Everything AI: An Update on Machine Learning & Multiple Expansion

In our June piece External Obsolescence: Tech Investors' Newest Nightmare, we explained how the consensus view on AI stocks might simply be misplaced confidence that had sent multiples soaring. We highlighted that investors had anointed Microsoft, Apple, Google, Nvidia, and Amazon as the "sure-fire" winners of all things AI. We referred to these five stocks as "MAGNA" for short.

We built a simple chart showing the primary driver of returns was **multiple expansion – not fundamentals.**

A broker-dealer recently penned an explanation for why AI and tech stocks today "…don't appear to be in a bubble."[i] Thoughtful in structure, the piece observed that tech valuations have risen this year despite rising rates and acknowledged this "…suggests investors are assuming much higher future growth rates for these companies." **The work's rationale for why AI is not a bubble emphasized the following three items:**

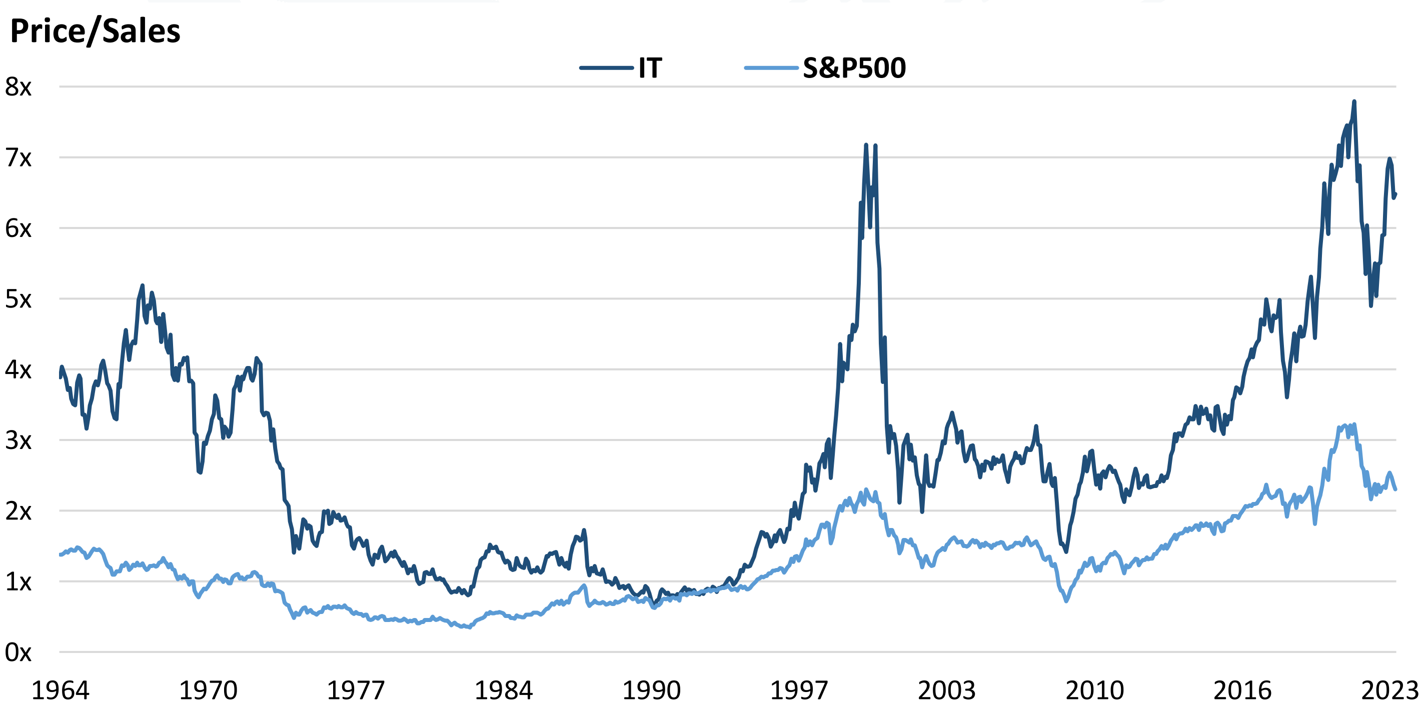
- Big tech's Price-to-Earnings (P/E) ratios are lower than they were in the dot.com or Nifty 50 manias
- The concentrated returns and lack of "broader optimism" are further evidence that we are not in a bubble
- Big tech has higher margins, better balance sheets, and better moats than tech in the dot.com bubble[1]

KCR strongly recommends folks read their thoughtful work. **In contrast, this paper will explain:**

