Compounder Fund Investors' Letter: Second Quarter of 2023

COMPOUNDER FUND
GROWING YOUR WEALTH AND ENRICHING SOCIETY

*Note (24 May 2024): Information related to a global stock market index has been redacted from this letter because of intellectual-property restrictions. As such, we believe the S&P 500 is currently sufficient for context about Compounder Fund's performance. This is because the fund's portfolio is heavily weighted toward US stocks. In addition, the S&P 500's return has been higher than a broad collection of global stocks since Compounder Fund's inception, and US stocks have by far the largest market capitalisation among stocks around the world. We will revisit our decision on displaying global stock market returns data in the future if there are significant changes to Compounder Fund's portfolio from a geographic perspective, or if US stocks start lagging their global peers.

Dear investors,

I'm presenting Compounder Fund's 2023 second-quarter investors' letter together with my co-founder Jeremy Chia.

During the quarter, Compounder Fund's overall net-of-fee return for the earliest series of its Class A and Class B shares were both 10.8%. Over the same period, the dividend-adjusted Singapore-dollar returns for the ███████████████ and the S&P 500 were 8.6% and 10.3%, respectively. Tables 1 and 2 below show the returns for Compounder Fund's two share classes (the earliest series for each share class), the ███████████████, and the S&P 500, since the birth of the fund.

Table 1

Time period	Compounder Fund Class A (after fees)		S&P 500**
2020*	11.2%	▮	14.2%
2021	0.9%	▮	31.2%
2022	-44.1%	▮	-18.7%
Q1 2023	16.6%	▮	6.7%
Apr 2023	-0.4%	▮	1.9%
May 2023	4.6%	▮	2.1%
Jun 2023	6.6%	▮	6.3%
Q2 2023	10.8%	▮	10.3%
Year-to-date 2023	29.5%	▮	18.0%
Total return since inception*	-18.8%	▮	43.9%
Annualised return since inception*	-6.8%	▮	13.1%

Inception date: 13 July 2020
**-▮▮▮▮▮▮▮ and S&P 500 returns are in Singapore-dollar terms, with dividends reinvested*

Table 2

Time period	Compounder Fund Class B (after fees)		S&P 500**
2020*	6.8%	▮	8.6%
2021	0.9%	▮	31.2%
2022	-44.1%	▮	-18.7%
Q1 2023	16.6%	▮	6.7%
Apr 2023	-0.4%	▮	1.9%
May 2023	4.6%	▮	2.1%
Jun 2023	6.6%	▮	6.3%
Q2 2023	10.8%	▮	10.3%
Year-to-date 2023	29.5%	▮	18.0%
Total return since inception*	-22.0%	▮	36.8%
Annualised return since inception*	-8.7%	▮	12.1%

Inception date: 1 October 2020
**▮▮▮▮▮▮▮and S&P 500 returns are in Singapore-dollar terms, with dividends reinvested*

Jeremy and I are comparing Compounder Fund's performance with the ████████████ and the S&P 500 to provide an indication of how the fund is faring against a broad group of stocks that are listed across the world and in the USA.

As you know, Compounder Fund's investment mandate is global in nature. This means the fund can invest in any listed stock in the world; it also makes the ████████████ a sensible index for context about Compounder Fund's performance. But since most of Compounder Fund's holdings are currently US-listed stocks, it's also important to Jeremy and me that we compare the fund's performance with a prominent US stock market index, in this case, the S&P 500. If Compounder Fund is doing better than the ████████████ comparing the fund's return with the S&P 500 helps us see if the outperformance is simply due to a rising tide in US stocks.

At the publication of this letter, it's been three years since we started investing Compounder Fund's capital on 13 July 2020. The results have been poor. The fund's return has not only been negative since its inception, but it has also substantially underperformed both market indices. The first half of 2023 saw a welcome upswing in the stock prices of the fund's holdings (see Tables 1 and 2) but the fund has yet to fully recover the declines from prior periods. As a result, while most of Compounder Fund's underlying businesses have done well since the fund's inception, their stock prices have not.

Jeremy and I are clear that Compounder Fund exists to ultimately produce a positive *and* healthy return over the long run for all of you, and not merely to invest in stocks with growing businesses. **We understand too that discussion about the fund's underlying businesses can ring empty when their stock prices have fared so poorly**, *especially* **when most of the holdings had high valuations when we first invested in them (the valuation numbers can be found in our investment theses for the holdings)**. But I have repeatedly emphasised, in our past letters, how our stocks' underlying *businesses* have been doing because what ultimately drives a stock's price over the long run is its business performance. Over the short run, stock prices and business fundamentals can diverge wildly, but they tend to converge with the passing of time. This is a concept that I illustrated in detail on a number of occasions in our past letters, including the "*Equanimity and patience"* section of our **2021 fourth-quarter letter**, the "*An unfortunate but necessary disconnect"* section of our **2022 third-quarter letter**, and the introductory section of our **2022 fourth-quarter letter**; I will have more to say on this in the "*When genius failed (temporarily)"* section of this letter.

So what are the appropriate next steps for Compounder Fund? Jeremy and I believe that managing Compounder Fund in the way we think will produce the best long-term results going forward is the answer, and it is the way we have been investing from the start: *Finding companies with the potential for strong long-term growth in their businesses and holding their shares*. The performance of Compounder Fund has been poor so far, and we understand why you may question this approach. But based on our experience investing in the past over longer time frames, we believe this is a way of investing that will very likely work if given the time to succeed. In the paragraph above, I highlighted sections from our previous letters that detailed severe dislocations between business and stock price performances seen in the past that were eventually corrected over time; these examples also lend weight to our belief.

Times like these are not easy for any of you. We *know*. Charlie Munger - Warren Buffett's long-time right-hand man - was once asked about the lessons he learnt from his investment fund's big losses in 1973 and 1974 (his total loss in that period was 53%). He said:

> "It didn't bother me with my own money, but it made me suffer the tortures of hell as I thought through the loss of morale of the limited partners who had trusted me."

It's the same anguish we feel when we think of you. But at the same time, you have provided us with gentle patience and the space to engage in long-term thinking about stocks - **we're incredibly grateful for this**. With your strong support, Jeremy and I are taking the long-term approach here at Compounder Fund, where the fund's return will come from the underlying business performances of its holdings. I've mentioned in many past letters that you should never underestimate the importance of your role in shaping Compounder Fund's long-term return and I'll like to do so here again. In the "*What's our edge?*" section of our **2020 fourth-quarter letter**, I discussed the three sources of investing edge that exist in the stock market and how all of you - Compounder Fund's investors - **play a critical role in helping Jeremy and me produce the behavioural edge**. In what has been a rough period for Compounder Fund over the past three years, you have helped us produce the behavioural edge. ***Thank you***.

Judging our performance

In all our **previous quarterly investors' letters**, I've provided a section discussing how Jeremy and I intend to judge Compounder Fund's performance. In it, I've always shared the following thoughts from Warren Buffett on a suitable time frame to assess the performance of an investment manager:

> "While I much prefer a five-year test, I feel three years is an absolute minimum for judging performance. It is a certainty that we will have years when the partnership performance is poorer, perhaps substantially so, than the [market]. If any three-year or longer period produces poor results, we all should start looking around for other places to have our money. An exception to the latter would be three years covering a speculative explosion in a bull market."

I've also always mentioned our agreement with Buffett's thoughts and stated our hope that "**you, as an investor in Compounder Fund, will judge its performance over a three-year period at the minimum.**" We've just crossed the three-year mark at Compounder Fund and as I mentioned in the introductory section of this letter, the performance of the fund has been poor. The journey so far has been rough on all of us at Compounder Fund, to say the least. **If you had invested with the fund since inception and found our performance wanting by using the minimum three-year evaluation period, we understand.** But based on the business performances of Compounder Fund's holdings, we're confident that when the fund's *stock price* performance is eventually weighed in the fullness of time, a favourable judgement is likely to result.

Below, I will reiterate most of the content found in the same section in last quarter's letter, because they are still relevant and important.

Our target for Compounder Fund is to generate an annual return of 12% or more over the long run (a five- to seven-year period, or longer) for the fund's investors, net of all fees. **It will be very disappointing for the both of us too if Compounder Fund fails to beat the ▮▮▮▮▮▮▮▮▮ and the S&P 500 over a five- to seven-year timeframe. Jeremy and I believe that having a thoughtful investment framework to find Compounders, and the willingness and ability to hold the shares of Compounders for years, will likely lead us to long-term market-beating returns.** Do note, however, that we harbour *no* illusion that we're able to beat the indices each month, each quarter, or each year. The willingness comes from our ingrained long-term view towards the market. The ability, though, comes from *your* keen understanding of our investment approach.

