days which is quite hard to do by luck across 539 trading days.

The tracking error of the portfolio is 7% (for non-quants this is a measure of how much the portfolio moves with the benchmark). This is indicative of the risk of the portfolio vs the benchmark and 7% which, in our opinion, is quite low. The information ratio is 2.08 (for the non-quants, this is a bit like the Sharpe ratio of the return above the benchmark).

These are really very good numbers. I think they would put Numerai near the top of the category of US long only funds. There are not many funds with an information ratio of 2.08 (0.5 is considered a good information ratio). So congratulations to the Numerai data scientists around the world whose models created this excellent track record.

If the long only version of Numerai would make 98.25% over two years why do the market neutral hedge fund?

Diversification. The S&P does not usually do what it's recently been doing. Sometimes markets crash and stay down for a long time. From 2000 to 2010 you would have made almost no money holding stocks in the US. Another decade like that is in our future and when it comes it will be wise to be holding a few things which can survive and thrive such as market neutral hedge funds.

Even if an institutional investor expects Bitcoin to outperform the stock market, it doesn't mean they should put all their money into Bitcoin or even most of it. Institutional investors care about things like volatility adjusted return because they are in a multi-decade game where they will live to see multiple environments. By being uncorrelated with the market and many more risks besides, market neutral funds will always have a place in a sophisticated investor's portfolio. They may even be the perfect diversifier in world with extreme valuations in every risk asset.

Also, any institutional investor can buy equity exposure or tech exposure or Bitcoin exposure for almost nothing. These are just risks so they are cheap to create and manage. It's hard to create a market neutral fund and therefore hard to replicate one for cheap. Institutional investors are often happy to pay fees to a market neutral hedge fund like Numerai for a unique, uncorrelated diversifying exposure that they can't get anywhere else.

What's Numerai's AUM?

We recently raised money from a new investor. They are Numerai's first big institutional investor, a pension fund. They have a deal with Numerai where they gave us $20m but can invest up to $130m more later. Subsequent investments after the first $20m are at lower fees so they are incentivized to use their $130m in capacity rights to re-invest as new investors come on board.

We are only at about $43m in AUM right now so we're still very small for a hedge fund. But Numerai's fund trades with 5.5x leverage so almost one quarter of a billion dollars

is controlled by Numerai's data scientists right now. Pretty cool.

Raising assets into a quant fund is only a good idea when the fund has achieved some significant milestones. For Numerai, we wanted to see four things before raising assets:

1. Numerai's fund is outperforming its peers
2. Numerai's fund is meeting its backtest expectations
3. Numerai's fund can demonstrate risk management in a large macroeconomic stress test
4. The fund returns are attributed to skill (stock selection) not luck (risk exposure).

It took a while but today we're at 4/4:

1. Numerai is beating our most comparable index Aurum Quant EMN by 26.46%, and AQR by 29.61%*** over two years.
2. We observe live return and volatility in line with our backtest expectations.
3. We handled the Covid-19 market volatility extremely well going down 1.54% in March 2020 when the S&P fell as much as 28%. We handled the momentum crash in November 2020 with minimal drawdown. We handled the meme stock rally in January 2021 with minimal drawdown.
4. Over 80% of the Numerai's fund return is due to stock selection, meaning <20% of the return can be attributed to risk exposures such as factor, country or sector exposure.