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TRIVARIATE RESEARCH

THE CASE FOR SMALL CAPS

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ADAM S. PARKER, Ph.D., FOUNDER
adam@trivariateresearch.com
646-734-7070

COLIN COONEY, HEAD OF SALES
colin@trivariateresearch.com
617-910-7934

JONATHAN GILL, SR. ANALYST
jonathan@trivariateresearch.com
203-461-5110

RESEARCH SUMMARY

Small caps have lagged: As we noted at the beginning of the year, SIZE matters. In Q4, all 11 of the GICs sectors lagged the SP500 on an equally-weighted basis for the first time ever. Historically, small caps have outperformed in an up tape, and equity investors who gravitated toward the traditional risk-on playbook have been disappointed. Small caps have had their worst 18-month period of underperformance in the last twenty years other than during COVID and the Financial Crisis.

How to time to small exposure: We utilized our proprietary macro-based framework to see if there are certain macro conditions consistent with small cap outperformance. As a reminder, we created several proprietary indices using over 150 variables that systematically process “macro” data and include gauges of economic activity, consumer activity, industrial activity, corporate profitability, financial conditions, currency, and oil.

Macro data indicate small caps should outperform: Changes or inflections in macro conditions matter more than level. Small caps typically outperform when economic, industrial, and consumer activity are increasing, and when the US dollar is strengthening, an environment that largely exists today.

Profits / valuations favor small cap: We looked at the distribution of gross margins and price-to-sales for small caps and large caps. Adjusting for historical discounts and current margins, small caps appear more attractively valued than large caps. Small cap margins have recently begun to improve, and are still below long-term averages, whereas large caps have softened. With nearly 50% of all small caps trading below 15x price-to-forward earnings, ample single stock small cap opportunity exists.

INVESTMENT CONCLUSIONS

Conclusion: The risk-reward favors increasing exposure toward small caps.

1) Small caps have lagged: The relative weakness has been pronounced.

2) Macro conditions favor small caps: Activity, currency, and corporate profitability from Trivariate's macro gauges indicates today's environment favors small caps

3) Valuation vs. profit paradigm: Adjusting for historical differences, the price for today's profits is more

