



1987 REDUX?

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On Monday, October 19, 1987, the stock market declined a stunning 22%, earning that day the infamous name, "Black Monday".

With hindsight, we can see that the stock market selloff actually began in late August of 1987. From its peak in August until the interim low on Black Monday, the stock market declined about 33%, a bear market. The market then rallied from its Black Monday decline and retested the low on December 4th. The 1987 bear market lasted about three months.

In late September of 2018, the stock market peaked. The fourth quarter of last year was tough on stocks. On Christmas Eve, the stock market assumed the role of the Grinch and declined to its low for the year. This decline brought the overall decline from the late September peak in the S&P 500 to 20% and the Nasdaq to 23%, which qualifies this decline also as a bear market.

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There are similarities between 2018 and 1987. Both declines were severe and quick and marked by elevated daily stock price volatility. And both declines were not based on any significant change in the economic environment. The crash on Black Monday brought about widespread predictions of impending economic calamity. With hindsight we can see the crash was not followed by any major adverse economic events. Quite the opposite. The Tax Reform Act of 1986 set the stage for an economic boom which lasted throughout the 1990's. Today, there are widespread economic worries which have not yet manifested into a major economic issue. The two main worries involve the Federal Reserve Bank, which took on far too much long-term debt after the 2008 financial crisis. Investors should

be concerned that the Fed may be too compromised by its leveraged balance sheet to pursue an independent monetary policy. Also, the possibility of a destructive trade war looms over the talks between the U.S. and China.

While it is always possible that the economic environment may become adverse, we think the odds favor a good environment at least through next year. Innovation is continuing to proliferate and the effects of the 2017 corporate tax cut are still working their way through the system. The banking system is healthy. If the pace of economic growth slows, the FOMC is likely to put its own debt worries aside and pause/loosen monetary policy.

FINANCIAL INTERMEDIARIES, MARKET SELLOFFS AND INVESTMENT TRUISMS

If the economy did not cause the 1987 or the present selloff, then what did?

In the mid-1980's, there were two boom-bust developments among major financial intermediaries. The savings and loan (S&L) industry grew rapidly and then collapsed and Drexel Burnham Lambert pioneered the junk bond lending market before its' collapse.

The S&L industry struggled during the 1970's inflation and high interest rates of the 1980's. In March of 1980, a new law was passed to enable the S&Ls to grow their way to prosperity. This policy was misguided, to say the least. It is foolhardy for a lending institution to grow its way out of trouble; the only effective way to restore solvency is to reduce bad loans, not find new ones. One of the most pernicious features of the new law was an increase in Federal Insurance on CDs from \$40,000 to \$100,000. Predictably, S&L lending volume exploded during the first half of the 1980's.

This unwise policy failed quickly and spectacularly. During the late 1980's nearly one third of all S&Ls failed. The extensive failures eventually caused FSLIC (Federal S&L Insurance Corp) to become insolvent. In 1989, the FSLIC was merged into the FDIC.



About the same time Drexel Burnham emerged as a major Wall Street brokerage firm on its pioneering efforts in junk bond issuance. In fiscal 1986, Drexel earned after-tax profits of \$545 million, the largest annual profits by any Wall Street brokerage firm until that time.

Michael Milken was the key figure in Drexel's junk bond business. He and his cohorts were ethically and legally challenged. In 1990, Milken was convicted of violating federal securities laws and served two years in prison. Drexel Burnham paid a huge fine to the SEC and never recovered. The firm filed for bankruptcy protection in February of 1990.

It is noteworthy that the bear market occurred in late 1987, while the problems in the S&L and junk bond areas were not resolved until 1989 and 1990 respectively.

We see some corollaries between the rise of financial intermediaries in the 1980's and today. Specifically, over the last few decades two financial intermediaries have been remarkably successful—hedge funds and index funds.

HEDGE FUNDS

Hedge funds enjoyed a breakout period of performance in the 2000-2002 bear market. This performance catapulted hedge funds from a niche product to a mainstream investment option. Today hedge funds manage an estimated \$3.2 trillion in client assets.

INDEX FUNDS ARE NOT MOTIVATED
TO ESTIMATE WHAT THE UNDERLYING
ASSETS OF THE INDEX ARE
ACTUALLY WORTH.

