Summer 2022 Edition

The stock market isn't dead quite yet.

This quote comes from Monty Python, the renowned British surreal comedy troupe. The 1975 comedy film "The Holy Grail" is an original story that parodies the legend of King Arthur's quest for the Holy Grail. Aren't we all little King Arthurs after all?

Statue of King Arthur by Rubin Eynon, Tintagel Castle, England.

No matter how intelligent and thoughtful people write about the current market environment, nobody knows what's going to happen next. Are we going to witness a strong rebound before year's end, or a further fall into unknown territory? I prefer the latter one, and let me explain why.

S&P 500

The S&P 500® is widely regarded as the most accurate single indicator of large-cap US equities in the world. The index includes 500 leading companies and covers approximately 80% of the available market capitalization. An estimated $13.5 trillion is indexed or benchmarked to the index, with indexed assets comprising approximately $5.4 trillion of this total (as of Dec. 31, 2020, according to the S & P Global Annual Survey of Assets).

If you study the S&P 500, for instance, as reported in the latest Berkshire Hathaway annual report, you will find three moments in time, from 1965 to 2021, where the S&P 500 declined more than 30% in one or two years: 1973/1974, 2001/2002, and 2008. These were pivotal times to invest in the S & P 500 index, reinvest dividends, and simply hold it. For example, $10.000

invested on the first trading day in 1975 was worth approximately $2.6 million by the end of 2021, just before the current crash. It looks as if there is a new 1973-1974 moment on the horizon.

Recently, Bank of America suggested investors "nibble" on stocks when the S&P 500 hits 3600 and "gorge" at 3000. Once the bear market ends, the S&P 500 could be poised for a bull market run to 8900 by 2028. It is a compelling idea, I believe.

So here we have an approach where there is a clearly defined "moment of action" and the only thing you have to do is to "take that action." We are not fully there yet, but perhaps we will get there very soon. If we get there, rest assured that I'll be ready to invest.

The Algorithm

One of the "lessons learned" in 2022 is that you have to be very careful with the interpretation of back-test results. Perhaps you recall the exceptional back-test results of the algorithm as described in the Winter 2021 Edition. With the phenomenal crash we are experiencing right now, I realized even better than ever before that these back-test results were realized in the BULL period of the second decade of this new millennium.

In the table below you will find the new back-test results, but this time going back all the way to the year 2000. Some changes were made to the algorithm, so we are testing the "2022 Release" of it.

For instance, in 2002, the algorithm selected five stocks for the 2002 basket, namely AAON, Check Point Software Technologies, CSG Systems, FactSet Research Systems and Oracle. This basket generated a 10 year CAGR of 11.5% from the first trading day in June 2002 to the last trading day in May 2011. The S&P 500 price to earnings ratio (PE) was 37.92 on the first trading day of June 2002, and the S&P 500 price to sales ratio (PS) was 1.39. Source: www.multpl.com.

Year	Constituents	10Y CAGR	S&P 500 PE	S&P 500 PS
2000	—	0%	28.16	1.77*
2001	Citrix Systems, CSG Systems, FactSet Research, Oracle, Waters.	9.3%	33.67	1.64
2002	AAON, Check Point Software Technologies, CSG Systems, FactSet Research Systems, Oracle.	11.5%	37.92	1.39
2003	Amgen, Check Point Software, Cognizant Technologies, CSG Systems, FactSet Research.	16.4%	28.6	1.42
2004	Amgen, Cognizant Technology, FactSet Research, Penn National Gaming, Take-Two Interactive Software.	15.6%	20.17	1.54
2005	Cognizant Technology Solutions, Electronic Arts, Monster Beverage, Moody's, Zimmer Biomet.	22.5%	19.00	1.44
2006	Monster Beverage, Moody's, Netflix, NortonLifeLock, Zimmer Biomet.	22.1%	16.82	1.38
2007	Alliance Data Systems, MicroStrategy, Monster Beverage, Moody's, Netflix.	29.7%	17.83	1.52
2008	Alliance Data Systems, MicroStrategy, Monster Beverage, Moody's, Netflix.	34.8%	26.11	1.19
2009	Autodesk, Gilead Sciences, Interdigital, Monster Beverage, Netflix.	32.1%	123.32	0.97
2010	Apple, Gilead Sciences, MercadoLibre, Monster Beverage, Netflix.	29.9%	16.15	1.11
2011	Amazon.com, Apple, Booking Holdings, Gilead Sciences, Netflix.	25.3%	15.35	1.31
2012	Amazon.com, Apple, Booking Holdings, Fortinet, Medifast.	21.0%	15.05	1.27

The S&P 500 PE is measured on the first trading day in June of that specific year. The S&P 500 PS are estimates, based upon the www.multpl.com information.