Some caution is needed here: **The stock market is volatile**. The returns of Compounder Fund in the future will very likely *not* be smooth - this is just how stocks work. And indeed, we've already experienced significant volatility in the results of Compounder Fund since its inception. If the market falls in the future, you should expect Compounder Fund to decline by a similar magnitude or more. But this will likely only be short-term pain. Jeremy and I believe in the long-term potential of the stock market, and especially in the underlying businesses of the stocks in Compounder Fund's portfolio.

Speaking of volatility, I want to discuss the important concept of the 'destination'. I first heard about it from a friend - an incredibly impressive young investor and person - who in turn learnt about it from Nicholas Sleep, one of the best investors I've read about. After retiring in the mid-2010s and initially wanting to be outside the public eye, Sleep published a collection of his investment letters in 2021 on the **website** of his charitable foundation, I.G.Y (do check out his letters - they're a fantastic read). To illustrate the concept, I will need you to first think about two sequences of returns over a five year period, shown in Table 3:

Table 3

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Sequence A return	+50%	+28%	+3%	+15%	+5%	**139%**
Sequence B return	+5%	+15%	+3%	+28%	+50%	**139%**

Both sequences result in the same total return - the journey is different, but the destination is the same. Interestingly, even though the end results are identical*,* we humans tend to prefer Sequence B over Sequence A. This is because Sequence B's return looks better to us compared to Sequence A's, since the former improved over time while the latter deteriorated. As humans, we exhibit natural psychological biases that cause us to favour more recent data.

This is important to note because **when investing in stocks, it's often much easier to know the destination than it is to know the journey**. Jeremy and I have absolutely *no* control over the journey of returns for Compounder Fund - what we have is a great degree of control over the destination. This 'great degree of control' comes from our careful selection of the companies that Compounder Fund owns shares in. And I say 'a great degree of control' and not 'full control' because luck *will* play some role in Compounder Fund's eventual gain. So you should expect Compounder Fund's return - and indeed, that of all stocks - to bounce around wildly in the short term. We've already seen such a bounce

happen in an unwanted direction (downwards) but over the long run, Compounder Fund's return should gravitate toward the long term business performances of the companies it owns partial stakes in. There's no guarantee that this gravity will be a strong upward pull though. The direction of the gravitational force will depend on whether our insights - on the abilities of Compounder Fund's companies to grow their businesses at high rates over the long run - turn out to be correct. **In this regard, it's been so far, so good, as I'll discuss in the "*Wonderful businesses*" section of this letter**.

Portfolio changes

Compounder Fund's **2023 first-quarter letter** was published on 14 April 2023. In it, I mentioned a few things: (a) all 50 holdings that were in the fund's portfolio at the time; and (b) updates on the acquisition of Activision by Microsoft. Since then, there have been no changes to the fund's holdings.

Coming to Microsoft's pending acquisition of Activision, there have been further positive developments. In our 2023 first-quarter letter, I wrote that "the US FTC (Federal Trade Commission) had challenged the deal." The FTC eventually filed a lawsuit against Microsoft in June to block the acquisition from closing before the regulator provides its own verdict in its in-house court. The hearing for the June lawsuit, which was presided by US District Judge Jacqueline Scott Corley, ended on the 29th. Corley released her verdict earlier this week and it was in favour of the union between Microsoft and Activision. She wrote:

> "Microsoft's acquisition of Activision has been described as the largest in tech history. It deserves scrutiny. That scrutiny has paid off: Microsoft has committed in writing, in public, and in court to keep *Call of Duty* on PlayStation for 10 years on parity with Xbox. It made an agreement with Nintendo to bring *Call of Duty* to Switch. And it entered several agreements to for the first time bring Activision's content to several cloud gaming services. This Court's responsibility in this case is narrow. It is to decide if, notwithstanding these current circumstances, the merger should be halted—perhaps even terminated—pending resolution of the FTC administrative action. For the reasons explained, the Court finds the FTC has not shown a likelihood it will prevail on its claim this particular vertical merger in this specific industry may substantially lessen competition. To the contrary, the record evidence points to more consumer access to Call of Duty and other Activision content. The motion for a preliminary injunction is therefore DENIED."

The FTC could still appeal against the decision, so there's no official green light given yet for the acquisition. Meanwhile, I also mentioned in the 2023 first-quarter letter that the UK's regulator, the CMA (Competition and Markets Authority), announced in late-March 2023 that "the transaction will not result in a substantial lessening of competition in relation to console gaming in the UK." But a month later, CMA released its final decision to prevent the acquisition. Microsoft has been in dialogue with CMA on possible tweaks to the deal to assuage any concerns that the UK regulator has.

We have no special insights on the thought processes of the regulators that are relevant to Microsoft's attempt to acquire Activision. So we're watching how the situation unfolds. As first discussed in Compounder Fund's **2022 first-quarter letter**, Jeremy and I intend for the

fund to hold onto its Activision shares and receive the cash from Microsoft if and once the acquisition is completed (but our intention could change depending on developments at both companies and the stock market in general).

As you know, Compounder Fund is able to accept new subscriptions once every quarter with a dealing date that falls on the first business day of each calendar quarter. Jeremy and I have successfully closed Compounder Fund's 11th subscription window since its initial offering period (which ended on 13 July 2020) and raised a net amount of S$0.06 million. Part of this new capital was deployed quickly in the days after the last subscription window's dealing date of 3 July 2023 and we added to one existing Compounder Fund holding: Paycom Software. As of this letter's publication, we have released our investment theses on all the companies that are currently in Compounder Fund's portfolio and they can be **found here**. In the future, if and when we add new companies to the portfolio or completely exit any of the 50 companies, we will be releasing our detailed thoughts for these actions.

In Compounder Fund's **Owner's Manual**, we mentioned that "if Compounder Fund receives new capital from investors, our preference when deploying the capital is to add to our winners and/or invest in new ideas." This is the first time we had added to the fund's position in Paycom after the initial investments were made in July 2020. The company's stock price at our latest addition is only modestly higher compared to the initial purchases. But importantly, Paycom has been executing brilliantly, so it has been a clear winner, according to our definition. In our Paycom **thesis**, we mentioned the company's excellent history up to 2019 of growing its client base and retaining them. We also discussed Paycom's financial track record till the first nine months of 2020 and highlighted its strong top-line growth, profitability, and free cash flow. All these positive factors have continued to be in place - Table 4 shows the important metrics up to 2022. Moreover, in the first quarter of 2023, Paycom's revenue, net income, and free cash flow, all grew at impressive rates of 27.8%, 29.8%, and 27.5%, respectively.

Table 4

Year	Number of clients	Revenue retention rate	Revenue (US$, million	Net income (US$, million)	Free cash flow (US$, million)
2011	7,955	92%	57.2	1.4	-5.8
2012	9,233	91%	78.8	-0.4	5.0
2013	10,792	91%	107.6	0.6	-0.2
2014	12,775	91%	150.9	5.7	8.1
2015	15,004	91%	224.7	20.9	26.4
2016	17,817	91%	329.1	70.4	55.0
2017	20,591	91%	433.0	123.5	70.8
2018	23,533	92%	566.3	137.1	124.9
2019	26,527	93%	737.7	180.6	131.3
2020	30,994	93%	841.4	143.5	133.1
2021	33,875	94%	1,055.5	196.0	193.2
2022	36,561	93%	1,375.2	281.4	228.3

Source: Paycom annual reports

Beyond the numbers, Paycom has also made significant improvements to its product suite since our initial investment. BETI (Better Employee Transaction Interface), Paycom's self-service payroll technology for employees to do their own payroll that was launched in July 2021, is a great example. The app, the first of its kind in Paycom's industry, has become a key differentiator for the company. 50% of Paycom's clients' employees are currently using BETI for their own payroll. BETI is a valuable product for companies. A recent study by Ernst and Young found that a 1,000 employee-company could incur nearly US$1 million in annual costs that are related to payroll mistakes; a self-service payroll product such as BETI helps remove these unnecessary costs. As cherries on the cake: (1) Paycom has today captured just 5% of its addressable market, suggesting significant room for future growth, and (2) at the time of our addition, Paycom's P/E and P/FCF ratios of 59 and 73, respectively, while still high, were noticeably lower than when we first invested (88 and 141).