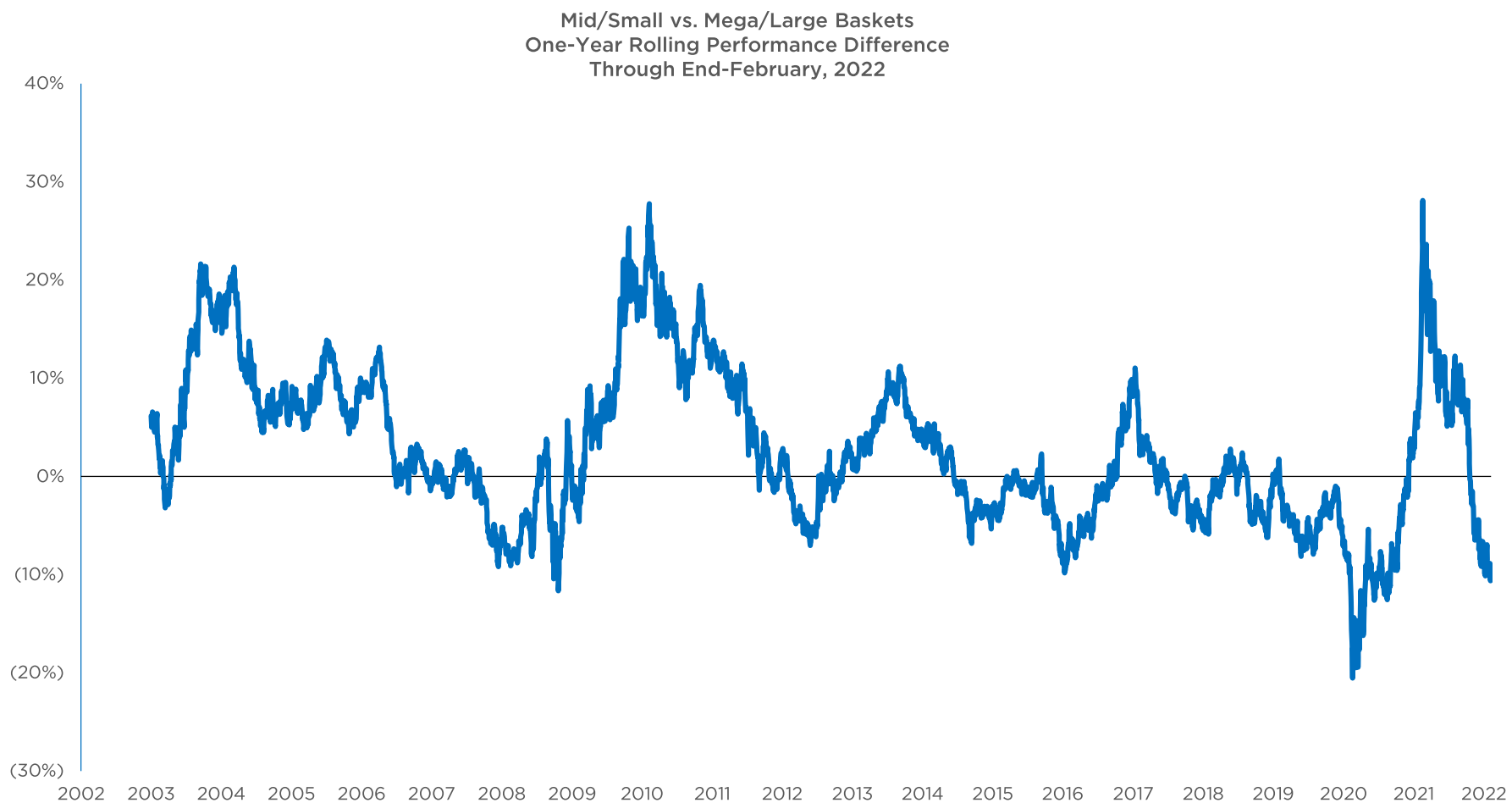
Why would now be the inflection? This cycle has been different because large caps on average can raise pricing and absorb inflationary pressures more than small caps. Investors didn't reward small caps, fearful that conditions could rollover. However, a strong dollar hurts relative estimate achievability of large caps, with recent margin trends favoring small caps but not being discounted. Obviously, there are meaningful sectoral differences, like more banks and utilities in the small cap universe, but today's relative multiple appears to more than adjust for these differences.

Our judgment is to look for small compounders - i.e. stocks with consistent gross margin expansion that are forecasted to have further expansion this next quarter - as that basket has outperformed over the long-term and seems particularly relevant in an environment where gross margins are a paramount concern.

Small cap ideas are shown on page 10.

SMALL CAPS HAVE HAD ONE OF THEIR WORST PERIODS IN 20 YEARS

Small caps have lagged over the last 18-months, the worst relative period other than COVID and the Financial Crisis in over 20 years. Many US-focused equity managers rightfully and intentionally seek for differentiation in smaller cap names, but have been fishing from an inferior asset class, both in the up tape in 2021 and the down tape year-to-date.



MACRO IS MATTERING MORE, AND PEAKING IN MANY AREAS

We have a proprietary framework which uses over 150 variables that systematically process macro data. The macro data have various frequencies, ranging from daily through monthly. We smooth and transform the data to create indices or gauges to comprehensively assess current macro conditions. We show seven of these below, consumer activity, economic activity, etc., and our goal is to study whether any conditions on these gauges translate to small vs. large US stock performance. Many of our signals have multiple inputs (right side of below chart) and are designed to capture larger and longer-term trends, not shorter-term / smaller counter-trend movements. The goal is to use our framework to test whether small vs. large performance is consistent with any measurable macro conditions.