- Why P/E could be a dangerous metric for these stocks and offers an alternative view of **tech valuations**
- Why **concentration** indicates AI darlings are in a massive bubble
- Evidence AI stocks are using the same **accounting gimmicks** seen before the dot.com bubble imploded

Everyone is busy. Let's hustle. **First up, valuation:**

Navy blue line is the price-to-sales ratio of tech stocks. **Light blue line** is the price-to-sales ratio of the S&P 500. Using this metric instead of price-to-earnings ratios, the story looks familiar. **Tech's valuation is a near-perfect doppelganger for the peak of the dot.com bubble.**

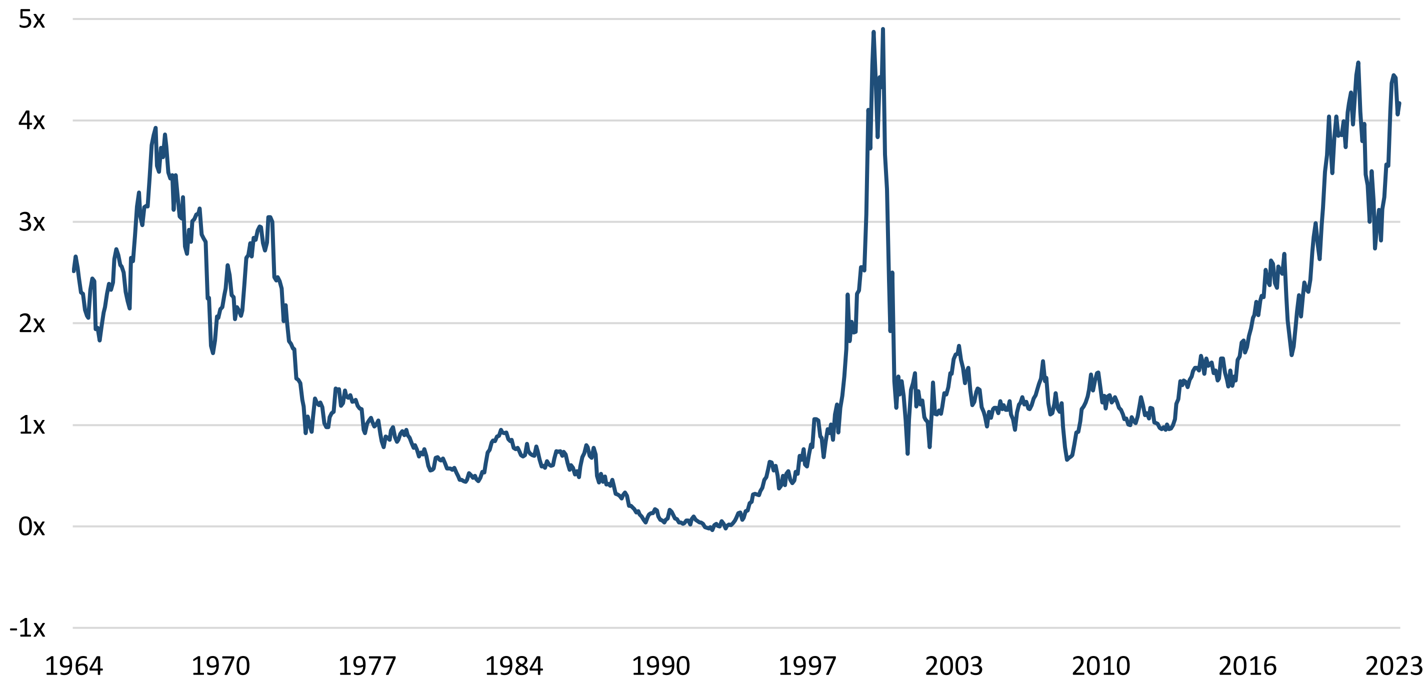


Source: Kailash Capital Research, LLC; Data from 4/30/1964 - 10/31/2023

[1] In the piece, they note return on equity (ROE) and margins are nearly double what was seen in the runup to the dot.com peak

The chart below is merely the spread between the two lines above. We took the P/S ratio of US Tech and deducted the P/S ratio of the S&P 500. While not precisely as high as in the dot.com bubble, the inflated valuations that collapsed in 2022 have now re-taken their 2021 highs. **So which multiple matters more?**

Price to Sales Ratio of US Tech *less* Price to Sales of the S&P 500



Source: Kailash Capital Research, LLC; Data from 4/30/1964 - 10/31/2023

When bloated P/S ratios are accompanied by more moderate P/E ratios, the implications are clear: margins are high. We first highlighted margins in our piece Economic Cycles and Mean Reversion, showing that profit margins were above a peak last seen in 1929. Our recent piece, The Politics of Profits, explained how the headwinds to Tech oligopolists' margins had turned into a veritable hurricane of possible problems.