Here's how Compounder Fund's portfolio of 50 companies looks like as of 9 July 2023:

Table 5

Company	Weighting	Country/Region of listing	Headquarters
Meta Platforms	6.0%	USA	USA
MercadoLibre	5.1%	USA	Argentina
Microsoft	4.4%	USA	USA
Netflix	4.2%	USA	USA
Amazon	4.0%	USA	USA
Apple	3.7%	USA	USA
Tractor Supply	3.7%	USA	USA
Chipotle Mexican Grill	3.6%	USA	USA
Costco	3.5%	USA	USA
Alphabet	3.5%	USA	USA
The Trade Desk	3.2%	USA	USA
Intuitive Surgical	2.9%	USA	USA
Mastercard	2.9%	USA	USA
Visa	2.8%	USA	USA
Tesla	2.8%	USA	USA
ASML	2.7%	USA	Netherlands
Adobe	2.7%	USA	USA
DataDog	2.6%	USA	USA
Shopify	2.6%	USA	Canada
Markel	2.2%	USA	USA
Tencent	2.1%	Hong Kong	China
MongoDB	1.9%	USA	USA
Activision Blizzard	1.7%	USA	USA
Salesforce	1.7%	USA	USA
Starbucks	1.7%	USA	USA

Table 5 (continued from above)

Company	Weighting	Country/Region of listing	Headquarters
Veeva Systems	1.6%	USA	USA
Medistim	1.6%	Norway	Norway
PayPal	1.5%	USA	USA
TSMC	1.5%	USA	Taiwan
Adyen	1.4%	Netherlands	Netherlands
Medpace	1.4%	USA	USA
Etsy	1.4%	USA	USA
Hingham	1.1%	USA	USA
Wise	1.1%	UK	UK
Illumina	1.0%	USA	USA
Block*	1.0%	USA	USA
Meituan	0.9%	Hong Kong	China
Paycom Software	0.8%	USA	USA
Haidilao	0.8%	Hong Kong	China
DocuSign	0.8%	USA	USA
Okta	0.7%	USA	USA
Wix	0.7%	USA	Israel
Zoom	0.6%	USA	USA
Sea	0.4%	USA	Singapore
dLocal	0.4%	USA	Uruguay
Upstart	0.3%	USA	USA
Fiverr	0.3%	USA	Israel
Coupang	0.2%	USA	South Korea
Alteryx	0.2%	USA	USA
Super Hi	0.1%	Hong Kong	Singapore
Cash	**0.0%**	-	-

*0.2% of the Block position comes from Block shares that are listed in Australia, but for all intents and purposes, we see the Australia-listed Block shares as being identical to the US-listed variety

Table 6 below shows the high-level geographical breakdown of Compounder Fund's portfolio as of 9 July 2023:

Table 6

Country/Region	% of Compounder Fund's capital based on country of listing	% of Compounder Fund's capital based on location of headquarters
Argentina	-	5.1%
Canada	-	2.6%
China	-	3.8%
Hong Kong	3.9%	-
Israel	-	1.0%
Netherlands	1.4%	4.1%
Norway	1.6%	1.6%
Singapore	-	0.5%
South Korea	-	0.2%
Taiwan	-	1.5%
UK	1.1%	1.1%
Uruguay	-	0.4%
USA	92.0%	78.2%

Wonderful businesses

Jeremy and I are pleased to report that the companies in Compounder Fund's portfolio have, in aggregate, continued to deliver healthy revenue growth in the first quarter of 2023. Table 7 below shows the year-on-year revenue growth rates for all the 50 companies that are currently in Compounder Fund's portfolio (the ones in Table 5) for a few time periods: The whole of 2020, 2021, and 2022, and the first quarter of 2023:

Table 7

Company	2020 revenue growth	2021 revenue growth	2022 revenue growth	Q1 2023 revenue growth
Activision Blizzard	24.6%	8.9%	-14.5%	**34.8%**
Adobe	17.3%	18.0%	11.5%	**9.8%**
Adyen	28.1%	46.4%	32.8%	**-**
Alphabet	12.8%	41.2%	9.8%	**2.6%**
Alteryx	18.5%	8.2%	59.5%	**26.1%**
Amazon	37.6%	21.7%	9.4%	**9.4%**
Apple	9.9%	28.6%	2.4%	**-2.5%**
ASML	18.3%	33.1%	13.8%	**90.9%**
Block	101.5%	86.0%	-0.7%	**26.0%**
Chipotle Mexican Grill	7.1%	26.1%	14.4%	**17.2%**
Costco	12.8%	17.7%	11.5%	**2.0%**
Coupang	90.8%	53.8%	11.8%	**13.4%**
Datadog	66.3%	70.5%	62.8%	**32.7%**
dLocal	88.4%	134.4%	71.6%	**57.0%**
DocuSign	49.2%	45.0%	19.4%	**12.3%**
Etsy	110.9%	35.0%	10.2%	**10.6%**
Fiverr	77.0%	57.1%	13.3%	**1.5%**
Haidilao	7.8%	43.7%	-20.6%	**-**
Hingham	27.4%	20.3%	3.6%	**-45.4%**
Illumina	-8.6%	39.7%	1.3%	**-11.1%**
Intuitive Surgical	-2.7%	31.0%	9.0%	**14.0%**
Markel	17.0%	20.0%	22.1%	**8.3%**
Mastercard	-9.4%	23.4%	17.8%	**11.2%**
Medistim	-0.2%	17.7%	15.1%	**11.3%**
Medpace	7.5%	23.4%	27.8%	**31.2%**
Meituan	17.7%	56.0%	22.8%	**26.7%**
MercadoLibre	73.0%	77.9%	49.1%	**35.1%**
Meta Platforms	21.6%	37.2%	-1.1%	**2.6%**
Microsoft	14.7%	20.6%	10.4%	**7.1%**
MongoDB	40.0%	48.0%	47.0%	**29.0%**
Netflix	24.0%	18.8%	6.5%	**3.7%**
Okta	42.5%	55.6%	42.9%	**24.8%**
Paycom Software	14.1%	25.4%	30.3%	**27.8%**
PayPal	20.7%	18.3%	8.5%	**8.6%**
Salesforce	24.3%	24.7%	18.3%	**11.3%**
Sea	101.1%	127.5%	25.1%	**4.9%**

Table 7 (continued from above)

Company	2020 revenue growth	2021 revenue growth	2022 revenue growth	Q1 2023 revenue growth
Shopify	85.6%	57.4%	21.4%	**25.2%**
Starbucks	-14.1%	31.0%	8.4%	**14.2%**
Super Hi	-5.0%	41.1%	78.7%	-
Tencent	27.8%	16.2%	-1.0%	**10.7%**
Tesla	28.3%	70.7%	51.4%	**24.4%**
The Trade Desk	26.5%	43.1%	31.9%	**21.4%**
Tractor Supply	27.2%	19.9%	11.6%	**9.1%**
TSMC	25.2%	18.5%	42.6%	**3.6%**
Upstart	42.0%	263.6%	-0.7%	**-66.8%**
Veeva Systems	32.7%	26.3%	16.4%	**4.2%**
Visa	-8.7%	18.6%	18.5%	**11.1%**
Wise	43.9%	32.3%	48.5%	**45.3%**
Wix	29.9%	29.0%	9.3%	**9.5%**
Zoom	325.8%	54.6%	7.1%	**2.9%**

Source: Companies' earnings updates

Here's a table showing the simple averages of the year-on-year revenue growth rates for the fund's holdings for each quarter going back to the first quarter of 2020 (**note the high revenue growth rates for every quarter**):

Table 8

Simple averages for revenue growth from year ago	Compounder Fund current portfolio
Q1 2020	34.4%
Q2 2020	31.7%
Q3 2020	42.6%
Q4 2020	44.1%
2020	37.4%
Q1 2021	54.7%
Q2 2021	77.6%
Q3 2021	38.4%
Q4 2021	34.3%
2021	43.7%
Q1 2022	28.0%
Q2 2022	21.4%
Q3 2022	19.8%
Q4 2022	16.3%
2022	20.4%
Q1 2023	**14.0%**

Source: Companies' earnings updates

As I mentioned in the "*Judging our performance*" section of this letter, it's been 'so far, so good' for the business results of Compounder Fund. **The fund's current crop of portfolio companies produced healthy year-on-year revenue growth of 14.0% (this is a simple average) in the first quarter of 2023**, **and this continues from the impressive revenue growth rates seen in prior quarters going back to 2020**. Table 9 below gives perspective on the superior growth rates for Compounder Fund's holdings compared to the S&P 500.

