



Winter 2023

Even one person can make a difference.
— John C. Bogle

If you manage enormous amounts of money, Planet Microcap is not the best place to be. Suppose that capital preservation is your top priority, and you decide to limit your investment universe to large caps. Is there an investment robot that beats Nick Sleep? Let's find out. Enjoy!

Things can get complicated

I've had a love-hate relationship with backtesting over the years. Backtesting is obviously the only way to learn what worked on Wall Street, which is great. However, when it comes to the certainty that great backtest results can provide in predicting the future, things can get complicated.

One of the best long-term stock-only backtest results that I know of is that of the Mohnish Pabrai Free Lunch Portfolio. On December 15, 2017, Mohnish wrote in *Forbes* that the Free Lunch Portfolio trounced the S&P 500 by 11.7% on average over 17+ years, which is the equivalent of a 17+ year CAGR of 17.1%.

So how has the Free Lunch Portfolio fared thus far? It vastly underperformed its backtest results. While it is not unfair to emphasize that patience is required and that it will pay off in the end, the challenge remains in developing a backtest that not only outperforms the Free Lunch Portfolio backtest but also lives up to its backtest results in a real-world environment.

Nick Sleep's name is frequently mentioned when it comes to the gold standard of long-term investing. From September 10th, 2001, until December 31st, 2013, his Nomad Investment Partnership compounded money over 12+ years with an annualized CAGR of 20.8% before performance fees. Let's try to outperform both Pabrai and Sleep!

Robustness

The long-term robustness of the S&P 500 index is phenomenal, and if you want to design an investment robot where the two key ingredients are longevity and robustness, sticking to the S&P 500 constituents as your investable universe makes a lot of sense.

The S&P 500 is a long-term, low-turnover index that employs a buy-and-hold strategy that is tax efficient. It lets its winners run and eliminates its losers selectively. It never reduces a successful investment, regardless of how high the stock has risen, and it does not impose arbitrary size or position limits on holdings, either by company or industry. The contrast with the typical active manager is profound.

The average annualized return since adopting 500 stocks into the index in 1957 through December 31, 2021, is 11.88%, according to Aswath Damodaran, New York School of Business. It has consistently beaten other broader, passively constructed indices, and the fact that it has also beaten other active money managers is not an argument against active management; rather, it is an argument against the methods used by the majority of active managers.

Warren Buffett has often preached that average retail investors should buy and hold an index fund tracking the S&P 500. The Oracle of Omaha even said he's instructed the trustee in charge of his estate to invest 90 percent of his money in the S&P 500 for his wife after he dies.

Value Creation

The first building block of this new investment robot is indeed "sticking to the S&P 500 companies." The second one, as we'll discuss in this paragraph, is sticking with companies that excel at creating value.

According to the latest study on "Return on Invested Capital" by THE KING of ROIC & ROLL, Mr. Michael J. Mauboussin and his colleague, Dan Callahan, a company creates value when the present value of the cash flows from its investments are greater than the cost of the investments.

“In other words, one dollar invested in the business becomes worth more than one dollar in the market. Discounting future cash flows makes sure the investment is attractive relative to the capital’s opportunity cost, the return on the next best alternative.”

ROIC is a simple concept, but how it is calculated requires a lot of judgment. For example, the authors recommend a framework for dealing with excess cash, restructuring charges, asset write-offs, and share buybacks. Let me give you an example of the Microsoft ROIC and show you that ROIC estimation is indeed not a one-size-fits-all exercise.

	2020	2021	2022
MM ROIC TR	52%	58%	49%
MM ROIC WA	33%	37%	34%
MY ROIC	34%	40%	43%
MS ROIC	24%	31%	33%
GF ROIC	26%	30%	30%
FB ROIC	24%	29%	31%
RA ROIC	20%	26%	28%

MM ROIC TR: Mauboussin traditional ROIC

MM ROIC WA: Mauboussin ROIC with adjustments

MY ROC: My ROIC

MS ROIC: Morningstar.Com ROIC

GF ROIC: GuruFocus.Com ROIC

FB ROIC: FinBox.Com ROIC

RA ROIC: ROIC.AI ROIC

The authors state that return on invested capital (ROIC) is a measure of value creation, and obviously I agree. But there is, I believe, a better way of representing value creation, and that is by adjusting ROIC with growth, which results in a newly created measure of company performance, which I have referred to as the Value Creation Engine (VCE).

After reading the research by Michael Mauboussin, you probably agree that estimating return on invested capital (ROIC) can be a daunting challenge, and balancing growth and ROIC even more so. There are companies where growth adds significant value, but this is not always the case. It's not always easy to tell the difference. But I came up with my version of balancing both after assessing many, many multi-baggers, and my version, the VCE, suits me well.