The importance of this cannot be overstated. Stories like the one being told by this broker suggest that valuations are moderate, balance sheets healthy, and therefore, investors can chase popular mega-cap Tech stocks because they are defensive. **We believe this is nonsense.**

As we explained in AI, Oil and Gas: Misadventures in Capital Allocation, if profits, capital intensity, and margins are the measure of "safety,"….well **Energy and Tech** stocks are now tied. **On all three variables.**

The difference, as we have discussed before, is that for the same level of sales, earnings, profit margins, and capital intensity, US Energy is valued at **$2 trillion** while US Tech is valued at **~$12 trillion. The entire valuation gap between the two sectors is investor extrapolation bias and narrative.**

John Thornhill of the Financial Times wrote a stunning summary of just how high expectations for AI are. He notes that big tech itself has described AI as "…the new electricity or fire." He then explains that "even the sober suits at McKinsey estimate that the technology could add between $2.6 to $4.4 trillion of economic value annually." Those are big numbers. The "…rough equivalent of creating a new UK economy." Every year.

Gentle reminder: software may eat the world, but you cannot eat AI.

Second Point: Concentration

Back to this broker's report. Another defense is that "Not only are the leading tech companies less extreme in valuation today, but the broader optimism that spilled over into equity valuations in the late 1990s is not apparent today." Their work observes that "Just 15 companies accounted for more than 90% of the returns of the S&P 500 Index from January through June."

We found this logic utterly confounding. Updating the analysis through the end of October, the top 15 contributors to the S&P 500's returns explain **over 100%** of the entire index return.

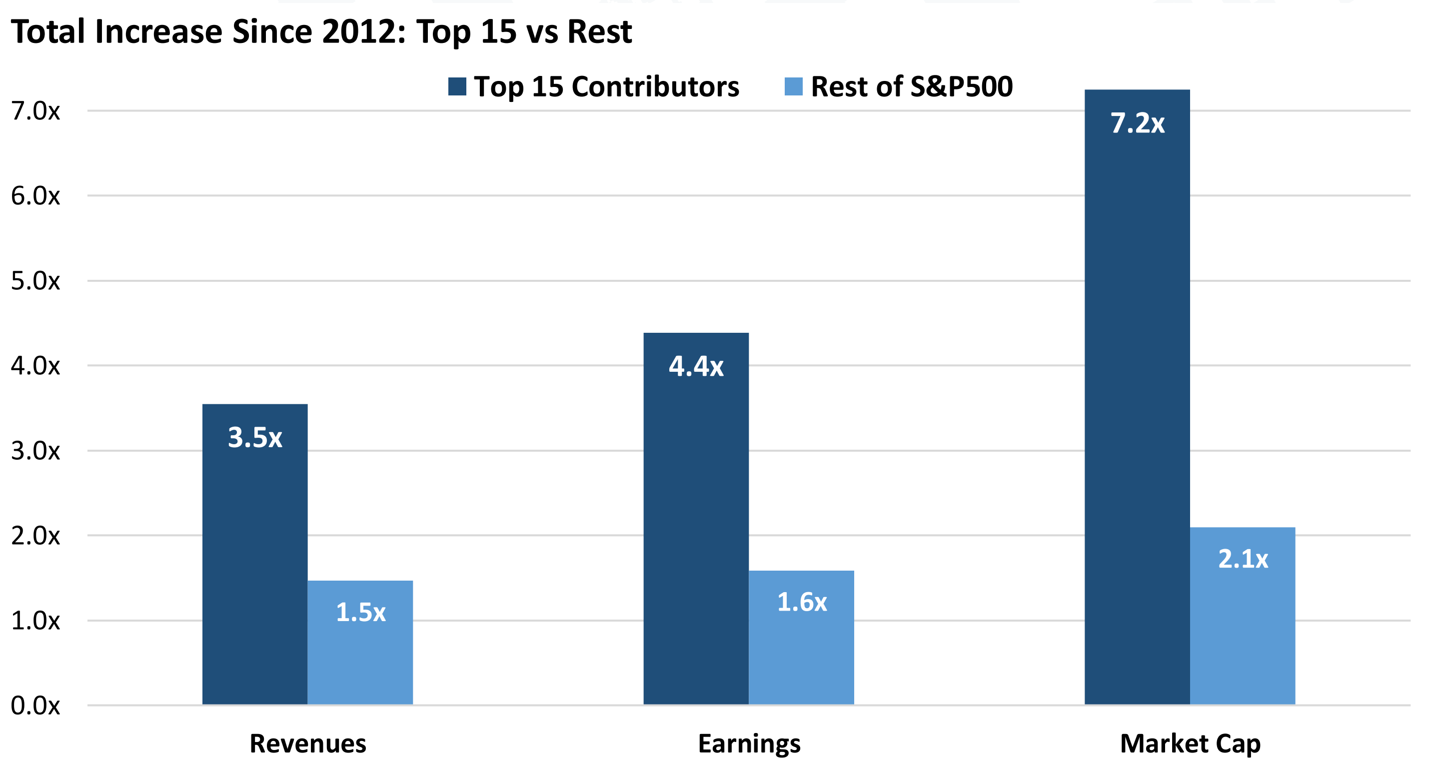
Specifically, those 15 stocks contributed 12.5% to the S&P 500's return through October. In that period, the S&P 500 was up by only 10.7%. This means that the remaining 485 stocks **detracted** from returns.