Table 9

Simple averages for revenue growth from year ago in a certain quarter	S&P 500	Compounder Fund current portfolio
Q1 2020	Around -2%	34.4%
Q2 2020	Around -10%	31.7%
Q3 2020	Around -2%	42.6%
Q4 2020	Around -0.5%	44.1%
Q1 2021	Around 10%	54.7%
Q2 2021	Around 25%	77.6%
Q3 2021	16.6%	38.4%
Q4 2021	16.1%	34.3%
Q1 2022	13.4%	28.0%
Q2 2022	11.9%	21.4%
Q3 2022	12.1%	19.8%
Q4 2022	6.9%	16.3%
Q1 2023	**7.9%**	**14.0%**

Source: Yardeni Research for S&P 500 data (data for S&P 500 is as of 28 June 2023; revenue growth rate for Compounder Fund is a simple average of the revenue growth from the fund's holdings)

In our letter for **2023's first quarter**, I mentioned:

> "It's likely that Compounder Fund's holdings will continue to post relatively-slower revenue growth in the next few quarters."

This indeed came to pass. During the first quarter of 2023, Compounder Fund's portfolio companies produced an average revenue growth rate of 14.0%. This is a decent growth rate and comfortably exceeds the S&P 500's corresponding revenue growth of 7.9% (great), but it's also a significant deceleration from what was achieved throughout 2021 and 2022 (not great). Some of our companies had enjoyed a COVID-induced bump in their business fortunes. Moreover, there are signs of a broader economic slowdown that has affected some of our companies. But we're not worried. We invested in the companies that are currently in Compounder Fund's portfolio because their businesses are riding on - or creating - durable and lasting long-term trends. This means they still have massive market opportunities to grow into over the long run (you can read about this in detail in our investment theses for each company).

It's likely that Compounder Fund's holdings will continue to post relatively-slow revenue growth in the next few quarters. But consistent with what I've been sharing in our past quarterly letters, Jeremy and I continue to think there's a high chance that the fund's portfolio

companies will, in aggregate, produce pleasing year-on-year revenue growth in the years ahead. **And if these companies can sustain average annual revenue growth of around 20-25% in aggregate for the next five to seven years, *while producing healthy free cash flow* (an important requisite!), we believe it will be exceedingly difficult for Compounder Fund's portfolio to *not* do well over the same timeframe and when measured from the fund's inception**. We're excited to see what the future brings.

Speaking of free cash flow, Compounder Fund's holdings managed to strengthen their cash flow muscles in the first quarter of 2023. Table 10 below shows the revenue growth for each company that's currently in the portfolio (the 50 companies in Table 5) for the quarter as well as the change in their free cash flow margins for the period. **During the first quarter of 2023, the simple-average free cash flow margin for all the fund's current holdings was 18.6%, up from 14.5% a year ago**. This is a pleasing development after a string of quarters where the free cash flow margin of Compounder Fund's holdings had declined on a year-on-year basis (the margin fell in the second, third, and fourth quarters of 2021, and each quarter in 2022). We look forward to seeing continued improvements over time in the free cash flow margins of the companies in Compounder Fund's portfolio. Given the nature and track records of the companies in Compounder Fund's portfolio, we continue to think that the long-term average free cash flow margin for the current crop of portfolio companies can grow to around 25% eventually and be maintained at that level.

Table 10

Company	Revenue growth in Q1 2023 from a year ago	Free cash flow margin in Q1 2023	Free cash flow margin in Q1 2022
Activision Blizzard	34.8%	22.7%	35.5%
Adobe	9.8%	41.9%	43.6%
Adyen	-	-	-
Alphabet	2.6%	24.6%	22.3%
Alteryx	26.1%	16.4%	-0.3%
Amazon	9.4%	-7.4%	-15.2%
Apple	-2.5%	27.0%	26.4%
ASML	90.9%	2.9%	-23.7%
Block	26.0%	5.3%	4.8%
Chipotle Mexican Grill	17.2%	14.1%	9.2%
Costco	2.0%	1.3%	0.7%
Coupang	13.4%	7.0%	-5.7%
Datadog	32.7%	24.2%	35.8%
dLocal	57.0%	58.8%	83.8%
DocuSign	12.3%	32.4%	29.7%
Etsy	10.6%	7.4%	8.7%
Fiverr	1.5%	15.0%	7.9%
Haidilao	-	-	-
Hingham	-45.4%	-	-
Illumina	-11.1%	-3.9%	9.1%

Table 10 (continued from above)

Company	Revenue growth in Q1 2023 from a year ago	Free cash flow margin in Q1 2023	Free cash flow margin in Q1 2022
Intuitive Surgical	14.0%	10.5%	8.6%
Markel	8.3%	-	-
Mastercard	11.2%	26.9%	28.3%
Medistim	11.3%	-1.2%	17.4%
Medpace	31.2%	16.3%	11.2%
Meituan	26.7%	-	-
MercadoLibre	35.1%	25.4%	-16.5%
Meta Platforms	2.6%	23.4%	27.9%
Microsoft	7.1%	33.2%	2.7%
MongoDB	29.0%	14.4%	3.2%
Netflix	3.7%	25.9%	10.2%
Okta	24.8%	23.9%	2.4%
Paycom Software	27.8%	23.4%	23.4%
PayPal	8.6%	14.2%	15.8%
Salesforce	11.3%	51.5%	47.2%
Sea	4.9%	16.6%	-
Shopify	25.2%	5.7%	-3.4%
Starbucks	14.2%	3.2%	-3.8%
Super Hi	-	-	-
Tencent	10.7%	34.5%	11.2%
Tesla	24.4%	1.9%	11.8%
The Trade Desk	21.4%	46.2%	43.2%
Tractor Supply	9.1%	-4.2%	-1.8%
TSMC	3.6%	16.3%	22.4%
Upstart	-66.8%	-78.9%	-87.7%
Veeva Systems	4.2%	95.6%	94.8%
Visa	11.1%	45.7%	44.8%
Wise	45.3%	17.5%	0.5%
Wix	9.5%	6.7%	-9.8%
Zoom	2.9%	35.9%	46.4%
Simple averages	**14.0%**	**18.6%**	**14.5%**

Source: Companies' earnings updates

(As of the publication of this letter, there's no quarterly free cash flow data available for Adyen, Haidilao, Meituan, and Super Hi for the first quarter of 2023. We did not include free cash flow data for Hingham and Markel because we don't think it's as important for the two companies - Hingham is a **bank** while Markel is predominantly an **insurer and investment holding company**, so we think the book value holds more meaning for them.)

In summary, we are satisfied with the aggregate business performance of Compounder Fund's portfolio holdings.

There's more to share on the business and stock price performances of the companies held by Compounder Fund. Table 11 below shows a few things for the period from 05 April 2023 to 30 June 2023 for the fund's current crop of 50 companies: The change in their trailing revenues-per-share; the change in their trailing P/S (price-to-sales) ratios; and the change in their stock prices. I'm using revenue instead of earnings or cash flow because some of Compounder Fund's holdings are still reinvesting in their businesses for future growth. As a result, they currently are deliberately loss-making, have negative free cash flow, or have low profit and/or free cash flow margins.

Table 11

Company	Trailing revenue per share on 05 Apr 2023	Trailing revenue per share on 30 Jun 2023	P/S ratio on 05 Apr 2023	P/S ratio on 30 Jun 2023	Trailing revenue per share change from 05 Apr 2023 to 30 Jun 2023	P/S ratio change from 05 Apr 2023 to 30 Jun 2023	Stock price change from 05 Apr 2023 to 30 Jun 2023
Activision Blizzard	US$ 9.54	US$ 10.28	8.9	8.2	7.8%	-8.4%	-1.3%
Adobe	US$ 39.13	US$ 40.15	9.8	12.2	2.6%	24.7%	28.0%
Adyen	€ 41.17	€ 41.17	34.6	38.5	0.0%	11.2%	11.2%
Alphabet	US$ 21.49	US$ 22.2	4.9	5.4	3.3%	11.0%	14.6%
Alteryx	US$ 12.49	US$ 12.83	4.3	3.5	2.8%	-17.6%	-15.4%
Amazon	US$ 50.44	US$ 50.73	2.0	2.6	0.6%	28.2%	28.9%
Apple	US$ 24.29	US$ 24.22	6.7	8.0	-0.3%	18.8%	18.4%
ASML	€ 53.19	€ 61.77	11.4	10.7	16.1%	-6.1%	9.2%
Block	US$ 30.28	US$ 30.82	2.2	2.2	1.8%	-3.3%	-1.6%
Chipotle	US$ 307.7	US$ 323.26	5.5	6.6	5.1%	19.9%	26.0%
Costco	US$ 527.31	US$ 529.85	0.9	1.0	0.5%	7.8%	8.3%
Coupang	US$ 11.66	US$ 11.85	1.3	1.5	1.6%	9.5%	11.3%
Datadog	US$ 5.31	US$ 5.62	12.4	17.5	5.8%	40.7%	48.8%
dLocal	US$ 1.34	US$ 1.50	9.3	8.1	12.5%	-13.1%	-2.3%
DocuSign	US$ 12.52	US$ 12.44	4.5	4.1	-0.7%	-8.1%	-8.7%
Etsy	US$ 20.24	US$ 18.38	5.2	4.6	-9.2%	-11.5%	-19.6%
Fiverr	US$ 9.15	US$ 8.98	3.7	2.9	-1.8%	-22.1%	-23.6%
Haidilao	RMB 5.73	RMB 5.73	3.1	2.8	0.0%	-10.8%	-15.5%
Hingham	US$ 48.2	US$ 42.15	4.5	5.1	-12.6%	11.3%	-2.7%
Illumina	US$ 29.19	US$ 28.15	7.9	6.7	-3.6%	-15.8%	-18.8%
Intuitive Surgical	US$ 17.11	US$ 18.06	15.1	18.9	5.6%	25.5%	32.5%
Markel	US$ 946.38	US$ 970.05	1.4	1.4	2.5%	4.0%	6.6%
Mastercard	US$ 22.9	US$ 23.87	15.9	16.5	4.2%	3.7%	8.1%