Current Regime for Each Trivariate Macro Signal

Macro Signal	Current Regime	Examples of Components
Consumer Activity	Increasing But Nearing Peak	Credit Card Delinquency, Retail Sales, Consumer Confidence, Wage Growth, Unemployment
Corporate Profitability	Peaked After Ripping Higher	Operating Margin, 1-Year FWD Earnings Expectations, 2-Year FWD Earnings Expectations
Currency	Dollar Strengthening	AUD, CAD, CHF, DXY, EUR, GBP, INR, JPY, SEK
Economic Activity	Increasing After Having Flattened	CEO Confidence, Inflation, Philly Fed Business Outlook, Small Business Optimism, Leading Indicators, Surprise
Financial Conditions	Tightening	Credit Spreads, US Treasury Implied Volatility, 30-Year Fixed Mortgage Rates
Industrial Activity	Flattened After Large Increase	Dry Van Rate per Mile, Baker Hughes Total Rig Count, AAR N. America Total Carloads, US Capacity Utilization, Private Non-Residential Construction, US C&I Loans
Oil	Increasing But Volatile	WTI, Brent

SMALL CAP BEATS LARGE WHEN OUR INDICATORS ARE INCREASING

We evaluated the performance of small vs. large cap US equities in the various regimes of our macro gauges. For the past 20 years we show how often each gauge indicates conditions are increasing, decreasing, positive, or negative, or whether it is in a “no trend” in between stage. We also show the count and percentage of how often small caps beat large caps under each macro condition. The left side shows industrial activity, consumer activity, and economic activity, the right oil, currencies, corporate profitability, and financial conditions. Our primary observation is that in general, change matters more than level: small outperforms large **especially in times when are indicators are increasing**, with this slope having a large impact than solely looking at whether conditions are favorable moment-in-time. This effect is most pronounced when looking at industrial and consumer activity. Today’s conditions are shaded in gray.

Small/Large Regime Counts by Trivariate Indicator Since 2002

Indicator	Regime	Negative/ Decreasing	Negative/ Increasing	Positive/ Decreasing	Positive/ Increasing	No Trend
Industrial Activity	Small Beating Large	12	10	20	22	67
	Small Lagging Large	13	2	19	19	57
	% Small Beating Large	48%	83%	51%	54%	54%
Consumer Activity	Small Beating Large	8	13	25	40	45
	Small Lagging Large	10	5	26	31	38
	% Small Beating Large	44%	72%	49%	56%	54%
Economic Activity	Small Beating Large	2	0	38	32	59
	Small Lagging Large	2	2	30	25	51
	% Small Beating Large	50%	0%	56%	56%	54%

Small/Large Regime Counts by Trivariate Indicator Since 2002

Indicator	Regime	Decreasing	Increasing	No Trend
Oil	Small Beating Large	59	58	14
	Small Lagging Large	50	50	10
	% Small Beating Large	54%	54%	58%
Currencies	Small Beating Large	64	54	13
	Small Lagging Large	60	41	9
	% Small Beating Large	52%	57%	59%
Corporate Profitability	Small Beating Large	33	44	54
	Small Lagging Large	30	33	47
	% Small Beating Large	52%	57%	53%
Financial Conditions	Small Beating Large	56	55	20
	Small Lagging Large	38	55	17
	% Small Beating Large	60%	50%	54%

ACTIVITY, CURRENCY, AND PROFITABILITY FAVOR SMALL CAPS NOW

Over the last 20 years in aggregate, small caps beat large in the majority of macro regimes. The highest small cap outperformance is observed when economic, industrial, and consumer activity is increasing (left), and when corporate profitability growth is increasing, financial conditions are tightening, oil is decreasing, and the dollar is strengthening (right). We shade below where our gauge currently indicate conditions are - with the exception of oil, the current macro environment both favors small caps over large caps today and is one of the most favorable possible environments for small caps relative to history, contradicting the recent price action in small has lagged large.