Considering the bulk of these 15 stocks are AI darlings like Microsoft, Nvidia, Amazon, Google, etc., it seems obvious that this is evidence **of a bubble**.

The chart below shows the following:

- **Navy Blue Bars**: change in sales, earnings, and market cap of the 15 biggest contributors since 2012
- **Light Blue Bars**: change in sales, earnings, and market cap of the remaining 485 stocks in the index

What do we see? **Light blue bars.** Since 2012, the 485 stocks in the market have grown sales by 1.5x and earnings by 1.6x. And their collective market caps have risen 2.1x. There's some modest multiple expansion there, but the market caps have largely risen in lock-step with profit growth.



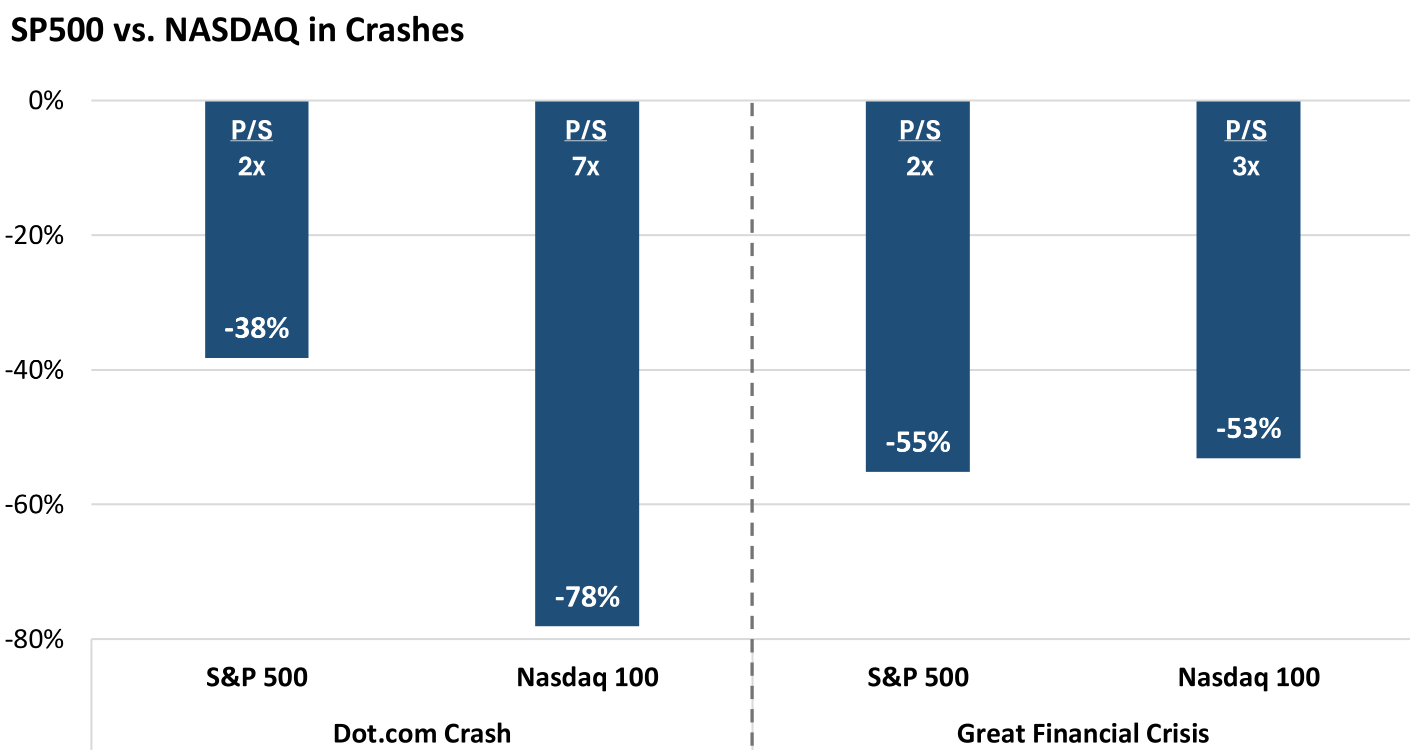
Source: Kailash Capital Research, LLC; Data from 8/31/2012 - 10/31/2023