Here are some observations:

- On average, the algorithm generated a 10-year CAGR of 20.8%. If you only included the years where either the S&P 500 PS was below 1.2 and the S&P 500 PE was below 20, the years 2005 to 2012, the algorithm generated an average 10-year CAGR of 27.1%. That's excluding dividends.
- On average, over the years 2000 to 2012, almost one out of two stock picks became a multi-bagger, generating a 10 year stock price CAGR of 16% or more. Over the years 2005 to 2012, 60% became multi-baggers.
- The algorithm identifies exceptional multi-baggers like Cognizant Technologies, Monster Beverage, Netflix, MercadoLibre, and Amazon.Com. But be careful. If you remove these companies from the baskets, though, you end up with an average 10-year CAGR of 11.4% over all the years, and 13.2% from 2005 onwards. That's what will happen when the United States, for instance, stops producing these exceptional multi-baggers.
- You're never 100% certain that you'll have all the publicly listed companies in your database, and that imposes the risk that you missed out on a few exceptional companies that would have shown up if they were actually in your database, and that affected the final outcome. Another risk is that of data errors in the data of the companies that are actually in your database. I do not know of any database without data errors. I try to mitigate that risk by making sure that the data of the finally selected constituents is "double checked."
- In the year 2000, the algorithm decided, based upon the overall valuation multiples of the 2000 basket, that there were no buys whatsoever.
- Alliance Data Systems was recently renamed Bread Financial.
- As pointed out in the previous edition, "data cleansing," where you exclude industries with a low probability of finding multi-baggers, is critical.
- You'll probably agree that, although unintentional, it's almost impossible not to make any mistakes in such a research project. Please be advised to do your own due diligence and let me know if you find some errors, so I can correct them.

Great back-test results aren't necessarily the equivalent of guaranteed favorable future results. Trying to implement an algorithmic investing approach without back-testing, however, is like walking a tightrope blindfolded. That's kind of scary, but as always in investing, you must move forward with caution. Great back-test results may be the equivalent of removing the blindfold, but that doesn't mean the acrobat will not fall off the rope.

Although I am much more of a believer in a concentrated portfolio of handpicked stocks, you could argue that I'm obsessed with machine learning. I do realize that you'll never achieve the deep thinking about companies and industries of a Seth Klarman or Ted Weschler with an algorithm. But that doesn't mean that you will not be able to achieve superior long-term investment results just by using an algorithm.

Indeed, the algorithm does not have the odds in its favor, and many great investors are skeptical that it can be done. The only way to find out is to try it, which is exactly what I'm doing. And I'm not the only one.

A trio of Alphabet-owned DeepMind employees left the company in January to form their own company and develop artificial intelligence capable of selecting stocks and cryptocurrencies to invest in before their prices rise. I'm not interested in cryptocurrencies, but their stock picking AI should be worth keeping an eye on.

The AI system of their new company, Equilibre Technologies, will be trained to buy and sell stocks in order to make a profit using reinforcement learning, a technique that rewards the AI every time it achieves a specific goal.

I expect their solution to be more of a "trading bot" than an "investing algorithm" like the one I use for The Wizard Portfolio, but we'll see. Equilibre hopes to use its AI to launch a new hedge fund or sell it to a major institutional bank in the long run. The new start-up, based in Prague, Czech Republic, has received funding from several venture capitalists,

demonstrating Equilibre's credentials as a result of its work at DeepMind.

So here we are

We all know that there are no certainties in investing. Anything can happen, and nobody knows if such an algorithmic approach will stand the test of time. But you probably agree that it's worth trying.

For you, professional datacrunchers, I added as an attachment the "raw data" generated by the algorithm, and that is before cleansing for data errors, and before cleansing for low probability multi-bagger industries.

The algorithm can be run on a global scale, and over time, these "raw data reports" will become available on my website on a subscription basis.

Anyhow, the idea is to set up an EU-law compliant Luxembourg Investment Fund. If that peaks your interest and you are willing to step up as an investor in such a unique project, please contact me at peter@thevaluefirm.com.

Thank you for reading my letter.

Peter

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Post scriptum. This write-up is part 1 of the 2022 Summer Edition. By the end of July, I will publish the new India and China robot constituents on my website. And we'll also have a look at the results of the Intelligent Cloning portfolio by then.