Results

To test the new investment robot, I created my own information warehouse, or database, if you will, with all the historical data for S&P 500 constituents dating back to 1998, which implies some company fundamental data dating back to 1993.

Finding this data is no easy task, especially when it comes to the “delisted” companies. But I suppose one has to make the best of it, and I got roughly 80% of the data, which I consider to be more than enough to produce results that are representative of the S&P 500 as a whole. For instance, for the year 2021, I have 100% of the data needed to perform the analysis, and for 2001, I have approximately 60% of the necessary data.

While one could argue that a test using all of the historical S&P 500 data would provide a more accurate representation of the results, I noticed that there is probably no reason to add to the 80%-filled database. When I ran the software on the 50%-filled database, the outcomes differed from the outcomes on the 60%-filled database. However, adding to the 60%-filled database had no further effect on the final results.

Before I present the results, I would like to make a comment on the quality of the data. In general, I believe that well-known databases that provide financial data are trustworthy. Nevertheless, one of the findings of a random sample of databases that provide fundamental data that goes way back is that the further you go back in time, the bigger the chance that you will find mistakes in these databases.

In the attachment, you will find a random sample of the Devon Energy revenue from 1998 to 2021, taken from two databases. The red numbers are the ones that differ from what the SEC (The U.S. Securities and Exchange Commission) reports as the latest reported revenue number. It's troubling to me that so many numbers differ in just one random data sample. Having said that, here are the results.

Top 3	Top 5	Top 10	Top 20	Top 30
34.3%	29.2%	22.6%	17.8%	16.4%



Slicing and dicing the data endlessly on many variables, predominantly on return on invested capital (ROIC), growth, balance sheet strength, and valuation, led, for instance, to a portfolio of the top 30 stocks with a CAGR of 16.4% over 24 years (and that includes the recent crash). Just think about the vast amount of money you can manage with a portfolio of thirty S&P 500 companies. As expected, previously discovered Value Creation Engine (VCE) insights guided me more efficiently to the promised land.

A portfolio of top 20 stocks with a CAGR of 17.8% over 24 years, as well as a portfolio of 10 stocks with a CAGR of 22.6% over 24 years, were also discovered. On paper, the top 10 stock portfolio outperforms Pabrai, Sleep, O'Shaughnessy, and Buffett.

Finally, the two top-performing portfolios identified were the most concentrated ones: a portfolio of the top five stocks with a CAGR of 29.2% over 24 years and a portfolio of the top three stocks with a CAGR of 34.3% over 24 years. The latter is currently attempting to enter the Guinness Book of Long-Term Backtesting Records. I never imagined I would get this far with my business adventure. The prospects of establishing a 100% quantitative investing firm are undeniably appealing.

If you're overwhelmed with skepticism and disbelief at this point, you're probably not alone. These are indeed theoretical results, and even I find it difficult to believe that such an exceptional long-term CAGR exists.

Unfortunately, there are no guarantees when it comes to investing. Nevertheless, the point I'm trying to make here is that it appears that there is an investment robot out there that outperforms the best of us, huminoids, in the long run. And it is not based on a long-term buy-and-hold strategy.

Let's not celebrate too soon. In 2023, I plan to rerun the entire backtest. If I find mistakes, I will let you know through my writing. Also, I would applaud a professional team that is skeptical of the results presented in this paper for investigating it and writing an independent, comprehensive due diligence report. You will not have access to the algorithm, but you will have access to all of the algorithm's input data and the algorithm's output.

The prerequisites are that you have access to reliable information on a company's historical financials, stock prices, and dividends; that you perform the due diligence at your own cost; that you sign a confidentiality agreement; and that you agree that the due diligence report, if favorable, will be published.

Hopefully, you will agree with me that making mistakes in such a large data-driven project is nearly impossible. We'll fix them if we find them. I would be very surprised if this project became unfavorable as a result of errors that have yet to be discovered. In the upcoming quarterly editions of this newsletter, I will most likely present more detailed results.

So here we are

I started this write-up with a remark about how, when it comes to the certainty that great backtest results can provide in predicting the future, things can get complicated. There are no certainties in the business of investing.

Using intelligent software to endlessly slice and dice the historical fundamental data of S&P 500 companies is not the same as actually realizing an exceptional long-term CAGR under real-world conditions. Actually, it is something completely different, as both Mohnish Pabrai and Tobias Carlisle found out the hard way.