Table 11 (continued from above)

Company	Trailing revenue per share on 05 Apr 2023	Trailing revenue per share on 30 Jun 2023	P/S ratio on 05 Apr 2023	P/S ratio on 30 Jun 2023	Trailing revenue per share change from 05 Apr 2023 to 30 Jun 2023	P/S ratio change from 05 Apr 2023 to 30 Jun 2023	Stock price change from 05 Apr 2023 to 30 Jun 2023
Medistim	NOK 26.92	NOK 27.62	10.5	10.1	2.6%	-3.6%	-1.1%
Medpace	US$ 43.36	US$ 48.61	4.4	4.9	12.1%	13.2%	26.9%
Meituan	RMB 35.73	RMB 37.73	3.3	3.0	5.6%	-8.8%	-8.7%
Mercado-Libre	US$ 205.26	US$ 221.11	6.1	5.4	7.7%	-12.0%	-5.2%
Meta Platforms	US$ 43.16	US$ 45.20	4.9	6.3	4.7%	29.6%	35.7%
Microsoft	US$ 27.29	US$ 27.78	10.4	12.3	1.8%	17.7%	19.8%
MongoDB	US$ 18.71	US$ 19.48	11.4	21.1	4.1%	85.3%	92.9%
Netflix	US$ 70.06	US$ 70.53	4.9	6.2	0.7%	27.8%	28.7%
Okta	US$ 11.76	US$ 12.15	6.7	5.7	3.4%	-14.6%	-11.8%
Paycom Software	US$ 23.64	US$ 25.41	12.1	12.6	7.5%	4.7%	12.5%
PayPal	US$ 23.76	US$ 24.76	3.1	2.7	4.2%	-13.0%	-9.3%
Salesforce	US$ 31.45	US$ 32.58	6.2	6.5	3.6%	4.4%	8.2%
Sea	US$ 22.31	US$ 21.03	3.8	2.8	-5.7%	-28.2%	-32.3%
Shopify	US$ 4.42	US$ 4.57	10.2	14.1	3.4%	38.3%	43.0%
Starbucks	US$ 28.55	US$ 29.49	3.7	3.4	3.3%	-8.6%	-5.6%
Super Hi	US$ 1.00	US$ 1.00	2.4	1.9	0.0%	-18.9%	-19.0%
Tencent	RMB 58.20	RMB 58.12	5.8	5.3	-0.1%	-9.0%	-13.9%
Tesla	US$ 23.84	US$ 24.81	7.8	10.6	4.1%	35.6%	41.1%
The Trade Desk	US$ 3.16	US$ 3.29	18.6	23.5	4.3%	26.3%	31.7%
Tractor Supply	US$ 126.66	US$ 130.71	1.9	1.7	3.2%	-8.6%	-5.7%
TSMC	NT 426.36	NT 439.94	6.4	7.1	3.2%	10.9%	11.9%
Upstart	US$ 10.18	US$ 7.76	1.7	4.6	-23.8%	179.7%	113.2%
Veeva Systems	US$ 13.27	US$ 13.39	13.6	14.8	0.9%	8.8%	9.8%
Visa	US$ 14.36	US$ 14.77	15.9	16.1	2.8%	1.2%	4.1%
Wise	£ 0.75	£ 0.81	7.2	8.1	8.0%	12.9%	21.9%
Wix	US$ 23.93	US$ 25.18	4.0	3.1	5.2%	-22.8%	-18.8%
Zoom	US$ 14.44	US$ 14.55	4.9	4.7	0.8%	-5.2%	-4.5%
Simple average	-	-	**7.4**	**8.1**	**2.2%**	-	-

Source: Companies' earnings updates

What Table 11 highlights: **Compounder Fund's businesses performed well over the past quarter, with average sequential trailing revenue growth of 2.2% and 38 of them experiencing growth in their trailing revenues per share for 30 June 2023 compared to 5 April 2023. On this occasion, many of Compounder Fund's businesses also saw their stock prices rise, a consequence of their business growth *and* an increase in their P/S ratios.**

This rise in the P/S ratio (from an average of 7.4 to 8.1) continues from the increase seen in the last quarter (from 7.0 to 7.4) and is a welcome change from many prior quarters when the stock prices of many of Compounder Fund's holdings fell because of a sharp compression in their P/S ratios despite growth in their businesses. **We think Compounder Fund's holdings continue to have more-than-reasonable valuations (similar to what we saw when I wrote the letters for 2023's first quarter and 2022's second, third, and fourth quarters) and this bodes well for the fund's future return**. As of 30 June 2023, the companies currently in Compounder Fund's portfolio **have an average trailing P/S ratio of 8.1, and an average trailing free cash flow margin of 15.1%, which equates to an average P/FCF ratio of 54; the removal of Upstart's numbers (Upstart is in the midst of a major change in its business model, as last mentioned in the 2023 first-quarter letter) would result in an average trailing P/S ratio, free cash flow margin, and P/FCF ratio of 8.2, 17.2%, and 48, respectively**. If Compounder Fund's companies had an average free cash flow margin of 25% today - around the level we think they could achieve, eventually - **the implied P/FCF ratio on the P/S ratio of 8.1 would be even lower at 32**. For perspective, the implied P/FCF ratio of 32 comes from a group of companies - Compounder Fund's current portfolio - that produced healthy-to-impressive average revenue growth rates of 37.4%, 43.7%, 20.4%, and 14.0% for the whole of 2020, 2021, 2022, and the first quarter of 2023, respectively.

Thoughts on artificial intelligence

The way Jeremy and I see it, artificial intelligence (AI) really leapt into the zeitgeist in late-2022 or early-2023 with the public introduction of DALL-E2 and ChatGPT. Both are provided by OpenAI and are known as generative AI products - they are software that use AI to generate art and text, respectively (and often at astounding quality), hence the term "generative". Since then, developments in AI have progressed at a breathtaking pace. One striking observation we've found with AI is the much higher level of enthusiasm that company-leaders have for the technology compared to the two other recent "hot things", namely, blockchain/cryptocurrencies and the metaverse. Put another way, AI could be a real game changer for societies and economies.

I thought it would be useful in this letter to share some current thoughts that Jeremy and I have about AI and its potential impact. Putting pen to paper (or fingers to the keyboard) helps us make sense of what's in our minds and we would like you to know the broad strokes of how we're thinking about AI. **Do note that our thoughts are fragile** because the field of AI is developing rapidly and there are many unknowns at the moment. In no order of merit:

- While companies such as OpenAI and Alphabet have released generative AI products, they have yet to release open-source versions of their foundational AI

models that power the products. Meta Platforms, meanwhile, has been open sourcing its foundational AI models in earnest. During Meta's latest earnings conference call in April this year, management explained that open sourcing allows Meta to benefit from improvements to its foundational models that are made by software developers, outside of Meta, all over the world. Around the same time, there was a purportedly leaked **document** from an Alphabet employee that discussed the advantages in the development of AI that Meta has over both Alphabet and OpenAI by virtue of it open sourcing its foundational models. There's a tug-of-war now between what's better - proprietary or open-sourced foundational AI models - but it remains to be seen which will prevail or if there will even be a clear winner.