Now look at the **navy blue bars**. The 15 stocks that have driven over 100% of the index return year to date. They have experienced exceptional sales and earnings growth. But their market caps have soared 7.2x. So their market caps have risen nearly twice as much as earnings (7.2x for market cap vs. 4.4x for earnings).

That is ***extrapolation bias*** – investors have come to believe that the outsized growth in sales and profits will remain perpetually higher. And they have priced it in. These are the classic attributes of “glamour stocks.”

As we showed in our work, The Persistence of Profits, extrapolating abnormally high growth rates is a common human error that fails with spectacular consistency.

Why it matters? We have explained in blunt detail that valuations matter when corrections happen. The two bars on the left show that tech got crushed in the dot.com bubble due to extraordinary valuations. The two bars on the right show that tech also fell nearly as much as the market in the GFC when they were cheap on P/S and their P/E ratios were closer to the market like they are today. *Historical and current valuations of Tech vs. the S&P 500 are in the Appendix.*



Source: Kailash Capital Research, LLC; Data from 2/28/2000 - 10/10/2002 & 10/10/2007 - 03/09/2009

Third Point: Accounting Gimmicks on a Grand Scale

KCR will wrap this paper up with a brief but hopefully compelling look at a disconcerting trend we see among today’s AI mega-cap darlings. From what we can tell, they all engage in epic vendor financing that looks painfully reminiscent of big tech’s behavior in the dot.com bubble. As a reminder, vendor financing is simply the act of lending your customers money to buy your goods and services.

The Globe and Mail did an outstanding job explaining this practice during the dot.com bubble:

Like all of its peers, Nortel engages in vendor financing, which…can also include what's called working capital financing, whereby the lender also lends the customer funds with which to run its business. … Vendor financing can be a valuable tool.

An upstart networking company that survives and thrives is unlikely to change suppliers as it grows. Being the first one in the door, then - assuming the firm would thrive - was vital for the Nortels, Lucents, Alcatel SAs and Ciscos of the world, all of which lent generously, especially as 2000 sped by.

Not playing the game meant possibly losing out on future business, and in a competitive industry where scale matters, that's not an option. But such financing can also be extremely dangerous if the risks aren't respected, and that's what happened to Nortel and its rivals.[ii]

So fund neat new startups. In return, the new startups buy a bunch of your gear. The more big tech invested, the faster big-tech's sales and profits grew. This was the dogma of big tech during the dot.com bubble.

We all know this ended in disaster. As upstart companies faltered, they could no longer buy the equipment from their once-generous blue-chip sponsors. The knock-on effect for the blue-chip tech companies was devastating as sales and earnings growth sputtered, stumbled, and disappointed the street.

"The world of finance hails the invention of the wheel over and over again, often in a slightly more unstable version."

-John Kenneth Galbraith

Here we are. Just over 20 years from the dot.com peak. The apostles of AI are delivering vendor financing in what reasonable minds might believe is a less-stable fashion than in 1999.

The dot.com analogs are so overwhelming it is impossible to document them in full. But the bigger point is clear: **Big tech, venture capital and private-equity are engaged in a massive vendor financing binge.** See if you can spot possible signs of misplaced euphoria and trouble in the few excerpts below:

Google agreed to invest up to $2 billion in Anthropic, building on its earlier investment in the artificial-intelligence company….Anthropic has also signed a multiyear deal with Google Cloud worth more than $3 billion…Anthropic's two megadeals with Amazon and Google mean it has raised almost $7 billion in the past year alone. Anthropic has also struck large deals with Amazon and Google to train and run its models. The AI company was largely bankrolled by Sam Bankman Fried's FTX until the crypto exchange collapsed last year…

-Berber Jin & Miles Kruppa, Wall Street Journal[iii]