2000	2001	2002	2003	2004
Citrix Systems Inc	Check Point Software Technologies Ltd	Exxon Mobil Corp	APACHE CORP	NVR Inc
SEI Investments Co	SEI Investments Co	Check Point Software Technologies Ltd	Nautilus Inc	Nautilus Inc
Microsoft Corp	American Eagle Outfitters Inc	SEI Investments Co	NVR Inc	FactSet Research Systems Inc
Cisco Systems Inc	Gap Inc	NVR Inc	FactSet Research Systems Inc	US Physical Therapy Inc
Paychex Inc	Oracle Corp	CSG Systems International Inc	US Physical Therapy Inc	Strategic Education Inc
TJX Companies Inc	Waters Corp	Oracle Corp	SEI Investments Co	APA Corp
Oracle Corp	Microsoft Corp	US Physical Therapy Inc	CSG Systems International Inc	APACHE CORP
Robert Half International Inc	Citrix Systems Inc	AAON Inc	Exxon Mobil Corp	Amgen Inc
Sanmina Corp	CSG Systems International Inc	FactSet Research Systems Inc	Vermilion Energy Inc	Endo International PLC
PTC Inc	FactSet Research Systems Inc	Pfizer Inc	Check Point Software Technologies Ltd	Cognizant Technology Solutions Corp A
Gap Inc	Affiliated Managers Group Inc	Forrester Research Inc	Amgen Inc	Sanofi SA ADR
Raymond James Financial Inc	TJX Companies Inc	DaVita Inc	Cognizant Technology Solutions Corp A	Penn National Gaming Inc
Ross Stores Inc	Cisco Systems Inc	Semtech Corp	GlaxoSmithKline PLC ADR	Enerplus Corp
ACI Worldwide Inc	Paychex Inc	Bed Bath & Beyond Inc	Pfizer Inc	China Yuchai International Ltd
Biogen Inc	Robert Half International Inc	Microsoft Corp	Sasol Ltd ADR	Columbia Sportswear Co
NortonLifeLock Inc	Semtech Corp	Steven Madden Ltd	Bed Bath & Beyond Inc	Bed Bath & Beyond Inc
AT&T Inc	Progress Software Corp	Stryker Corp	Arthur J. Gallagher & Co	Arthur J. Gallagher & Co
Semtech Corp	Dollar Tree Inc	Biogen Inc	Manhattan Associates Inc	FTI Consulting Inc
Buckle Inc	Buckle Inc	Penn National Gaming Inc	Penn National Gaming Inc	Take-Two Interactive Software Inc
Bed Bath & Beyond Inc	Biogen Inc	Orthofix Medical Inc	H&R Block Inc	H&R Block Inc
Clorox Co	AT&T Inc	Robert Half International Inc	Escalade Inc	Choice Hotels International Inc
ASGN Inc	NortonLifeLock Inc	Waters Corp	Columbia Sportswear Co	Electronic Arts Inc
Harley-Davidson Inc	Pfizer Inc	Merck & Co Inc	FTI Consulting Inc	Pool Corp
Intel Corp	Teradyne Inc	Applied Materials Inc	EOG Resources Inc	Escalade Inc
Enerpac Tool Group Corp Class A	NetApp Inc	Citrix Systems Inc	Endo International PLC	Vermilion Energy Inc
Gentex Corp	Fastenal Co	Arthur J. Gallagher & Co	Jack Henry & Associates Inc	GlaxoSmithKline PLC ADR
Merck & Co Inc	Orthofix Medical Inc	Dollar Tree Inc	Merck & Co Inc	Sasol Ltd ADR
Verizon Communications Inc	Bed Bath & Beyond Inc	Pool Corp	ConocoPhillips	Pfizer Inc
Fair Isaac Corp	Clorox Co	H&R Block Inc	Strategic Education Inc	Stericycle Inc
Cintas Corp	Zebra Technologies Corp Class A	Analog Devices Inc	NortonLifeLock Inc	Avis Budget Group Inc
Simpson Manufacturing Co Inc	Merck & Co Inc	NortonLifeLock Inc	Stantec Inc	Scientific Games Corp Ordinary Shares
Fiserv Inc	ASGN Inc	Occidental Petroleum Corp	Semtech Corp	NortonLifeLock Inc
The Interpublic Group of Companies Inc	Fiserv Inc	Buckle Inc	Star Group LP	Intuit Inc
ACCO Brands Corp	Vishay Intertechnology Inc	Clorox Co	Microsoft Corp	UGI Corp
Forrester Research Inc	Cintas Corp	Affiliated Managers Group Inc	Biogen Inc	Quest Diagnostics Inc

