



**Note for Investors in the
Granahan Small Cap Core Growth Strategy
in light of COVID-19 and Market Volatility
March 19, 2020**

Uncharted Terrain

As we discuss across the team at **Granahan Investment Management (“GIM”)**, we are in uncharted territory. Wall Street abhors uncertainty, and there are very uncertain health impacts and very uncertain economic impacts from COVID-19. In this context, the past four weeks’ volatility is not surprising.

One of our strengths at GIM is the experience level of our investment team. In our 35+ years as a firm, we have managed client assets through many periods of extreme fear and market corrections, including for most of us:

- '87 Crash
- '89 Mini-crash
- '91 Recession and impending invasion of Kuwait
- '97 Asian Contagion
- 2000 Dot.Com crash
- 9/11
- 2003 pending Iraq invasion
- Global Financial Crisis (“GFC”)
- 2011 GFC Echo

That said, This One is Different (they always are). A few things about the current situation:

- The economic impact is apt to be severe and is impossible to quantify. It will depend on how quickly the outbreak is contained, and when and to what degree businesses and consumers resume their (new normal) lives.
- Current valuations relative to the dot.com bust and GFC are generally not expensive, but nor are they dirt cheap (as ultimately was the case at the trough of the GFC). More on valuations below.
- Investor psychology can, and likely will, change rapidly. This bipolar market (manic ups and downs) could persist for some time. There are no guarantees we’ve seen the bottom, but when the bottom occurs, the move to the upside is likely to be violent.

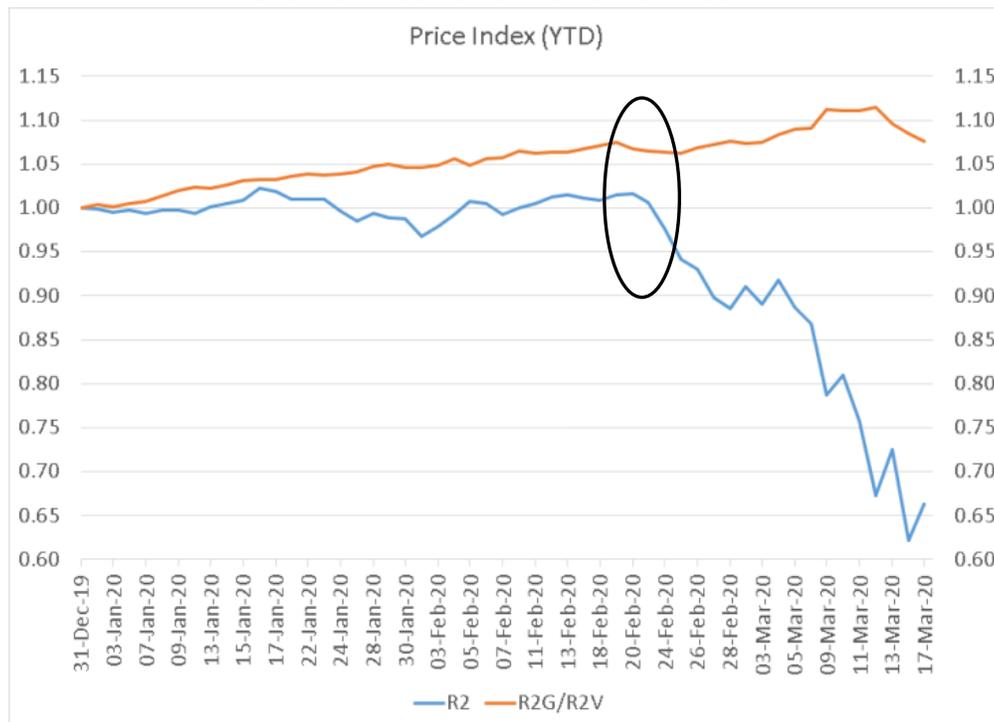
Importantly, the investment process and discipline at GIM has guided us, and our clients’ portfolios, through many market cycles. We feel confident that it will continue to do so, as we work through these challenging times and come to the next new “normal.”

With respect to performance, the Granahan Small Cap Core Growth strategy is down approximately 36% year-to-date through March 18th, versus -37% for the Russell 2000 Growth Index. What has been notable about recent performance is that our unique **Lifecycle diversification tool**, an integral part of GIM’s investment process, has not reacted in this market as we would have expected. Specifically, the Special Situation holdings are lagging significantly, which is atypical in a bear market.