A key portion of the success of the hedge funds during 2000-2002 was their extensive use of bonds and derivatives, powered by lots of leverage which generated high returns. Beginning in 1981 and through the bear market of 2000-2002, interest rates were high and declining. This is a very favorable, albeit temporary, environment for financial instruments like bonds and derivatives. Hedge funds then multiplied their returns using financial leverage to exploit the interest-rate spread between the bonds they owned and the interest costs on their debt. Because interest rates were generally declining, the prices of their fixed-rate debt would generally increase. We suspect but cannot

prove that the pricing of derivatives also reflected high interest rates.

Hedge funds' success in 2000-2002 reflected their minimal exposure to stocks, so that they escaped that severe bear market.

We believe that the 2000-2002 period reflected the pinnacle of hedge funds' influence and relative performance because the confluence of market events were overwhelmingly positive for them.

The financial crisis in 2008 abruptly changed the financial environment. Interest rates fell precipitously and for a brief moment were actually negative. Post the crisis, hedge funds were forced to invest in an environment of low and rising interest rates and stocks became favored. This is a profound change! Hedge funds were far too slow to recognize this tectonic shift.

Not surprisingly, hedge fund returns have been poor since the crisis. According to Eurekahedge, the universe of all hedge funds earned 4.5% per year for the ten years from the end of 2008 until the end of 2018. (We note that hedge funds are difficult to track because hedge funds are opaque. If anything the performance numbers are too high given the likelihood of survival bias in the reported numbers.) By comparison, the S&P earned 13.1% per year and our mid-cap portfolios earned 18.1% per year, compounded.

In calendar 2018 the hedge fund universe posted a negative year, -4.1%, their worst year since 2008. The pressure on hedge fund managers must be intense. Hedge fund fees are insanely high. One of the reasons clients pay a king's ransom is because they are not supposed to lose money over a twelve-month period.

Many high-profile hedge funds have been closing, liquidating their positions, and sending the money back to their clients. Even those hedge funds who purport to be stock experts are floundering. Two very well-known funds, Pershing Square (Bill Ackman) and Greenlight Capital (David Einhorn) have been posting horrific results.

Because of the sparseness of data about hedge fund redemptions, we can only guess at the intensity of client dissatisfaction as 2018 unfolded. We would not be surprised if eventually it becomes clearer that the intense selling in the fourth quarter of 2018 reflected heavy liquidation. We expect liquidations will continue until hedge funds' assets shrink to their proper size. We doubt liquidations will be as intense going forward, although the potential exists that a major hedge fund or two could face a margin debt squeeze creating short lived market anomalies.



INDEX FUNDS AND THEIR COUSINS, ETFs

Index funds and ETFs (exchange traded funds) have also enjoyed a huge run in popularity. In 2017, incredibly, 81% of all new investment money went to Vanguard (index funds) and Blackrock (ETFs).

The growth in index funds and ETFs has been based on their low management fees and reflects the failure of traditional investment managers to properly price their investment management fees in relation to their value added. The direct management cost of index funds is an easy number to calculate.

There is, unfortunately, a significant problem with index funds and ETFs. In order to explain this further, we need to delve a little more deeply into the way we invest. Every investment must meet three criteria: 1) we must be able to calculate the real value of the asset, 2) the asset must pay us to own it, and 3) the intended holding period for the asset must be indefinite.

WE ARE USING THE SEVERE DECLINE
IN SOME STOCKS TO IMPROVE
THE EXPECTED RETURN OF THE
PORTFOLIO OVERALL.

The mission of an index fund or ETF is very specific: to match closely the performance of the given index. Therefore, index funds are not motivated to estimate what the underlying assets of the index are actually worth. This is a critical feature and flaw of index funds. Investors in index funds and ETFs do not know what their investments are worth.

We think this is an unsound way to invest money. When the market is rising it seems that no one is too concerned about the underlying value of their portfolios. In bear markets it is crucial to understand what your portfolio is worth.

We admit that for many years we have been fans of index funds, especially S&P 500 index funds. In the spring of last year we began to experience discomfort with the S&P 500. Five companies, Apple, Amazon, Google, Facebook and Microsoft, represented 15% of the market value of the S&P 500. This was

the highest concentration of holdings we could find in history. By any reasonable measure these very large cap stocks were priced as small growth companies, not mature large companies. It was hard to visualize how investors could profit from these stocks over the long-term.

We wonder how many investors in S&P 500 index funds have understood the concentrated nature of their investments and/or their unattractive investment merits.

We do not believe the major flaw in index funds will manifest itself as sharply or forcefully as the hedge fund crisis, but index funds and ETFs will likely continue to be a source of market instability for the foreseeable future.

LOOKING AHEAD

What does our work at DGI tell us? Our security blanket is our steadfast focus on rule #1 of investing: you have to be able to value the asset.