*AI startups are still catching sky-high valuations, powered by all-in bets by Big Tech incumbents such as Amazon…..The [Anthropic] deal is one of the latest in a long list of large rounds like Cohere's $270 million Nvidia-backed Series C and Inflection's blockbuster $1.3 billion series B led by Microsoft…and Nvidia. Investors poured $21.4 billion into **generative AI** startups this year through Sept. 30th….*

-Jacob Robbins, Pitchbook[iv]

*Globally, AI and machine learning companies raised **$22.7 billion** across nearly **1,500 deals** in the **first quarter** of the year….The vast majority went to…OpenAI, which received $10 billion from Microsoft in a complex partnership deal that includes supercomputing capacity, cloud services from Microsoft Azure…*

-Kevin Truong, The San Francisco Standard[v]

A French start-up [Mistral] founded four weeks ago by a trio of former Meta and Google researchers…has raised Europe's largest-ever seed round. The record amount raised highlights the growing frenzy surrounding AI….Mistral has yet to develop its first product, and its first few employees started work only days ago.

-Tim Bradshaw & Leila Abboud, Financial Times[vi]

Before their startup had customers, a business plan or even a formal name, former Google AI researchers Niki Parmar and Ashish Vaswani were fielding interest from investors eager to back the next big thing in artificial intelligence…As with the recently ended bull run of broader startup investing, though, investors are often jumping into AI startups even when it isn't clear how they will make a profit….firms are willing to back well-respected researchers without so much as a business plan…

-Deepa Seetharaman, Wall Street Journal[vii]

Gather around children. We are about to discuss some financial innovation: using computer chips as collateral for loans. CoreWeave, a cloud computing startup backed by Nvidia and Magnetar Capital, has secured a $2.3 billion debt facility using Nvidia's sought-after H100 GPUs as collateral. The company intends to use that money to purchase more high-end chips….

If your head hurts, let me try to sum this up: Nvidia invested in CoreWeave, which is reliant on Nvidia products, and now those Nvidia products are being used as collateral to buy…more Nvidia products. …because CoreWeave is a startup, it needs a creative way to come up with collateral. This isn't exactly a new phenomenon – Silicon Valley Bank, for instance, specialized in providing risky startups with financing.

So what's CoreWeave's collateral on its loan? Why it's Nvidia's H100-based GPUs…. This collateral is a little different than other startup loans I've seen: the chips have a built-in expiration date, and it's soon. A more powerful chip for AI – the GH200s – should be available for purchase next year. But of course, Nvidia isn't the only company racing to beat the H100; companies such as Microsoft, Google, and Amazon are trying to make their own chips. If one of them has a breakthrough, the collateral on CoreWeave's loan is suddenly worth a lot less…
-Elizabeth Lopatto, The Verge[viii]

Under no circumstances is KCR suggesting anything illegal is going on. Companies and investors are welcome to fund whatever they want to buy whatever they want. If the billions poured into these startups, create profitable, sustainable and successful firms with recurring and growing demand for the chips and compute they are buying, then this will all work out well.

But what if it doesn't?

For what little it's worth, KCR believes the idea that AI will be transformative is far more credible than the gibberish that underpinned the mania around novelty crypto-tokens in 2020. Yet even there, our judgment should be taken with a grain of salt. Actually, make it a mouthful of salt.

In a remarkable article by George Hammond of the Financial Times, he sources none other than Vinod Khosla as saying most AI firms were overvalued and will fail to make money. Mr. Khosla made an explicit analogy between AI investments and the catastrophic losses incurred from investing in the crypto mania, including FTX.

Maybe Vinod Khosla is out of touch.

Maybe giving money to companies without business plans to buy computer storage and chips is a good idea.

Maybe lending money with soon-to-be-obsolete computer chips as collateral is good underwriting.

Maybe the people who brought you WeWork, Theranos, and FTX are much better at forecasting the future now.

Or maybe not.

We were on a recent call with a client who is part of a Small Cap team. They run several products with long histories of beating their benchmarks. Despite the firm's blue-chip pedigree, aggressive prices, low turnover, and excellent performance, there have been a dearth of inflows.

The client swung hard as he advocated ***for AI stocks***. His case for the Nvidias of the world was compelling. Quality. Growth. Change. Investor attention. Off guard, our team put up a decidedly mediocre defense.

He later admitted he was playing Devil's advocate and closed by telling us he owned "…an entire portfolio of stocks like **[redacted]** which trades at a 15% free cash flow yield, is growing, and has been in business for over 100 years. And these stocks just keep getting cheaper because nobody cares."

We think the frustrated sentiment is the perfect "anti-AI" of today. You can go where the herd is and buy companies that price in future developments that nobody can predict with any certainty. This is the equivalent of betting **against** Vinod Khosla in an investment space the man practically invented.