- During Amazon's latest earnings conference call (in April 2023), the company's management team shared their observation that most companies that want to utilise AI have no interest in building their own foundational AI models because it takes tremendous amounts of time and capital. Instead, they merely want to customise foundational models with their own proprietary data. On the other hand, Tencent's leaders commented in the company's May 2023 earnings conference call that they see a proliferation of foundational AI models from both established companies as well as startups. We're watching to find out which point of view is closer to the truth. I also want to point out that the frenzy to develop foundational AI models may be specific to China. Rui Ma, an astute observer of and writer on China's technology sector, mentioned in a recent tweet that "everyone in China is building their own foundational model." Meanwhile, the management of online travel platform Airbnb (which is based in the US, works deeply with technology, and is clearly a large company) shared in May 2023 that they have no interest in building foundational AI models - they're only interested in designing the interface and tuning the models.

- A database is a platform to store data. Each piece of software requires a database to store, organize, and process data. The database has a direct impact on the software's performance, scalability, flexibility, and reliability, so its selection is a highly strategic decision for companies. In the 1970s, relational databases were first developed and they used a programming language known as Structured Query Language (SQL). Relational databases store and organise data points that are related to one another in table form (picture an Excel spreadsheet) and were useful from the 1980s to the late 1990s. But because they were used to store structured data, they began to lose relevance with the rise of the internet. Relational databases were too rigid for the internet era and were not built to support the volume, velocity, and variety of data in the internet era. This is where non-relational databases – also known as NoSQL, which stands for either "non SQL" or "not only SQL" – come into play. NoSQL databases are not constrained to relational databases' tabular format of data storage and can work with unstructured data such as audio, video, and photos. As a result, they are more flexible and better suited for the internet age. AI appears to require different database architectures. The management of MongoDB, a Compounder Fund holding that specialises in NoSQL databases, talked about the need for a vector database to store the training results of large language models during the company's June 2023 earnings conference call. Simply put, a vector database stores data in a way that allows users to easily find data, say, an image (or text), that is related to a given image (or text) - this feature is very useful for generative AI products. This said, MongoDB's management also commented in the same earnings conference call that NoSQL databases will still be very useful in the AI era. We're aware that MongoDB's management could be biased, but we do agree

with their point of view. Vector databases appear to be well-suited (to our untrained technical eye!) for a narrow AI-related use case, whereas NoSQL databases are useful in much broader ways. Moreover, AI is likely to increase the volume of software developed for all kinds of software - not just AI software - and they need modern databases. MongoDB's management also explained in a separate June 2023 conference that a typical generative AI workflow will include both vector databases and other kinds of databases (during the conference, management also revealed MongoDB's own vector database service). We're keeping a keen eye on how the landscape of database architectures evolve over time as AI technologies develop.

- Keeping up with the theme of new architectures, the AI age could also usher in a new architecture for data centres. This new architecture is named accelerated computing by Nvidia. In the traditional architecture of data centres, CPUs (central processing units) are the main source of computing power. In accelerated computing, the *entire* data centre - consisting of GPUs (graphic processing units), CPUs, DPUs (data processing units), data switches, networking hardware, and more - provides the computing power. Put another way, instead of thinking about the chip as the computer, the *data centre* becomes the computer under the accelerated computing framework. During Nvidia's May 2023 earnings conference call, management shared that the company had been working on accelerated computing for many years but it was the introduction of generative AI - with its massive computing requirements - that "triggered a killer app" for this new data centre architecture. The economic opportunity could be immense. Nvidia's management estimated that US$1 trillion of data centre infrastructure was installed over the last four years and nearly all of it was based on the traditional CPU-focused architecture. But as generative AI gains importance in society, data centre infrastructure would need to shift heavily towards the accelerated computing variety, according to Nvidia's management.

- And keeping with the theme of something new, AI could also bring about novel and better consumer experiences. Airbnb's co-founder and CEO, Brian Chesky, laid out a tantalising view on this potential future during the company's latest May 2023 earnings conference call. Chesky mentioned that search queries in the travel context are matching questions and the answers depend on who the questioner is and what his/her preferences are. With the help of AI, Airbnb could build "the ultimate AI concierge that could understand you," thereby providing a highly personalised travel experience. Meanwhile, in a recent interview with *Wired*, Microsoft's CEO Satya Nadella shared his dream that "every one of Earth's 8 billion people can have an AI tutor, an AI doctor, a programmer, maybe a consultant!"

- Embedded AI is the concept of AI software that is built into a device itself. This device can be a robot. And if robots with embedded AI can be mass-produced, the economic implications could be tremendous, beyond the impact that AI could have as just software. Tesla is perhaps the most high profile company in the world today that is developing robots with embedded AI. The company's goal for the Tesla Bot (also known as Optimus) is for it to be "a general purpose, bi-pedal, autonomous humanoid robot capable of performing unsafe, repetitive or boring tasks." There are other important companies that are working on embedded AI. For example, earlier this year, Nvidia acquired OmniML, a startup whose software shrinks AI models, making it easier for the models to be run on devices rather than on the cloud.

- Currently, humans are behind the content trained on by foundational AI models underpinning the likes of ChatGPT and other generative AI products. But according

to a recently-published paper from UK and Canadian researchers titled *The Curse of Recursion: Training on Generated Data Makes Models Forget*, the quality of foundational AI models degrades significantly as the proportion of content they are trained on shifts toward an AI-generated corpus. This could be a serious problem in the future if there's an explosion in the volume of generative AI content, which seems likely; for context, Adobe's management shared in mid-June this year that the company's generative AI feature, Firefly, had already powered 500 *million* content-generations since its launch in March 2023. The degradation, termed "model collapse" by the researchers, happens because content created by humans are a more accurate reflection of the world since they would contain improbable data. Even after training on man-made data, AI models tend to generate content that *understates* the improbable data. If subsequent AI models train primarily on AI-generated content, the end result is that the improbable data become even less represented. The researchers describe model collapse as "a degenerative process whereby, over time, models forget the true underlying data distribution, even in the absence of a shift in the distribution over time." Model collapse could have serious societal consequences; one of the researchers, Ilia Shumailov, told *Venture Beat* that "there are many other aspects that will lead to more serious implications, such as discrimination based on gender, ethnicity or other sensitive attributes." Ross Anderson, another author of the paper, wrote in a blog post that with model collapse, advantages could accrue to companies that "control access to human interfaces at scale" or that have already trained AI models by scraping the web when human-generated content was still overwhelmingly dominant.

There's one other fragile thought we have about AI that we think is more important than what I've shared above, and it is related to the concept of emergence. Emergence is a natural phenomenon where sophisticated outcomes spontaneously "emerge" from the interactions of agents in a system, even when these agents were not instructed to produce these outcomes. The following passages from the book, *Complexity: The Emerging Science at the Edge of Order and Chaos* by Mitch Waldrop, help shed some light on emergence:

> "These agents might be molecules or neurons or species or consumers or even corporations. But whatever their nature, the agents were constantly organizing and reorganizing themselves into larger structures through the clash of mutual accommodation and mutual rivalry. Thus, molecules would form cells, neurons would form brains, species would form ecosystems, consumers and corporations would form economies, and so on. At each level, new emergent structures would form and engage in new emergent behaviors. Complexity, in other words, was really a science of emergence…

> …Cells make tissues, tissues make organs, organs make organisms, organisms make ecosystems - on and on. Indeed, thought Holland, that's what this business of "emergence" was all about: building blocks at one level combining into new building blocks at a higher level. It seemed to be one of the fundamental organizing principles of the world. It certainly seemed to appear in every complex, adaptive system that you looked at…

> …Arthur was fascinated by the thing. Reynolds had billed the program as an attempt to capture the essence of flocking behavior in birds, or herding behavior in sheep, or

schooling behavior in fish. And as far as Arthur could tell, he had succeeded beautifully. Reynolds' basic idea was to place a large collection of autonomous, birdlike agents—"boids"—into an onscreen environment full of walls and obstacles. Each boid followed three simple rules of behavior:

1. It tried to maintain a minimum distance from other objects in the environment, including other boids.
2. It tried to match velocities with boids in its neighborhood.
3. It tried to move toward the perceived center of mass of boids in its neighborhood.

What was striking about these rules was that none of them said, "Form a flock." Quite the opposite: the rules were entirely local, referring only to what an individual boid could see and do in its own vicinity. If a flock was going to form at all, it would have to do so from the bottom up, as an emergent phenomenon. And yet flocks did form, every time. Reynolds could start his simulation with boids scattered around the computer screen completely at random, and they would spontaneously collect themselves into a flock that could fly around obstacles in a very fluid and natural manner. Sometimes the flock would even break into subflocks that flowed around both sides of an obstacle, rejoining on the other side as if the boids had planned it all along. In one of the runs, in fact, a boid accidentally hit a pole, fluttered around for a moment as though stunned and lost—then darted forward to rejoin the flock as it moved on."