Normally, within our Lifecycle diversification categories (**Pioneer, Core Growth, Special Situation**), the Special Situations are a strong positive influence on performance in a bear market. In today's environment, the portfolio's Special Situation holdings are down 48% year-to-date. The portfolio's Core Growth names have held up better, down 30%. Pioneers, which typically lag in down markets, are nearly even the benchmark at -38%. To illustrate this point further, the Russell 2000 Value Index (-43.5%) has meaningfully underperformed the Russell 2000 Growth Index (-37.4%) YTD. The chart below, courtesy of **Furey Research Partners**, reflects the small cap market's overall decline, and highlights how even during the downdraft, the Russell 2000 Growth more than held its own versus the Russell 2000 Value.

Growth Resilient in the Downturn



Source: FRP, FactSet; as of 3/17/20

As a reminder, our Special Situation holdings are often companies with relatively idiosyncratic or non-secular growth profiles, along with below average valuations. Year-to-date, some of the portfolio's lowest valuation names have meaningfully underperformed, despite the companies having outlooks that are relatively, or even absolutely, good.

We have been using the volatility to add to stocks of these companies whose businesses may fare well due to the social restrictions of the pandemic, such as **Limelight Networks** (content delivery network for online video streaming) and **Gray Television** (TV stations and digital assets). We have also added to holdings that represent companies with good prospects but have fallen hard, such as **Pros Holdings**. Pros Holdings has seen a sell off due to its exposure to the airlines; however, the company continues to diversify away from airlines and is transforming digital commerce with AI assisted price optimization software.



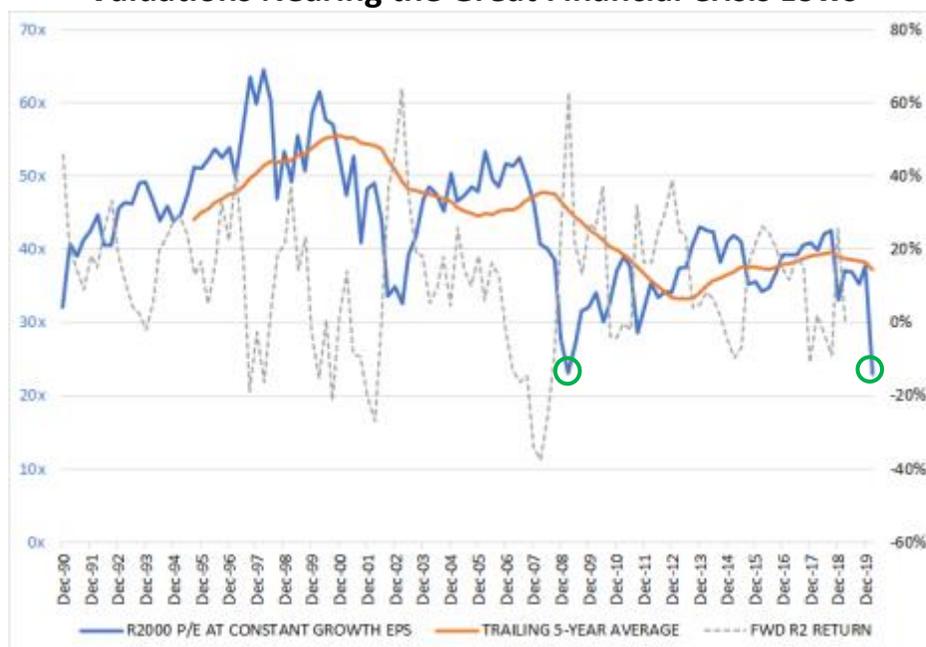
Even with these purchases in the Special Situation category, performance and some sales – such as **Albany International** (textile and paper machine clothing) and **Invacare** (non-acute medical equipment) – have reduced our Special Situations weighting to 20%, versus 26% at the start of the year (the typical range is 15%-35%).

Our Pioneer weighting is now 39%, up from 35% at year-end, as we have added names. We have also increased the position size on some holdings on which we remain bullish for their prospects in 2020, despite their stocks underperforming recently. Two examples are **Digital Turbine** (media & mobile communication solutions) and **Rubicon Project** (platform to automate purchases and sales of digital advertising), both of which have good leverage to the Connected TV theme which should buttress their results. At the same time, we have sold or trimmed some of our Core Growth names – including **Repligen** (bio processing equipment) and **DexCom** (diabetes medical devices) – that have significantly outperformed recently. We view these as companies with strong long-term stories, but also as stocks that may underperform in the early phases of a market recovery. Despite the sales, the Core Growth weighting remains at the same level as year-end, 38%, due to the category’s continued outperformance.

We remain disciplined with our investment process. That is, across the three Lifecycles, we are actively engaged in evaluating where the risks are being underappreciated, or overly discounted, to take advantage of opportunities that may upgrade the risk/reward profile of the portfolio. We continue to find compelling opportunities caused by the unusual dynamics of the market.