There is a very unique combination of variables that lead to the 34.3%, and even a slight deviation from it will result in lower CAGR results. The best example I can think of is a Japanese Zen archer who, under perfect circumstances, can hit the bull's eye over a distance of 200 meters. But if there is only a miniscule deviation from the point of arrow release during a second attempt, he will easily end up in "the lower CAGR area."

One of the key takeaways from this write-up, as far as I'm concerned, is that it makes a lot of sense to adjust ROIC for growth. I ran the algorithm on the 24 years of S&P 500 constituents once more, but this time without adjusting the ROIC. The outcome is substantially lower.

I have to admit that one of the side effects of these exceptional backtest results is that I am now in a



quandary of conscience. I am convinced that it is best to keep a once-purchased share in the portfolio as long as the company continues to perform well. And here we see backtest results showing that replacing the constituents annually gives by far the best long-term outcome.

Please note that these backtest outcomes are gross results. Taxes can have quite an impact on these gross results. Fortunately, there are tax-efficient investment vehicles available, like the Dutch EIL, or Exempt Investment Institution. This advantageous tax regime exempts corporations from corporate income tax and dividend withholding tax entirely (comparable with the Luxembourg SICAV).

A lot of different scenarios can unfold that will influence the outcome of an attempt to put this approach to work. For instance, legendary investor Stanley Druckenmiller warns there is a "high probability" the stock market will be "flat" for an entire decade. Nouriel Roubini, who predicted a major financial crisis in the United States in 2008, has now issued a dire warning about an impending recession that could occur as soon as late 2022 or early 2023. Worse, Roubini believes that the next downturn will be a "long and ugly one."

Nevertheless, if you are an institutional investor managing vast amounts of money, I guess a three- or five-stock portfolio is not the most preferable one. A minimum of ten stocks appears to be prudent, but a portfolio of 20, 30, or even 50 stocks appears to be appealing as well. All of them continue to outperform the S&P 500, which is a fantastic result in and of itself.

Please contact me if this idea piques your interest. I like the idea of establishing such a fund, or ETF, with, say, 30 stocks, with the lowest-performing 5% or 10% replaced by new ones once a year. There will be plenty of time to think things through, as I anticipate a few difficult years of investing ahead.

Thank you for taking the time to read my letter.
Happy new year!

Peter

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Post scriptum 1: Although the algorithm chose Fire Rock Holdings as a constituent of the China 2023 Quants to be purchased on August 1, 2022, it was not known at the time that trading in the company's shares had been suspended. KWG Living Group Holdings will take the place of Fire Rock Holdings.

Post scriptum 2: The ultimate form of "cloning," in my opinion, is identifying the not-too-expensive HVCs in super investors' portfolios. In my newest and also flagship report, you will find all of the 78 Dataroma Superinvestors' not-too-extensive HVCs. If you want to know what is currently the top HVC from the Seth Klarman Baupost portfolio, and believe me when I say that you should, then this report is available for €895 (ex-VAT). Also, the S&P 500 HVC, S&P 400 HVC, and S&P 600 HVC reports are available at the same price. To get the idea, [HERE](#) you can find an old and out-of-date S&P 500 HVC report.

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Attachment

Wingardium Leviosa! Here are the 2023 USD and EUR constituents, to be bought on the first trading day in January 2023 and sold on the last trading day of December 2023.

Robot	Constituents
Q1	TAV Airports, Restaurant Brands, Starbucks, Microsoft, Brookfield Corp, Brookfield Asset Management, Reysas Logistics, Alphabet, Chipotle Mexican Grill, Alibaba, Tencent, Assured Guaranty, Primerica, Navient, Discover Financial Services, Jack in the Box.
Q2, Q3	Restaurant Brands, Microsoft, Reysas Logistics, Alphabet, Chipotle Mexican Grill, Tencent.
Q4	TAV Airports, Restaurant Brands, Starbucks, Microsoft, Brookfield Corp, Brookfield Asset Management.
Q5 - Q11	Medifast, B Riley Financial, Academy Sports and Outdoors.
Q12 - Q18	Games Workshop Group, Moonpig Group, ID Logistics
Q33 - Q36	QuidelOrtho, Crocs, Interactive Brokers, Tempur Sealy, YETI Holdings and Medifast.
Q37 - Q40	Ninety One, Moonpig Goup, ID Logistics, JD Sports Fashion, Games Workshop Group, Azimuth.