In our view, the concept of emergence is important in AI because at least some of the capabilities of ChatGPT seen today **were not explicitly programmed for - they** *emerged*. Satya Nadella said in his aforementioned interview with *Wired* that "when we went from GPT 2.5 to 3, we all started seeing these emergent capabilities." Nadella was referring to the foundational AI models built by OpenAI in his *Wired* interview. One of the key differences between GPT 2.5 and GPT 3 is that the former contains 1.5 billion parameters, whereas the latter contains 175 billion, more than 100 times more. The basic computational unit within an AI model is known as a node, and parameters are a measure of the strength of a connection between two nodes. The number of parameters can thus be loosely associated with the number of nodes, as well as the number of connections between nodes, in an AI model. With GPT 3's much higher number of parameters compared to GPT 2.5, the number of nodes and number of connections (or interactions) between nodes in GPT 3 thus far outweigh those of GPT 2.5. Nadella's observation matches those of David Ha, an expert on AI whose most recent role was the head of research at Stability AI. During a February 2023 **podcast** hosted by investor Jim O'Shaughnessy, Ha shared the following (emphasis is mine):

"Then the interesting thing is, sure, you can train things on prediction or even things like translation. If you have paired English to French samples, you can do that. But what if you train a model to predict itself without any labels? So that's really interesting because one of the limitations we have is labeling data is a daunting task and it requires a lot of thought, but self-labeling is free. Like anything on the internet, the label is itself, right? So what you can do is there's two broad types of models that are popular now. There's language models that generate sequences of data and there's things like image models, Stable Diffusion you generate an image. These operate on a very similar principle, but for things like language model, you can have

a large corpus of text on the internet. And the interesting thing here is all you need to do is train the model to simply predict what the next character is going to be or what the next word is going to be, predict the probability distribution of the next word.

And such a very simple objective as you scale the model, as you scale the size and the number of neurons, you get interesting emerging capabilities as well. So before, maybe back in 2015, '16, when I was playing around with language models, you can feed it, auto Shakespeare, and it will blab out something that sounds like Shakespeare.

But in the next few years, once people scaled up the number of parameters from 5 million, to a hundred million, to a billion parameters, to a hundred billion parameters, this simple objective, you can now interact with the model. You can actually feed in, "This is what I'm going to say," and the model takes that as an input as if it said that and predict the next character and give you some feedback on that. And I think this is very interesting, because this is an emergent phenomenon. We didn't design the model to have these chat functions. It's just like this capability has emerged from scale.

And the same for image side as well. I think for images, there are data sets that will map the description of that image to that image itself and text to image models can do things like go from a text input into some representation of that text input and its objective is to generate an image that encapsulates what the text prompt is. And once we have enough images, I remember when I started, everyone was just generating tiny images of 10 classes of cats, dogs, airplanes, cars, digits and so on. And they're not very general. You can only generate so much.

But once you have a large enough data distribution, you can start generating novel things like for example, a Formula 1 race car that looks like a strawberry and it'll do that. This understanding of concepts are emergent. So I think that's what I want to get at. You start off with very simple statistical models, but as you increase the scale of the model and you keep the objectives quite simple, you get these emergent capabilities that were not planned but simply emerge from training on that objective."

Emergence occurred in AI models as their number of parameters (i.e. the number of interactions between nodes) grew. This is a crucial point because emergence requires a certain amount of complexity in the interactions between agents, which can only happen if there are large numbers of agents as well as interactions between agents. **It's highly likely, in our view, that more emergent phenomena could develop as AI models become even more powerful over time via an increase in their parameters. It's also difficult - perhaps impossible - to predict what these emergent phenomena could be, as specific emergent phenomena in any particular complex system are inherently unpredictable. So, any new emergent phenomena from AI that springs up in the future could be anywhere on the spectrum of being wildly positive to destructive for society. We'll see!**

When genius failed (temporarily)*

The late Henry Singleton was a bona fide polymathic genius. He had a PhD in electrical engineering and could play chess just below the grandmaster level. In the realm of business, Warren Buffett once said that Singleton **"has the best operating and capital deployment record in American business**… if one took the 100 top business school graduates and made a composite of their triumphs, their record would not be as good."

Singleton co-founded Teledyne in 1960 and stepped down as chairman in 1990. Teledyne started life as an electronics company and through numerous acquisitions engineered by Singleton, morphed into an industrials and insurance conglomerate. According to *The Outsiders*, a book on eight idiosyncratic CEOs who generated tremendous long-term returns for their shareholders, Teledyne produced a 20.4% annual return from 1963 to 1990, far ahead of the S&P 500's 8.0% return. *Distant Force*, a hard-to-obtain memoir on Singleton, mentioned that a Teledyne shareholder who invested in 1966 "was rewarded with an annual return of 17.9 percent over 25 years, or a return of 53 times his invested capital." In contrast, the S&P 500's return was just 6.7 times in the same time frame.

Beyond the excellent long-term results, Jeremy and I also found another noteworthy aspect about Singleton's record: **It is likely that shareholders who invested in Teledyne in 1963 or 1966 would subsequently have thought,** *for many years*, **that Singleton's genius had failed them**. I'm unable to find precise historical stock price data for Teledyne during Singleton's tenure. But based on what I could gather from *Distant Force,* **Teledyne's stock price sunk by more than 80% from 1967 to 1974**. **That's a huge and demoralising decline for shareholders after holding on for seven years, and was significantly worse than the 11% fall in the S&P 500 in that period**. **But even an investor who bought Teledyne shares in 1967 would still have earned an annualised return of 12% by 1990, outstripping the S&P 500's comparable annualised gain of 10%**. And of course, an investor who bought Teledyne in 1963 or 1966 would have earned an even better return, as mentioned earlier.

Just like how Buffett's Berkshire Hathaway had seen a stomach-churning short-term decline in its stock price enroute to superb long-term gains driven by outstanding business growth (see the "*An unfortunate but necessary disconnect"* section of our **2022 third-quarter letter**), shareholders of Teledyne also had to contend with the same*.* I don't have historical financial data on Teledyne from primary sources. But for the 1963-1989 time frame, based on data from *Distant Force,* it appears that the compound annual growth rates (CAGRs) for the conglomerate's revenue, net income, and earnings per share were 19.8%, 25.3%, and 20.5%, respectively; the self-same CAGRs for the 1966-1989 time frame were 12.1%, 14.3%, and 16.0%. These numbers roughly match Teledyne's returns cited by *The Outsiders* and *Distant Force*, once again demonstrating a crucial trait about the stock market I've mentioned in many of our past letters, and in the introductory section of this letter, that "what ultimately drives a stock's price over the long run is its business performance."

Not every long-term winner in the stock market will bring its shareholders through an agonising fall mid-way. A notable example is the Canada-based Constellation Software, which is well-known in the investment community for being a serial acquirer of vertical market software businesses. The company's stock price has risen by nearly 15,000% from its May 2006 IPO to the end of June 2023, but it has never seen a peak-to-trough decline of more than 30%. **This said, it's common to see companies suffer significant drawdowns**

in their stock prices while on their way to producing superb long-term returns, hence the following passage from the "*An unfortunate but necessary disconnect*" section of our 2022 third-quarter letter:

> "This is the unfortunate reality confronting investors who are focused on the long-term business destinations of the companies they're invested in: The end point has the potential to be incredibly well-rewarding, but the journey can also be blisteringly painful."

*The title of this section is a pun on one of my favourite books on finance, titled **When Genius Failed**. *In the book, author Roger Lowenstein detailed how the hedge fund, Long-Term Capital Management (LTCM), produced breath-taking returns in a few short years only to then give it all back in the blink of an eye. $1 invested in LTCM at its inception in February 1994 would have turned into $4 by April 1998, before collapsing to just $0.30 by September in the same year; the fund had to be rescued via a bail-out orchestrated by the Federal Reserve Bank of New York. Within LTCM's ranks were some of the sharpest minds in finance, including Nobel laureate economists, Robert Merton and Myron Scholes. Warren Buffett once said that LTCM "probably have as high an average IQ as any 16 people working together in one business in the country…[there was] an incredible amount of intellect in that room." LTCM's main trading strategy was arbitrage - taking advantage of price differentials between similar financial securities that are trading at different prices. The LTCM team believed that the price differentials between similar instruments would eventually converge and they set up complex trades involving derivatives to take advantage of that convergence. Because of the minute nature of the price differentials, LTCM had to take on enormous leverage in order to make substantial profits from its arbitrage trading activities. According to Roger Lowenstein's account, leverage ratios of 20-to-1 to 30-to-1 were common. At its peak, LTCM was levered 100-to-1 - in other words, the hedge fund was borrowing $100 for every dollar of asset it had. Compounding the problem, LTCM's partners, after enjoying startling success in the fund's early days, started making directional bets in the financial markets, a different - and arguably riskier - activity from their initial focus on arbitrage. The story of LTCM's downfall is a reminder of how hubris and leverage can combine into a toxic cocktail of financial destruction.*

House-keeping matters and what's next

Compounder Fund's audit for calendar year 2022, conducted by Baker Tilly, has wrapped up. On 16 May 2023, we sent a digital copy of Compounder Fund's audited financial statements for 2022 to all of the fund's investors. If you did not receive it, or if you joined the fund as an investor after 16 May 2023 and would like a digital copy of the audited 2022 financial statements, please let Jeremy and me know.