2005	2006	2007	2008
Moody's Corporation	Moody's Corporation	Moody's Corporation	Moody's Corporation
NVR Inc	Mannatech Inc	Monster Beverage Corp	Monster Beverage Corp
Zimmer Biomet Holdings Inc	Alphabet Inc Class C	Southern Copper Corp	Southern Copper Corp
W&T Offshore Inc	Alphabet Inc Class A	NVR Inc	Alliance Data Systems Corp
Chico's FAS Inc	Manning & Napier Inc	Tapestry Inc	Netflix Inc
Strategic Education Inc	Monster Beverage Corp	Alliance Data Systems Corp	Freeport-McMoRan Inc
CME Group Inc Class A	NVR Inc	NetEase Inc ADR	SEI Investments Co
Cognizant Technology Solutions Corp A	Tapestry Inc	Netflix Inc	MicroStrategy Inc Class A
Electronic Arts Inc	Netflix Inc	Freeport-McMoRan Inc	Tapestry Inc
Monster Beverage Corp	W&T Offshore Inc	Alphabet Inc Class C	Salesforce.com Inc
Pool Corp	Southern Copper Corp	Alphabet Inc Class A	Gilead Sciences Inc
China Yuchai International Ltd	Chico's FAS Inc	Mannatech Inc	Autodesk Inc
Perdoceo Education Corp	RELIV' INTERNATIONAL INC	MicroStrategy Inc Class A	NetEase Inc ADR
Endo International PLC	Encore Capital Group Inc	Gilead Sciences Inc	PetMed Express Inc
Sanofi SA ADR	CME Group Inc Class A	Blackbaud Inc	Garmin Ltd
TIM SA ADR	Vale SA ADR	Patterson-UTI Energy Inc	DMC Global Inc
Suncor Energy Inc	Frontline Ltd	Vale SA ADR	Blackbaud Inc
Choice Hotels International Inc	FRONTLINELTD	Autodesk Inc	Patterson-UTI Energy Inc
FactSet Research Systems Inc	Strategic Education Inc	Chico's FAS Inc	Lam Research Corp
Travelzoo	TIM SA ADR	Teck Resources Ltd Class B	America Movil SAB de CV ADR
Computer Programs and Systems Inc	Zimmer Biomet Holdings Inc	Graco Inc	Vale SA ADR
Arthur J. Gallagher & Co	Suncor Energy Inc	CME Group Inc Class A	Infosys Ltd ADR
NortonLifeLock Inc	Freeport-McMoRan Inc	SEI Investments Co	American Eagle Outfitters Inc
Marine Products Corp	Telefonica Brasil SA ADR	RELIV' INTERNATIONAL INC	Xperi Holding Corp
Avis Budget Group Inc	NortonLifeLock Inc	America Movil SAB de CV ADR	BHP Group PLC ADR
Vale SA ADR	Cognizant Technology Solutions Corp A	Steel Dynamics Inc	Herbalife Nutrition Ltd
Bed Bath & Beyond Inc	Marine Products Corp	Alliance Resource Partners LP	Tenaris SA ADR
Nautilus Inc	Alliance Resource Partners LP	Telefonica Brasil SA ADR	Alphabet Inc Class A
Scientific Games Corp Ordinary Shares	America Movil SAB de CV ADR	Garmin Ltd	Alphabet Inc Class C
Southern Copper Corp	Adobe Inc	Chevron Corp	Abercrombie & Fitch Co Class A
FTI Consulting Inc	Amedisys Inc	Cognizant Technology Solutions Corp A	Huron Consulting Group Inc
Amgen Inc	Perdoceo Education Corp	Morningstar Inc	Alliance Resource Partners LP
Qualcomm Inc	Chevron Corp	Urban Outfitters Inc	Teck Resources Ltd Class B
Penn National Gaming Inc	Endo International PLC	Strategic Education Inc	Apple Inc
US Physical Therapy Inc	Edgewell Personal Care Co	Frontline Ltd	Robert Half International Inc