Small vs. Large Median Performance by Trivariate Indicator Since 2002

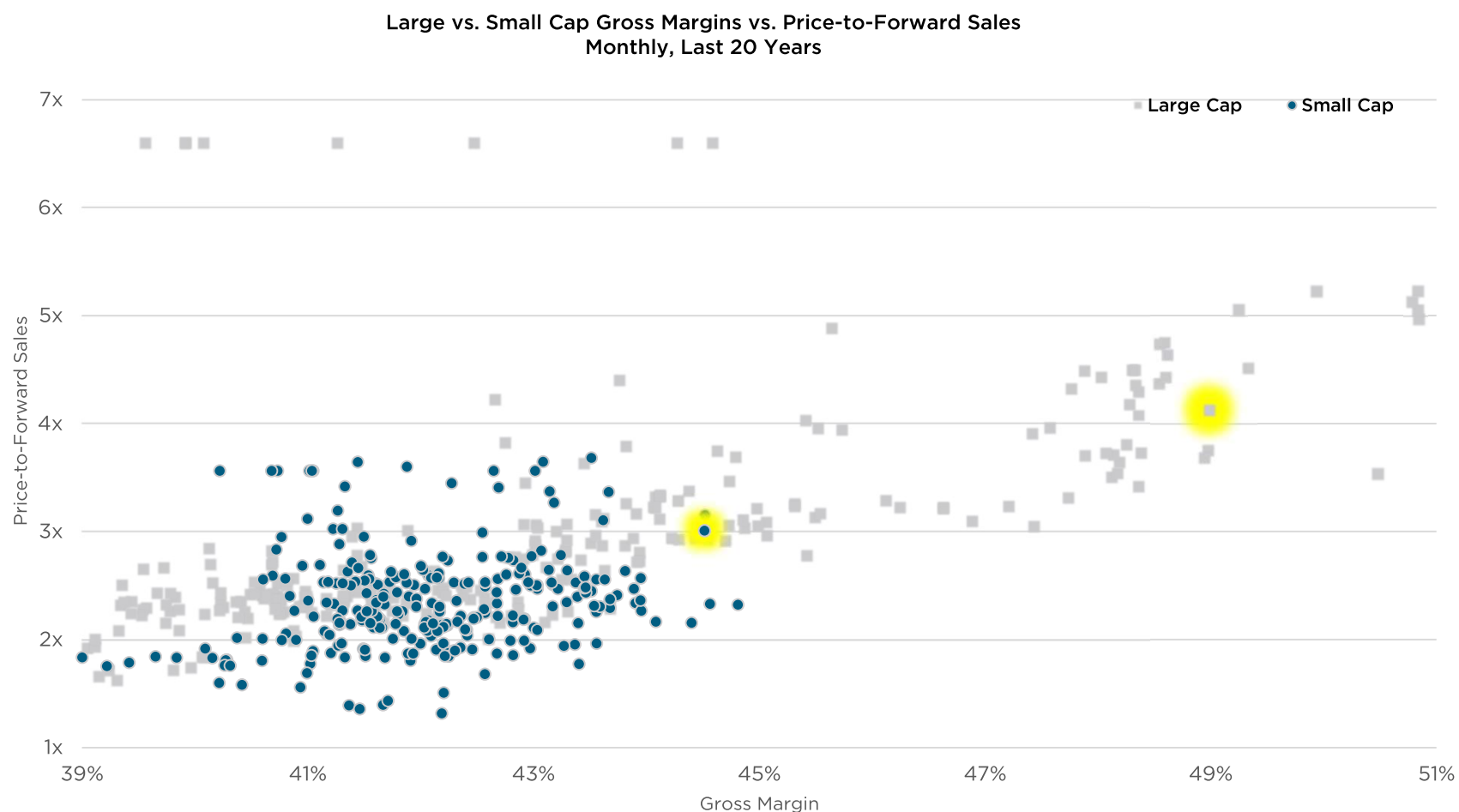
Indicator	Negative and Decreasing	Negative and Increasing	Positive and Decreasing	Positive and Increasing	No Trend
Industrial Activity	(0.6%)	8.7%	(2.6%)	4.6%	1.5%
Consumer Activity	(3.6%)	12.1%	(4.0%)	1.6%	3.4%
Economic Activity	7.3%	11.4%	0.3%	3.7%	2.2%
Industrial Activity	Large Outperforms	Small Outperforms	Large Outperforms	Small Outperforms	Small Outperforms
Consumer Activity	Large Outperforms	Small Outperforms	Large Outperforms	Small Outperforms	Small Outperforms
Economic Activity	Small Outperforms	Small Outperforms	Small Outperforms	Small Outperforms	Small Outperforms