Alternatively, you can buy growth stocks that generate so much free cash flow the market is betting that they will go out of business in just a few years. How is this possible?

Well, the stocks are small caps; they require the work of an evidence-based active manager (of which there are decidedly fewer), and they require you to think independently. Below, we show a list of stocks that:

- Are in the top 30% of KCR's Small & Midcap Rankings
- Are growing
- Are so cheap they have free-cash-flow yields over 10% of enterprise value

"Valuation doesn't matter until it is all that matters." *-Anon*

KCR Agg Rank	Ticker	Name	FCF/EV	3 Yr Sales Growth	KCR Agg Rank	Ticker	Name	FCF/EV	3 Yr Sales Growth
4	HUBG	HUB GROUP INC -CL A	12%	41%	159	HCC	WARRIOR MET COAL INC	19%	84%
16	STNG	SCORPIO TANKERS INC	25%	123%	160	ANDE	ANDERSONS INC	47%	121%
21	MTH	MERITAGE HOMES CORP	22%	60%	165	IDCC	INTERDIGITAL INC	15%	51%
27	GSL	GLOBAL SHIP LEASE INC	20%	139%	171	MDC	MDC HOLDINGS INC	37%	27%
29	LXU	LSB INDUSTRIES INC	17%	126%	177	SEB	SEABOARD CORP	11%	43%
32	TPH	TRI POINTE HOMES INC	24%	19%	178	MLI	MUELLER INDUSTRIES	20%	57%
35	AMWD	AMERICAN WOODMARK CORP	13%	25%	187	AGX	ARGAN INC	21%	76%
42	AMR	ALPHA METALLURGICAL RESOURCE	35%	82%	190	STRL	STERLING INFRASTRUCTURE INC	12%	40%
43	TMHC	TAYLOR MORRISON HOME CORP	20%	31%	193	SHOO	MADDEN STEVEN LTD	13%	36%
46	BZH	BEAZER HOMES USA INC	22%	8%	198	FOR	FORESTAR GROUP INC	17%	55%
47	RYI	RYERSON HOLDING CORP	20%	48%	202	PLAB	PHOTRONICS INC	19%	42%
50	TOL	TOLL BROTHERS INC	19%	53%	221	CNXN	PC CONNECTION INC	14%	10%
51	MHO	M/I HOMES INC	27%	48%	233	BECN	BEACON ROOFING SUPPLY INC	12%	22%
56	KBH	KB HOME	25%	47%	240	CCRN	CROSS COUNTRY HEALTHCARE INC	35%	185%
59	TWI	TITAN INTERNATIONAL INC	15%	62%	242	BCC	BOISE CASCADE CO	20%	34%
60	PBF	PBF ENERGY INC	33%	105%	248	GRBK	GREEN BRICK PARTNERS INC	15%	85%
63	SLCA	U S SILICA HOLDINGS INC	13%	47%	250	POWL	POWELL INDUSTRIES INC	18%	18%
65	HRMY	HARMONY BIOSC HOLD INC	14%	395%	251	NX	QUANEX BUILDING PRODUCTS	12%	37%
69	CIVI	CIVITAS RESOURCES INC	15%	1148%	255	INSW	INTERNATIONAL SEAWAYS INC	14%	151%
70	BXC	BLUELINX HOLDINGS INC	49%	33%	260	WGO	WINNEBAGO INDUSTRIES	10%	48%
71	DAC	DANAOS CORP	33%	124%	261	RES	RPC INC	16%	149%
76	CAL	CALERES INC	10%	19%	263	CHGG	CHEGG INC	13%	30%
81	CRC	CALIFORNIA RESOURCES CORP	13%	10%	268	WNC	WABASH NATIONAL CORP	12%	57%
82	MGY	MAGNOLIA OIL & GAS CORP	16%	92%	271	COHU	COHU INC	11%	31%
84	GIII	G-III APPAREL GROUP LTD	12%	24%	272	FLGT	FULGENT GENETICS INC	11%	603%
86	CAAP	CORPORACION AMERICA AIRPORTS	11%	2%	273	PARR	PAR PACIFIC HOLDINGS INC	25%	62%
88	DDS	DILLARDS INC -CL A	20%	35%	275	SCS	STEELCASE INC	14%	1%
89	ATKR	ATKORE INC	15%	106%	277	NTCT	NETSCOUT SYSTEMS INC	10%	3%
91	WIRE	ENCORE WIRE CORP	18%	119%	278	CCS	CENTURY COMMUNITIES INC	14%	24%
92	COLL	COLLEGIUM PHARMACEUTICAL INC	20%	78%	279	SKY	SKYLINE CHAMPION CORP	15%	85%
99	GTX	GARRETT MOTION INC	12%	22%	292	HRB	BLOCK H & R INC	11%	32%
101	CEIX	CONSOL ENERGY INC	23%	143%	297	CVI	CVR ENERGY INC	18%	98%
104	OMI	OWENS & MINOR INC	13%	22%	303	EXPI	EXP WORLD HOLDINGS INC	11%	260%
109	CARG	CARGURUS INC	14%	111%	314	SXC	SUNCOKE ENERGY INC	12%	35%
111	PRDO	PERDOCEO EDUCATION CORP	24%	10%	316	MBUU	MALIBU BOATS INC	16%	113%
112	BTU	PEABODY ENERGY CORP	66%	52%	333	SBLK	STAR BULK CARRIERS CORP	16%	37%
114	PTEN	PATTERSON-UTI ENERGY INC	11%	72%	340	TGNA	TEGNA INC	12%	27%
118	CMC	COMMERCIAL METALS	13%	61%	346	HELE	HELEN OF TROY LTD	11%	8%
122	CVCO	CAVCO INDUSTRIES INC	14%	93%	360	ROCK	GIBRALTAR INDUSTRIES INC	11%	25%
126	MED	MEDIFAST INC	32%	81%	362	CHRD	CHORD ENERGY CORP	19%	113%
127	TRIP	TRIPADVISOR INC	11%	53%	371	WTI	W&T OFFSHORE INC	12%	54%
129	MGNI	MAGNITE INC	10%	267%	397	VSTO	VISTA OUTDOOR INC	16%	67%
134	KEN	KENON HOLDINGS LTD	11%	74%	403	BRY	BERRY CORP	13%	54%
137	PATK	PATRICK INDUSTRIES INC	15%	82%	404	IRWD	IRONWOOD PHARMACEUTICALS INC	13%	0%
140	LZB	LA-Z-BOY INC	10%	41%	414	TNK	TEEKAY TANKERS LTD	30%	34%
141	REX	REX AMERICAN RESOURCES CORP	11%	156%	424	DVAX	DYNAVAX TECHNOLOGIES CORP	10%	1223%
146	GMS	GMS INC	11%	68%	454	MOV	MOVADO GROUP INC	17%	28%
148	NSIT	INSIGHT ENTERPRISES INC	13%	17%	469	LSTR	LANDSTAR SYSTEM INC	10%	68%
154	DBI	DESIGNER BRANDS INC	15%	15%	471	ARCH	ARCH RESOURCES INC	17%	95%
156	CMRE	COSTAMARE INC	10%	143%	488	LCII	LCI INDUSTRIES	11%	72%
157	UFPI	UFP INDUSTRIES INC	16%	83%	491	GFF	GRIFFON CORP	10%	19%
158	SIG	SIGNET JEWELERS LTD	14%	48%	516	WOR	WORTHINGTON INDUSTRIES	15%	61%