2009	2010	2011	2012
Netflix Inc	Netflix Inc	Strategic Education Inc	Zovio Inc
Monster Beverage Corp	Sohu.com Ltd ADR	American Public Education Inc	Baidu Inc ADR
SEI Investments Co	Strategic Education Inc	Westlake Chemical Partners LP	Strategic Education Inc
Nutrien Ltd	Gilead Sciences Inc	Baidu Inc ADR	American Public Education Inc
InterDigital Inc	MercadoLibre Inc	Grand Canyon Education Inc	Apple Inc
Sohu.com Ltd ADR	CF Industries Holdings Inc	Sohu.com Ltd ADR	Grand Canyon Education Inc
Gilead Sciences Inc	Westlake Chemical Partners LP	Gulf Resources Inc	Booking Holdings Inc
Autodesk Inc	Monster Beverage Corp	MercadoLibre Inc	Buckle Inc
Tapestry Inc	Apple Inc	Apple Inc	Medifast Inc
Garmin Ltd	Amazon.com Inc	Gilead Sciences Inc	Fortinet Inc
NetEase Inc ADR	Baidu Inc ADR	Amazon.com Inc	Amazon.com Inc
Salesforce.com Inc	Garmin Ltd	First Solar Inc	Sturm Ruger & Co Inc
Apple Inc	ICL Group Ltd	Netflix Inc	New Oriental Education & Technology Group Inc ADR
Intercontinental Exchange Inc	Booking Holdings Inc	Booking Holdings Inc	MercadoLibre Inc
ICL Group Ltd	Salesforce.com Inc	Synaptics Inc	Gilead Sciences Inc
Core Laboratories NV	NetEase Inc ADR	Cimpress PLC	Noah Holdings Ltd ADR
Freeport-McMoRan Inc	Dine Brands Global Inc	Trip.com Group Ltd ADR	Guess? Inc
Trip.com Group Ltd ADR	LHC Group Inc	Ebix Inc	Monster Beverage Corp
Herbalife Nutrition Ltd	Autodesk Inc	Lincoln Educational Services Corp	Sohu.com Ltd ADR
BHP Group PLC ADR	Blackbaud Inc	LHC Group Inc	Adtalem Global Education Inc
BHP Group Ltd ADR	Mobile TeleSystems PJSC ADR	Salesforce.com Inc	Netflix Inc
PetMed Express Inc	Transocean Ltd	Dine Brands Global Inc	ATN International Inc
Vale SA ADR	Infosys Ltd ADR	New Oriental Education & Technology Group Inc ADR	Trip.com Group Ltd ADR
Southern Copper Corp	Intercontinental Exchange Inc	Monster Beverage Corp	Cimpress PLC
Strategic Education Inc	Intuitive Surgical Inc	Buckle Inc	Credit Acceptance Corp
America Movil SAB de CV ADR	BHP Group Ltd ADR	Credit Acceptance Corp	Veeco Instruments Inc
Infosys Ltd ADR	Freeport-McMoRan Inc	PetMed Express Inc	Chipotle Mexican Grill Inc
Blackbaud Inc	CommVault Systems Inc	China Automotive Systems Inc	F5 Networks Inc
NVIDIA Corp	Chipotle Mexican Grill Inc	Guess? Inc	Gentherm Inc
Abercrombie & Fitch Co Class A	PetMed Express Inc	America Movil SAB de CV ADR	Gulf Resources Inc
Lam Research Corp	Amedisys Inc	Adtalem Global Education Inc	America Movil SAB de CV ADR
Morningstar Inc	Bruker Corp	NetEase Inc ADR	NetEase Inc ADR
Amazon.com Inc	Synaptics Inc	CommVault Systems Inc	BGC Partners Inc Class A
GigaMedia Ltd	Dawson Geophysical Co	Hawkins Inc	Lincoln Educational Services Corp
Allegheny Technologies Inc	BHP Group PLC ADR	Chipotle Mexican Grill Inc	Travelzoo

Summer 2022 Edition

Welcome to the Summer 2022 Edition, Part 2, in which we'll have a look at the Intelligent Cloning Portfolio, the India & China investing robots, and more. But first let's correct an error, or typo if you will, that I found in part 1. In the last paragraph on the first page, it says "May 2011." That should be "May 2012." And let me remind you of The Wizard Portfolio 2022 Update.

Intelligent Cloning Portfolio

Cloning works! Identifying the best investment teams, studying their 13Fs, and if the investment makes sense to you, copying the idea, a process better known as cloning, really works, and I believe will continue to work for many decades. What remains critical, though, is not only who you want to copy, but even more importantly, the in-depth due diligence. You have to understand the company and its environment better than anyone else, and that makes cloning, which has this connotation of being simple, actually very hard. Just copying ideas, like a gorilla throwing darts at a board with 13F ideas on it, is kind of madness.