Two Turkish companies are included in the 2023 Mohnish Pabrai Free Lunch Portfolio: Reysas Tasimacilik ve Lojistik Ticaret A.S. (Reysas Logistics) and TAV Havalimanlari Holding A.S. (TAV Airports). Until now, the Q1 to Q4 constituents were all traded on a US stock exchange, but with the addition of these two Turkish companies, that is no longer the case. So I guess that means that Q1 to Q4 are now intercontinental robots? Anyhow. As of today, December 30, 2022, 1 USD is the equivalent of 18.7076 Turkish Lira.

This year, I developed my own six-stock Free Lunch Portfolio, both in USD (Q33-Q36) and EUR (Q37-Q40). Three of the USD constituents are actually Super Investor backed HVCs: Interactive Brokers is a Bryan Lawrence holding, and both Crocs and YETI Holdings are in the portfolio of Bill Miller.

And here are the Devon Energy revenue numbers from two databases, let's name them DB1 and DB2, in comparison with the numbers from the SEC.GOV database.

	DB1	DB2	SEC
1993	99	99	99
1994	101	101	101
1995	113	113	113
1996	257	163	291
1997	452	313	500
1998	706	376	706
1999	1278	716	1278
2000	2587	2784	2587
2001	2864	3075	2864
2002	4316	4316	4316
2003	7352	7352	7352
2004	9086	3189	9086
2005	10027	10741	10027
2006	9767	10578	9767
2007	11362	11362	9975
2008	13858	15211	13858
2009	7631	8015	8015
2010	9940	3129	9940
2011	11445	10573	11445
2012	9501	9502	9501
2013	10397	10397	10397
2014	19566	19566	20638
2015	13145	13145	13145
2016	10304	10304	6753
2017	6501	13949	6501
2018	8896	10734	8896
2019	6220	6220	6220
2020	4828	4828	4828
2021	12206	12206	12206

It's troubling to me that so many numbers differ in just one random data sample. These figures may vary for a variety of reasons. With such large amounts of data, errors are easily made; however, companies occasionally restate their financials as a result of, for instance, changes in accounting methods, so often it depends on which version of the annual report you use to obtain your data.



QUANTS, ROBOTS & CYBORGS

In search of an investing quant, robot or cyborg that consistently outperforms the market with a greater than 15% CAGR.

The USD Robots		2018	2019	2020	2021	2022	2023	2024	2025	CAGR
Q1	The Mohnish Pabrai Free Lunch Portfolio (MP FLP).	-17.0%	21.7%	3.0%	25.0%	-17.7%				1.6%
Q2	The conservative version of the MP FLP.	-10.1%	25.2%	15.9%	25.6%	-10.0%				8.1%
Q3	The conservative version of the MP FLP. Sell at +40%.	21.6%	34.0%	20.6%	26.7%	-10.0%				17.5%
Q4	The MP FLP. Spawners only.	-	-	-	28.0%	-15.2%				4.2%
Q5	The USD new year robot. Sell at -20% or +40%.	40.0%	27.7%	-20.0%	36.3%	-20.0%				9.3%
Q6	The USD new year robot. Sell at -20% or +50%	50.0%	34.4%	-20.0%	43.0%	-20.0%				13.0%
Q7	The USD new year robot. Sell at -20% or +60%.	60.0%	33.4%	-20.0%	49.6%	-20.0%				15.4%
Q8	The USD new year robot. Sell at +40%.	40.0%	27.7%	-6.1%	36.3%	-17.4%				13.6%
Q9	The USD new year robot. Sell at +50%.	50.0%	34.4%	-6.1%	43.0%	-14.0%				18.4%
Q10	The USD new year robot. Sell at +60%.	60.0%	33.4%	-6.1%	49.6%	-14.2%				20.8%
Q11	The USD new year robot. No conditional selling.	18.4%	25.4%	-6.1%	95.1%	-14.2%				18.5%
Q33	The Value Firm® USD Free Lunch Portfolio (TVF FLP)	-	-	-	-	-				-
Q34	The TVF FLP USD. Sell at +40%.	-	-	-	-	-				-
Q35	The TVF FLP USD. Sell at +50%.	-	-	-	-	-				-
Q36	The TVF FLP USD. Sell at +60%.	-	-	-	-	-				-
BM1	Benchmark: iShares S&P SmallCap 600 UCITS ETF	-9.1%	22.3%	11.2%	28.1%	-16.5%				5.7%
BM2	Benchmark: iShares Core S&P 500 ETF	-5.2%	31.2%	17.4%	30.6%	-18.3%				9.3%

Results measured from 1 January to 31 December. For instance, the USD 2022 robot performance is measured from 1 January 2022 to 31 December 2022.