Source: Kailash Capital Research, LLC; Data from 10/31/2023

Appendix:

For the truly nerdy, we present to you the price-to-sales (P/S) and price-to-earnings (P/E) ratios of the S&P 500 and the S&P 500 tech index immediately prior to the dot com crash, prior to the great financial crisis (GFC) and today.

Peak	Dot.Com		GFC		Today	
Multiple	P/S	P/E	P/S	P/E	P/S	P/E
S&P500	2x	30x	2x	18x	2x	22x
IT	7x	71x	3x	29x	6x	33x

Source: Kailash Capital Research, LLC

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[i] https://www.goldmansachs.com/intelligence/pages/why-ai-stocks-arent-in-a-bubble.html
[ii] https://www.theglobeandmail.com/report-on-business/the-story-behind-nortels-fall/article20935077/
[iii] https://www.wsj.com/tech/ai/google-commits-2-billion-in-funding-to-ai-startup-anthropic-db4d4c50
[iv] https://pitchbook.com/news/articles/vc-valuations-generative-ai-startups
[v] https://sfstandard.com/2023/07/10/san-francisco-companies-got-half-the-worlds-ai-funding-so-far-this-year/
[vi] https://www.ft.com/content/cf939ea4-d96c-4908-896a-48a74381f251
[vii] https://www.wsj.com/articles/no-business-plan-no-problem-chatgpt-spawns-an-investor-gold-rush-in-ai-6bdbed3c
[viii] https://www.theverge.com/2023/8/8/23824661/coreweave-nvidia-debt-gpu-ai-chips-collateral