Even the process of identifying the ideas you want to study is hard. If, for instance, you study the latest ideas of Warren Buffett and Seth Klarman, which are the ones you want to spend your time on? What really helps, but that already takes a lot of experience, is to scan the list of new cloneables for their uniqueness and idiosyncrasy. That's how I got to, for instance, Verisign, a Berkshire Hathaway holding, and Veritiv, a Baupost holding.

Cloning, to me, is a tollgate to exceptional investment ideas. You just know that if you start your due diligence with ideas from very thoughtful and successful investment managers, there is a lot of safety guaranteed because the ideas have already been extensively researched. People frequently object to cloning because it lacks originality, but I guess I value safety far more than originality.

Let's have a look at the Intelligent Cloning Portfolio. Let me remind you once again that these returns are not actual fund results, nor does this table necessarily reflect any of my personal holdings. The table illustrates what the results could have been if we indeed started an investment partnership in 2H '16. The stocks are selected with the view of holding on to these companies for several years, preferably decades, as long as the company remains a good company.

Current positions

When	Company	Price	Return
2H '16	Deere	87 USD	302%
2H '16	Allison Transm.	29 USD	40%
1H '17	Davita	65 USD	28%
1H '17	Verisign	83 USD	120%
2H '18	StoneCo	17 USD	-43%
2H '18	Veritiv	24 USD	414%
1H '20	eBay	30 USD	60%
2H '20	XPEL	15 USD	303%
2H '21	Daily Journal	344 USD	-21%
1H '22	IDT Corporation	35 USD	-25%

Closed positions

When	Company	Price	Sold	Return
2H '17	Tegna	13 USD	2H '18	3%
1H '18	Esterline Corp.	72 USD	2H '18	70%
1H '18	Sinclair Broadcast	44 USD	2H '19	46%
1H '19	Liberty Global	22 USD	2H '20	5%
1H '20	Graftech	12 USD	1H '21	2%
2H '17	Monro	47 USD	2H '21	38%

The big disappointment came from StoneCo, the Brazilian FinTech company, which, after a fantastic run from $17 to $92, went down from $92 to $8. This kind of volatility is exceptional, but you better get used to it. Those things happen.

The latest addition, IDT Corporation, was copied from Alta Fox Capital when the stock was already down a lot as a result of the crash, but it went even further down, as many other stocks did. IDT Corporation is a founder-led company. In general terms, you could argue that founder-led companies outperform the rest. Chris Zook and James Allen wrote a book, entitled "The Founder's Mentality", in which they show you that the returns to shareholders in public companies

where the founder is still involved are 3x higher than in other companies.

The China Robots

The midyear robots buy the stocks on the first trading day in August and sell them on the last trading day in July. It's fair to say that the China robots did not live up to their expectations, with the exception of Q25. The three-year CAGR results of all the other China robots are all in negative territory.

What we saw in the first three years of their existence is that there were two major crashes in three years, which is way above the statistical average of one crash every seven years:

- During the 2020 midyear term, which lasts from 1 August 2019 to 31 July 2020, the COVID-19 pandemic led to a decline top-bottom of 26% for its benchmark, the MSCI China Small Cap Index.
- In the 2022 midyear term, the MSCI China Small Cap index at its worst point was down approximately 33%.

If the Chinese markets continue to behave like crazy, resulting in this type of vicious volatility, these robots don't have a chance. My best guess is that if China does not offer my robots a better work environment, they will flee the country and find themselves a cozy place in the sun in Copacabana.

But I'm optimistic and expect that the Chinese markets will eventually behave like the more mature US stock markets and show an average of one crash every seven years. You can find the results of the China Robots in the attachment.

Join me on a trip down memory lane as we examine the historical performance of the best performing China robot, Q25, with a three-year CAGR of 23.2%.

2020

Company	Begin	End	Div	%
IGG Inc	7.3	7.4	0.3	6.0
Tianneng Power	6.2	18.2	0.4	197.0
Consun Pharma	4.7	2.9	0.2	-33.9
				56.4

There are no conditional selling orders on the China robot Q25.

2021

Company	Begin	End	Div	%
Dongyue Group	3.5	15.2	0.1	339.5
Yadea Group	6.5	12.6	0.3	97.1
Bright Scholar Ed.	7.3	3.5	1.6	-29.1
				135.8

There are no conditional selling orders on the China robot Q25.

2022

Company	Begin	End	Div	%
Jiayuan Int. Group	3.0	0.3		-90.8
Pax Global Tech.	8.6	7.3	0.1	-13.0
Homeland Interact.	2.8	1.6		-44.2
				-49.3

There are no conditional selling orders on the China robot Q25.