As Jeremy and I have shared before, giving back to society is one of the four key pillars of Compounder Fund's mission to "Grow *Your* Wealth & Enrich Society." In the fund's website, we **mentioned** that "we are setting aside at least 10% of every dollar we earn from Compounder Fund in each year for charities of our choice" and that "we will audit our giving." The first audit for our giving, conducted by Baker Tilly, covered the period from November 2019 (when we started building the fund) to December 2021. Subsequent audits are for each calendar year and the audit report for 2022 - again with Baker Tilly as the auditor - was completed earlier this year. As a reminder, all the audit reports for our charitable giving are available on the fund's website **here**. If you are interested to know more about our charitable giving, feel free to reach out!

Another of the key pillars of Compounder Fund's mission involves investor education. To this end, Jeremy and I are running Compounder Fund transparently. We have released the investment theses for all of Compounder Fund's current holdings (for your convenience, all our theses can be **found here**). We will inform you when we publish any new theses.

Compounder Fund's next subscription window will close in the middle of September 2023 and it will have a dealing date on the first business day of October 2023 (which should be 2nd October). If you would like to increase your investment in the fund, please submit the relevant paperwork by the middle of September 2023. Jeremy and I are happy to assist with any queries you may have.
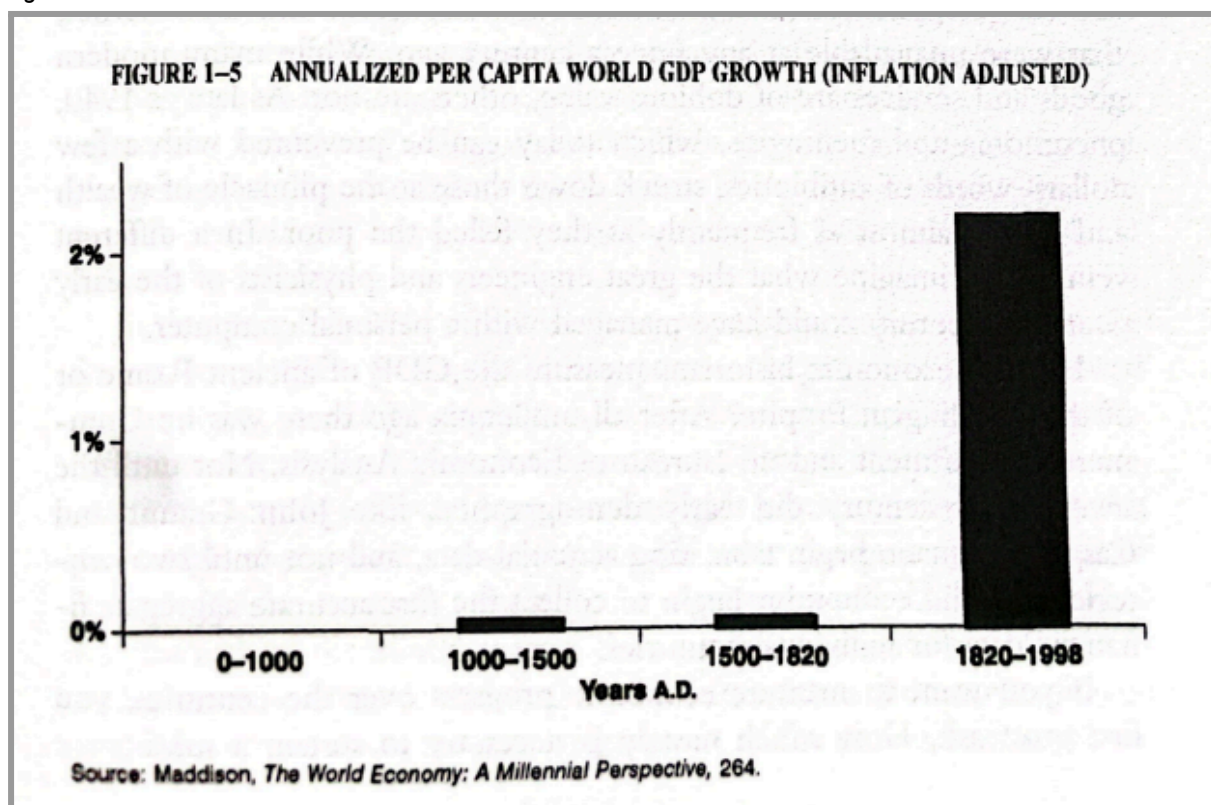

Optimism (as always!)

There are a myriad of important political, social, economic, and healthcare issues that are plaguing our globe today. But Jeremy and I are still long-term optimistic on the stock market. This is because we still see so much potential in humanity. There are more than 8.0 billion individuals in the world **right now**, and the vast majority of people will wake up every morning wanting to improve the world and their own lot in life. *This* - the desire for progress - is ultimately what fuels the global economy and financial markets. Miscreants and Mother Nature will occasionally wreak havoc but we have faith that humanity can clean it up. To us, investing in stocks is ultimately the same as having faith in the long-term positivity of humanity. We will remain long-term optimistic on stocks so long as we continue to have this faith.

What helps us keep the faith is also the existence of other factors that provide fertile soil for mankind's desire for progress to flourish. In his excellent book, **_The Birth of Plenty_**, William Bernstein explained why the pace of global economic growth picked up noticeably starting in the early 1800s; Figure 1 below shows the unmistakable growth spurt in global GDP per capita that started, and continued on, from that period. Bernstein wrote in his book that there are four *necessary* factors for economies to advance over time:

- **Respect for property rights**: Entrepreneurs and business owners must have confidence that the rewards from their efforts will not be unduly confiscated
- **Broad acceptance of the scientific method for investigating how the world works**: The foundation for innovative ideas is a useful intellectual framework
- **Easy access to capital**: Without funding, even the best business ideas will be starved of fuel to take off
- **Methods for rapid and efficient transport of ideas and widgets**: Great ideas and products will be unable to find their appropriate audience in time without reliable and fast transportation

Without any of these factors, economic growth can't proceed. **From our vantage point, all four factors are firmly in place in large swathes of the world**.

Figure 1

FIGURE 1–5   ANNUALIZED PER CAPITA WORLD GDP GROWTH (INFLATION ADJUSTED)

Source: Maddison, *The World Economy: A Millennial Perspective*, 264.

Source: The Birth of Plenty

So, the only time Jeremy and I will turn pessimistic on the long-term returns of stocks is when they become wildly overpriced - and we don't think this is the case today. This does *not* mean that stocks are cheap or that stocks won't fall in the months or next year or two ahead (remember, we don't know what the journey will look like). It only means that we think valuations are somewhat reasonable and that investing now will likely lead to a satisfactory outcome, *if* we have a multi-year time horizon and we're invested in fast-growing companies. **With your support, we have both ingredients at Compounder Fund.**

Final words

If you have any questions related to Compounder Fund's administrative matters or our general investment thinking, please know that our email inboxes are always open to you. Thank you again for trusting Jeremy and me with your hard-earned capital. We deeply appreciate your trust and support (especially in difficult times like these), your belief in Compounder Fund's mission to "Grow *Your* Wealth & Enrich Society," and your understanding of the investing approach that we are taking.

Your deep understanding of our long-term-oriented investment style gives us the space we need to do our work (analysing businesses and thinking about their possible long-run futures) to the best of our abilities, for you. **So, thank you all again for being the wonderful investors that you all are. And please, *never* underestimate your importance in helping to shape Compounder Fund's long-run return.**

You can expect to see Compounder Fund's 2023 third-quarter investors' letter in mid-October 2023. Till then, stay safe and take care.

Excelsior,
Chong Ser Jing
Co-founder and Portfolio Manager, Compounder Fund
12 July 2023

P.S.: You can find all of our **past investors' letters here**.

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