Small vs. Large Median Performance by Trivariate Indicator Since 2002

Indicator	Decreasing	Increasing	No Trend
Oil	3.8%	(0.4%)	5.2%
Currencies	0.6%	2.9%	6.7%
Corp. Profitability	3.0%	3.7%	0.9%
Financial Conditions	2.2%	1.2%	1.4%
Oil	Small Outperforms	Large Outperforms	Small Outperforms
Currencies	Large Outperforms	Small Outperforms	Small Outperforms
Corp. Profitability	Small Outperforms	Small Outperforms	Small Outperforms
Financial Conditions	Small Outperforms	Small Outperforms	Small Outperforms

SMALL CAPS APPEAR CHEAPER RELATIVE TO THEIR PROFIT PROFILE

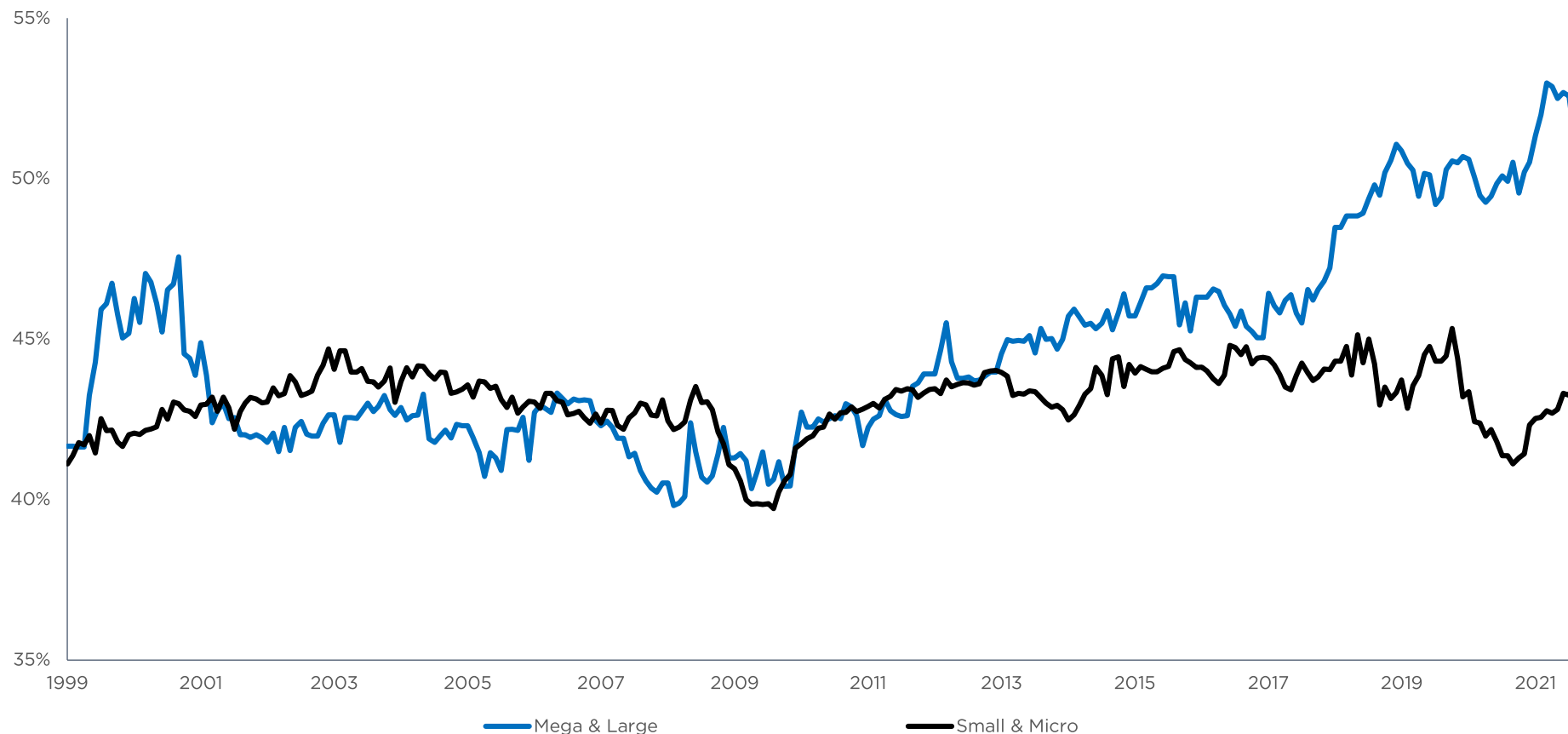
We evaluated the gross margins and price-to-sales on a monthly basis of the large and small cap. universes. It appears the market is paying more today for the large cap profits than small, adjusted for the difference, meaning either multiple contraction is a greater risk for large caps if profits fall, or expansion is more likely for small caps if margins expand. Said differently, small cap margins are relatively high vs. history but the multiple is not.