Wingardium Leviosa! Here are the new China constituents, to be bought on the first trading day in August 2022 and sold on the last trading day of July 2023.

Company	Business profile
Fire Rock Holdings	Fire Rock Holdings Limited is a investment holding company principally engaged in the development of browser and mobile games.
IVD Medical Holding	IVD Medical Holding Ltd is mainly engaged in the sales of in vitro diagnostic products
Binjiang Service Group	Binjiang Service Group Co. Ltd. is an investment holding company mainly engaged in property management services.

India Robots

As far as robot performance is concerned, China is left in the dust and shadows by India. What we saw in the first three years of their existence is that there was just one major crash.

- During the 2020 midyear term, the COVID-19 pandemic led to a decline top-bottom of 44% for its benchmark, the MSCI India Small Cap Index.

The COVID-19 crash of the benchmark index had no effect on Indian robots in any way. The worst performing India robot shows an outstanding three-year CAGR of 28.1%. All India robots vastly outperformed their benchmark, the MSCI India Small Cap index, which was up 56% since August 1, 2019, which is the equivalent of a three-year CAGR of 16.0%.

Join me on a trip down memory lane as we examine the historical performance of one of the best performing India robots, Q31, with a three-year CAGR of 32.9%.

2020

Company	Begin	End	Div	%
Sonata Software	316.0	264.5	20.2	-9.9
Persistent Systems	514.9	823.9		60.0
NIIT Tech.	1198	1928	31.0	62.6
				37.5

NIIT Tech was renamed COFORGE. Both Persistent and NIIT triggered the +60% sell order.

2021

Company	Begin	End	Div	%
Eclerx Services	480.2	768.4		60.0
Expleo Solutions	272.9	436.6		60.0
Accelya Solutions	983.2	1376.5	35	43.6
				54.5

Both Eclerx and Expleo triggered the +60% sell condition.

2022

Company	Begin	End	Div	%
Affle India	848.0	1356.8		60.0
Redington India	165.5	124.9	4.0	-22.1
Deepak Nitrite	2095.5	1924.0		-6.8
				10.4

Affle India triggered the +60% sell condition.

Please be advised to wait at least another few years before drawing any meaningful conclusion from these numbers.

Wingardium Leviosa! Here are the new India constituents, to be bought on the first trading day in August 2022, and sold on the last trading day of July 2023.

Company	Business profile
Apollo Tricoat Tubes	Apollo TriCoat Tubes Limited is an steel tubes and pipe manufacturing company.
Castrol India	Castrol India Limited is engaged in the business of manufacturing and marketing of automotive and industrial lubricants and related services.
Chemplast Sanmar	Chemplast Sanmar is a major manufacturer of speciality shemicals such as specialty paste PVC resin and custom manufactured chemicals for agro-chemical, pharmaceutical and fine chemicals sector.

Now I need your help. I'd like you to act as my independent financial controller and point out any mistakes I may have made, both for the China and India robots. That would be extremely helpful, as it would allow me to correct any errors. Thank you.

10 Baggers

Twitter is a great place for finding exceptional investment research. Long Equity, a London-based concentrated global equity fund, published a list of 148 S&P 500 companies with a multiple of 10x or greater between the market low in December 2008 and the market high in January 2022. Now, if you say that there is an algorithm that is able to produce a concentrated list of companies, with in this list plenty of multi-baggers, then this algorithm should be able to identify lots of these 10x companies, right?

What you will find in the table below are the first two columns of the list of 148 companies with their multi-bagger multiples, which I copied from Long Equity, and added to that the year in which this company was identified by the algorithm as a potential multi-bagger. And once again, what I mean by "was identified by" is that this company showed up in this concentrated list of potential multi-baggers.

Company	Bagger (x)	Year
Nvidia	116	2003
DexCom	116	NI
Netflix	93	2005
Caesars Ent	92	2001
United Rents	90	2015
Align	92	2013
Domino's	91	ND
Abiomed	67	2017
Ulta Beauty	64	2008
Old Dominion	52	2015
AMD	51	NI
MarketAxess	51	2006
Apple	47	2007
Live Nation	47	2019
Amazon	47	2006
CBRE	45	2007
Regeneron	44	2013
Cadence Finance	44	NI
Extra Space	42	2014
Pool Corpora	40	2000
SVB Financia	40	NI
Teradyne	40	2000
Tyler Techno	39	2007
MSCI	36	2011
Idexx Labora	35	2001
Mettler Toledo	33	2003
Intuitive Surgical	32	2009
Gartner	32	2000
Incyte	32	2015
Booking Hold	31	2006
Estee Lauder	31	2011
Monolithic Power	30	2010
Lam Research	30	2007
Zebra	29	2002
Micron	26	2001
Chipotle	27	2004
Tractor Supply	26	2006
Salesforce	26	2007
West Pharmac	26	NI
Adobe	25	1998
Seagate	24	2005
Edwards Life	24	2006
Expedia Grou	24	2013
S&P Global	24	ND
Mastercard	24	2007
Intuit	23	2002
UnitedHealth	23	2002
Fifth Third	23	2006
Molina Health	23	2003