The EUR Robots		2018	2019	2020	2021	2022	2023	2024	2025	CAGR
Q12	The EUR new year robot. Sell at -20% or +40%.	-	-	-	-	-20.0%				-20.0%
Q13	The EUR new year robot. Sell at -20% or +50%.	-	-	-	-	-20.0%				-20.0%
Q14	The EUR new year robot. Sell at -20% or +60%.	-	-	-	-	-20.0%				-20.0%
Q15	The EUR new year robot. Sell at +40%.	-	-	-	-	-45.0%				-45.1%
Q16	The EUR new year robot. Sell at +50%.	-	-	-	-	-45.0%				-45.1%
Q17	The EUR new year robot. Sell at +60%.	-	-	-	-	-45.0%				-45.1%
Q18	The EUR new year robot. No conditional selling.	-	-	-	-	-45.0%				-45.1%
Q37	The Value Firm® EUR Free Lunch Portfolio (TVF FLP)	-	-	-	-	-				-
Q38	The TVF FLP EUR. Sell at +40%.	-	-	-	-	-				-
Q39	The TVF FLP EUR. Sell at +50%.	-	-	-	-	-				-
Q40	The TVF FLP EUR. Sell at +60%.	-	-	-	-	-				-
BM	Benchmark: iShares MSCI Europe Small-Cap ETF	-	-	-	-	-27.3%				-27.3%

Results measured from 1 January to 31 December. For instance, the EUR 2022 robot performance is measured from 1 January 2022 to 31 December 2022.

The China Robots		2018	2019	2020	2021	2022	2023	2024	2025	CAGR
Q19	The China midyear robot. Sell at -20% or +40%.	-	-	-19.3%	23.8%	-20.0%				-7.2%
Q20	The China midyear robot. Sell at -20% or +50%.	-	-	-19.3%	30.5%	-20.0%				-5.6%
Q21	The China midyear robot. Sell at -20% or +60%.	-	-	-19.3%	37.2%	-20.0%				-4.0%
Q22	The China midyear robot. Sell at +40%.	-	-	6.1%	13.4%	-49.3%				-15.2%
Q23	The China midyear robot. Sell at +50%.	-	-	9.4%	20.1%	-49.3%				-12.7%
Q24	The China midyear robot. Sell at +60%.	-	-	12.8%	26.7%	-49.3%				-10.2%
Q25	The China midyear robot. No conditional selling.	-	-	56.4%	135.8%	-49.3%				23.2%
BM	Benchmark: iShares MSCI China Small-Cap ETF	-	-	11.3%	22.6%	-27.5%				0.1%

Results measured from 1 August to 31 July. For instance, the China 2020 robot performance is measured from 1 August 2019 to 31 July 2020.

The India Robots		2018	2019	2020	2021	2022	2023	2024	2025	CAGR
Q26	The India midyear robot. Sell at -20% or +40%.	-	-	23.0%	41.2%	19.3%				27.5%
Q27	The India midyear robot. Sell at -20% or +50%.	-	-	29.7%	51.2%	7.0%				28.0%
Q28	The India midyear robot. Sell at -20% or +60%.	-	-	36.3%	54.5%	10.4%				32.5%
Q29	The India midyear robot. Sell at +40%.	-	-	24.2%	41.2%	19.3%				27.9%
Q30	The India midyear robot. Sell at +50%.	-	-	30.9%	51.2%	7.0%				28.4%
Q31	The India midyear robot. Sell at +60%.	-	-	37.6%	54.5%	10.4%				32.9%
Q32	The India midyear robot. No conditional selling.	-	-	44.3%	243.7%	-1.2%				69.9%
BM	Benchmark: iShares MSCI India Small-Cap ETF	-	-	-7.2%	81.3%	-7.4%				16.0%

Results measured from 1 August to 31 July. For instance, the India 2020 robot performance is measured from 1 August 2019 to 31 July 2020. The "green 2022" actually means that between 1 August 2021 and 31 July 2022, the benchmark index did not experience a >20% crash.

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- With only a few trading days left in 2022, we now have a 5-year track record for the USD robots for the first time. With a 5-year CAGR of 20.8%, robot Q10 outperforms the competition. I would prefer a 10-year track record, yet I'm hopeful about the next five years.
- Because I now have access to much more historical S&P 500 company data, I was able to perform a backtest on the top three stocks for each year from 1998 to 2021 under the various conditional selling scenarios. The outcome is, lo and behold, that the final battle in the Grand Prix du USD Robots will be between Q10 and Q11, with Q11, the one with no conditional sell orders at all, holding by far all the cards, according to the backtest results. It also showed that the robots with a -20% conditional sell order belong to the laggards.
- The above numbers are the gross results. A "red year," like 2020, is a "market crash > 20%" year.