SMALL CAP MARGINS HAVE STARTED TO RELATIVELY IMPROVE

A major justification for small caps lagging last year was margins were initially weaker. However, recently large cap margins have modestly receded as currency, wage pressures, and limits to price increases started to take hold. Meantime, small cap margins have now started to inflect higher and are still well below the trailing 10-year average, signaling some potential for expansion is possible if the economy continues to grow.

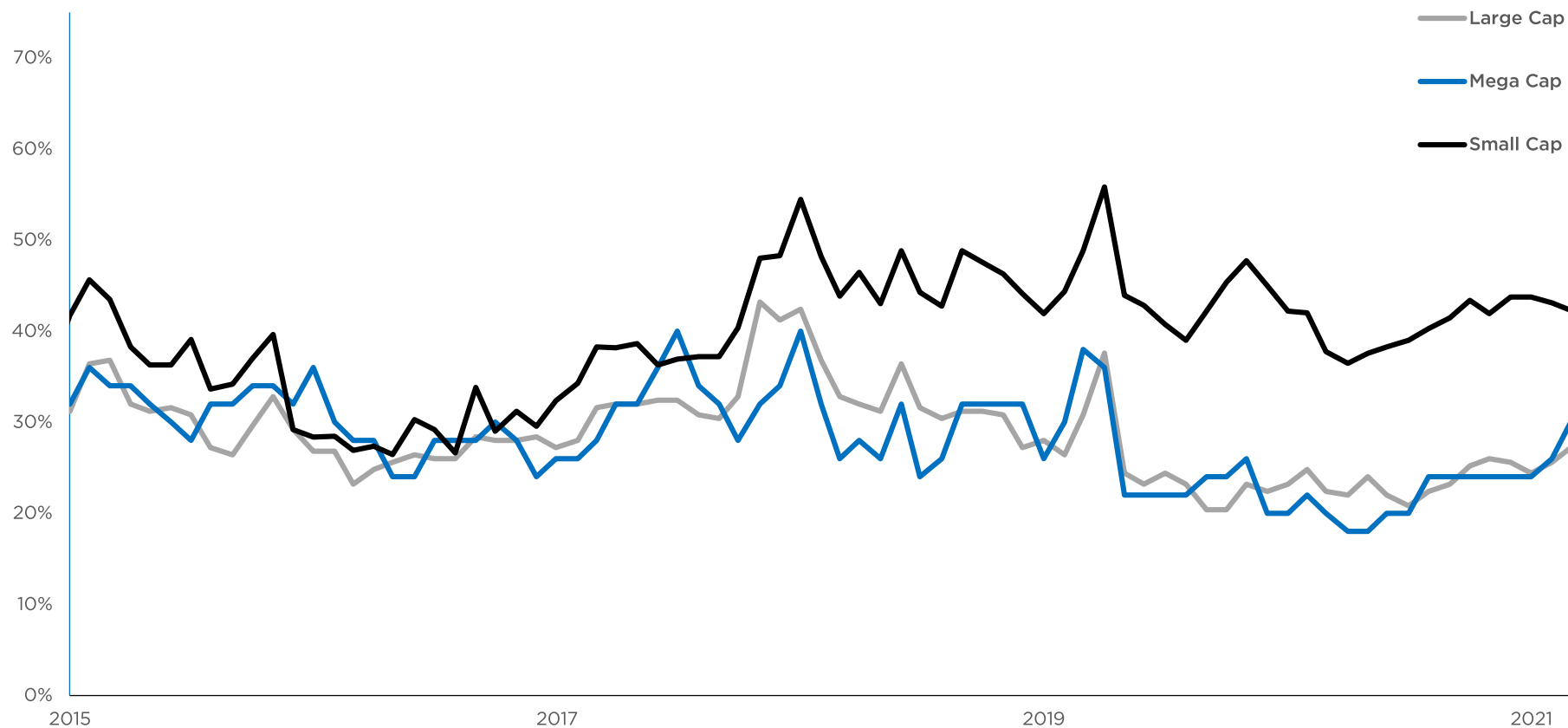
Median Gross Margin by Cap
Top 3000 US Equities
Through End-February, 2022



NEARLY HALF OF ALL SMALL CAPS TRADE BELOW 15X EARNINGS

As a more micro indicator that are more small caps that are cheap on a relative basis, we looked at the percentage of stocks that currently trade below 15x forward earnings and have seen a bifurcation between small and mega/ large of late. Just less than half of all small caps trade below 15x earnings today.

Percentage of Stocks Trading at Less Than 15x 1y Price-to-Forward Earnings
1999-End-February, 2022



SMID CAP COMPOUNDERS COULD BE GOOD LONG IDEAS