Discover Financial	22	2010
Sherwin-Williams	22	2007
KLA Corp	22	1998

NI : Not identified
ND: No data available

Please be careful with the interpretation of these results, but it's fair to say that the algorithm is indeed a very useful tool in identifying potential multi-baggers in a timely fashion.

So here we are

It will be interesting to see if there is a quant or robot that's able to consistently outperform the markets in the long run, and with that, the vast majority of professional investment managers. It seems as if these investment robots, whose constituents are once a year selected by the algorithm, Q5 to Q32, underperform their benchmark index during "red years" and vastly outperform their benchmark index during the "green ones." And if so, but we need more years of data before we "jump to conclusions," these robots will outperform over time.

At this point, having firsthand experience with these massive data sets and algorithms, I value a concentrated portfolio of handpicked stocks over these investing robots. Having said that, I am optimistic that if you do the necessary in-depth due diligence on the stocks picked by these algorithms and with that filter out possible data errors, there is a real chance that, in the end, these robots add fantastic value. We'll see.

Peter

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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 (FLP).	-17.0%	21.7%	3.0%	25.0%					7.0%
Q2	The conservative version of the FLP.	-10.1%	25.2%	15.9%	25.6%					13.1%
Q3	The conservative version of the FLP. Sell at +40%.	21.6%	34.0%	20.6%	26.7%					25.6%
Q4	The FLP. Spawners only.	-	-	-	28.0%					28.0%
Q5	The USD new year robot. Sell at −20% or +40%.	40.0%	27.7%	-20.0%	36.3%					18.2%
Q6	The USD new year robot. Sell at −20% or +50%	50.0%	34.4%	-20.0%	43.0%					23.2%
Q7	The USD new year robot. Sell at −20% or +60%.	60.0%	33.4%	-20.0%	49.6%					26.4%
Q8	The USD new year robot. Sell at +40%.	40.0%	27.7%	-6.1%	36.3%					23.0%
Q9	The USD new year robot. Sell at +50%.	50.0%	34.4%	-6.1%	43.0%					28.2%
Q10	The USD new year robot. Sell at +60%.	60.0%	33.4%	-6.1%	49.6%					31.6%
Q11	The USD new year robot. No conditional selling.	18.4%	25.4%	-6.1%	95.1%					28.4%
BM1	Benchmark: iShares S&P SmallCap 600 UCITS ETF	-9.1%	22.3%	11.2%	28.1%					12.0%
BM2	Benchmark: iShares Core S&P 500 ETF	-5.2%	31.2%	17.4%	30.6%					17.4%

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%.	-	-	-	-					-
Q13	The EUR new year robot. Sell at −20% or +50%.	-	-	-	-					-
Q14	The EUR new year robot. Sell at −20% or +60%.	-	-	-	-					-
Q15	The EUR new year robot. Sell at +40%.	-	-	-	-					-
Q16	The EUR new year robot. Sell at +50%.	-	-	-	-					-
Q17	The EUR new year robot. Sell at +60%.	-	-	-	-					-
Q18	The EUR new year robot. No conditional selling.	-	-	-	-					-
BM	Benchmark: iShares MSCI Europe Small-Cap ETF	-	-	-	-					

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.*

29 July 2022. These are the gross results. A "red year", like 2020, is a "market crash > 20%" year.

- *Please be advised to wait a few years before drawing any meaningful conclusion from these numbers. I urge you to do your own due diligence.*
- *I doubt there will ever be a time when you can confidently say, "This investing robot definitely works." In the end, I suppose it's similar to betting on horse races. Betting on a high-performing horse is obviously a wise decision, but it does not guarantee favorable future results.*
- *Keep in mind that this is "just an experiment." I would be more than happy if, 25 years from now, the best performing robot could beat the Mohnish Pabrai Free Lunch Portfolio back test result of 17.1%. And if, in the end, all 32 robots end up with mediocre or even disappointing results, then that's just the way it is. Thank you.*