As far as market valuations are concerned, the question is unusually difficult to answer. On a trailing basis, valuations have significantly compressed to the recent lows; but importantly, given the potential impact of the pandemic on the economy, valuations might be higher than normal on actualized forward earnings. Earnings estimates are in flux, and certainly stale. It is at this point too difficult to even point to valuation on a Price-to-Book basis, as book value is likely to be going down for many smaller companies.

Proprietary Valuation Methodology (Furey Research Partners): Valuations Nearing the Great Financial Crisis Lows



Source: Furey Research Partners and Factset, monthly chart



As we noted earlier, once the market bottoms, the move to the upside will most likely be swift. If history is a guide, smaller cap stocks will lead the markets in the rebound.

Bear Market Recoveries Favor Small Caps

Russell 2000 Forward Performance from Bear Market Bottoms								
Bear Market		Price Chg.	R2 Ann. Absolute Price Chg.			R2 Ann. Price Chg. Rel. to SP5		
Start	Bottom	From Peak	Fwd. 1Y	Fwd. 3Y	Fwd. 5Y	Fwd. 1Y	Fwd. 3Y	Fwd. 5Y
02/08/80	03/27/80	-26.7	75.2	31.7	20.4	38.1	15.7	7.6
06/15/81	08/12/82	-29.2	92.4	25.6	23.3	34.7	3.3	-2.5
06/24/83	07/25/84	-26.0	30.5	21.3	13.2	1.8	-6.2	-4.4
08/25/87	10/28/87	-39.1	39.7	5.0	13.1	19.1	-5.3	0.8
10/09/89	10/31/90	-34.0	54.0	29.2	20.2	24.7	14.0	6.3
04/21/98	10/08/98	-36.9	37.7	11.3	11.3	-1.5	6.9	9.5
03/09/00	10/09/02	-46.1	59.4	24.9	20.6	25.7	9.8	5.7
10/09/07	03/09/09	-59.4	95.1	32.4	28.2	26.5	6.4	5.6
04/23/10	07/06/10	-20.5	42.6	19.6	15.8	12.5	2.7	1.0
04/29/11	10/03/11	-29.6	37.9	21.6	15.4	6.4	0.2	1.0
06/23/15	02/11/16	-26.4	45.6	17.4		19.0	2.8	
08/31/18	12/24/18	-27.2	32.4			-4.7		
02/20/20	?	?						
Average			53.6	21.8	18.1	16.9	4.6	3.1
Median			44.1	21.6	18.0	19.1	3.3	3.3

Source: FRP and FactSet; as of 3/17/20

Notably, the 1, 3, and 5-year trailing returns for the Small Cap Indices have turned negative. Historically, when that happens, small caps outperform large caps coming off the bottom:

Small Cap Returns relative to Large Cap Returns

When R2 Trailing 1Y Return is Negative...						
	R2 Forward Absolute Return			R2 Forward Relative* Return		
	1Y	3Y (Ann.)	5Y (Ann.)	1Y	3Y (Ann.)	5Y (Ann.)
Average	21.9	14.9	14.3	5.7	1.5	0.7
Median	23.1	14.3	13.7	3.5	1.5	1.6
When R2 Trailing 3Y Return is Negative...						
	R2 Forward Absolute Return			R2 Forward Relative* Return		
	1Y	3Y (Ann.)	5Y (Ann.)	1Y	3Y (Ann.)	5Y (Ann.)
Average	30.1	18.9	16.1	9.2	4.0	1.7
Median	29.1	18.3	15.8	10.0	2.6	2.1
When R2 Trailing 5Y Return is Negative...						
	R2 Forward Absolute Return			R2 Forward Relative* Return		
	1Y	3Y (Ann.)	5Y (Ann.)	1Y	3Y (Ann.)	5Y (Ann.)
Average	40.8	22.1	18.3	12.6	5.0	2.3
Median	37.2	21.4	17.7	12.4	3.6	3.1

*Relative to S&P 500



Our Process Continues through the Uncertainty

- First, there is no panic at Granahan Investment Management. The investment team averages 28 years' experience and, as noted, has experienced many challenging markets.
- This is an unprecedented healthcare crisis that rapidly morphed into a still evolving financial crisis. A reversal can occur just as rapidly as the decline once a bottom is in place if there are successful policies implemented.
- When the healthcare crisis peaks, so too will the financial crisis peak.
- We are considering history (what is similar, what is different), looking at pre-cursors (China, South Korea, Italy, Spain), speaking with companies, consulting with experts, doing analysis, debating scenarios, updating our valuation models, and selectively buying and selling shares as situations merit...and we're staying safe (GIM has mandated working remotely).

As always, on behalf of the entire team at Granahan Investment Management, we thank you for entrusting us with your capital. It is invested alongside our own. If you have any questions or would like to discuss more details, please feel free to contact us anytime.

Please Be Safe,

Jane, David, Gary, Jennifer, Jeff, Drew

March 19, 2020

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