Long ideas in small cap with consistent gross margin expansion are shown below.

Small Cap Compounders, As of Mid-March, 2022

Ticker	Company Name	Industry Group	Market Cap (\$ US. Bil)
SYNA	Synaptics Incorporated	Semiconductors & Semiconductor Equipment	8.45
DBX	Dropbox, Inc.	Software	8.13
LSCC	Lattice Semiconductor Corporation	Semiconductors & Semiconductor Equipment	7.63
AN	AutoNation, Inc.	Specialty Retail	7.07
LITE	Lumentum Holdings Inc.	Communications Equipment	6.39
AZTA	Azenta, Inc.	Life Sciences	5.74
IRDM	Iridium Communications Inc.	Diversified Telecommunication Services	4.87
ALTR	Altair Engineering Inc.	Software	4.72
PRFT	Perficient, Inc.	IT Services	3.51
MTH	Meritage Homes Corporation	Household Durables	3.43
VRNT	Verint Systems Inc.	Software	3.25
CCOI	Cogent Communications Holdings, Inc.	Diversified Telecommunication Services	2.95
EPAY	Bottomline Technologies, Inc.	Software	2.54
AIMC	Altra Industrial Motion Corp.	Machinery	2.53
SPNS	Sapiens International Corporation N.V.	Software	1.36
AVID	Avid Technology, Inc.	Technology Hardware, Storage & Peripherals	1.32

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