During the first nine months of 2018, our stock portfolios were priced to yield returns around our hurdle rate. Some of our existing holdings were showing extremely rapid growth but were offering single digit returns because the stock prices had gone way up. We held those stocks in existing portfolios but would not invest with new money.

Since the selloff, our portfolios are showing expected returns comfortably above our required hurdle rate. The selloff in many individual stocks has been severe, bringing prices of many attractive companies into a range suitable for our criteria.

We are using the severe decline in some stocks to improve the expected return of the portfolio overall.

During times like these it is important to remember that we invest in three types of liquid market securities: stocks, bonds and money-market instruments. And we prudently allocate between asset classes based on their expected return. Today the expected return from our stocks dwarfs that available from bonds or money-market instruments.

While we do not know how long or deep this selloff may be, we are maintaining a maximum allocation to stocks.

ABOUT DISCIPLINED GROWTH INVESTORS

DISCIPLINED GROWTH INVESTORS IS A MINNEAPOLIS-BASED INVESTMENT MANAGEMENT FIRM SPECIALIZING IN PRUDENTLY EXPLOITING INVESTMENT OPPORTUNITIES IN PUBLICLY HELD SMALL CAP AND MID CAP GROWTH COMPANIES. FOUNDED IN 1997, THE FIRM REMAINS EMPLOYEE OWNED AND COMPLETELY INDEPENDENT.

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DISCIPLINED GROWTH INVESTORS ANNUAL COMPOSITE PERFORMANCE

JANUARY 1, 2008 THROUGH DECEMBER 31, 2017



DGI - MID CAP GROWTH COMPOSITE

Year	Composite Performance Gross of Fees	Composite Performance Net of Fees	Russell Midcap Index	Russell Midcap Growth Index	Number of Portfolios in Composite	Composite Dispersion	Total Composite Assets at End of Period (\$ in Millions)	Composite Percentage of Total Firm Assets	Total Firm Assets at End of Period (\$ in Millions)
2008	-39.5%	-39.9%	-41.5%	-44.3%	21	0.82%	\$268.2	26.9%	\$995.9
2009	61.2%	60.3%	40.5%	46.3%	25	0.89%	\$516.7	34.8%	\$1,484.5
2010	34.9%	34.1%	25.5%	26.4%	24	0.86%	\$665.2	33.2%	\$2,002.2
2011	2.4%	1.8%	-1.5%	-1.6%	29	0.26%	\$1,035.3	43.5%	\$2,382.6
2012	20.4%	19.7%	17.3%	15.8%	43	0.43%	\$1,159.0	41.6%	\$2,788.0
2013	35.1%	34.4%	34.8%	35.8%	48	0.81%	\$2,150.5	53.0%	\$4,054.4
2014	15.2%	14.6%	13.2%	11.9%	55	0.58%	\$2,538.1	56.9%	\$4,459.7
2015	-5.5%	-6.0%	-2.4%	-0.2%	56	0.45%	\$2,265.8	54.5%	\$4,158.5
2016	17.8%	17.2%	13.8%	7.3%	56	0.59%	\$2,517.9	52.9%	\$4,756.6
2017	21.5%	20.9%	18.5%	25.3%	65	0.50%	\$2,796.3	51.4%	\$5,444.1

Disciplined Growth Investors, Inc. (DGI) claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. DGI has been independently verified for the period February 28, 1997 through June 30, 2018. Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. The Mid Cap Growth Composite has been examined for the periods February 28, 1997 through December 31, 2017. The verification and performance examination reports are available upon request. GIPS® is a registered trademark of CFA Institute. CFA Institute has not been involved in the preparation or review of this report/advertisement. Benchmark returns are not covered by the report of independent verifiers.

Notes:

- Disciplined Growth Investors, Inc. (DGI) is an investment adviser registered with the U.S. Securities and Exchange Commission specializing in small cap growth equity, mid cap growth equity and balanced growth portfolio management. DGI was founded in February 1997.
- Benchmark comparisons are presented using the following: The Russell Mid Capitalization Growth Index and Russell Mid Capitalization Index. Management considers these indices to parallel both associated risk and the investment style represented by the composites.
- Valuations are computed in U.S. dollars.
- The Mid Cap Growth Composite was created on February 28, 1997.
- The dispersion of annual returns is measured by the standard deviation across asset-weighted portfolio returns represented within the composite for the full year.
- Gross performance results are presented before management and custodial fees but after all trading costs. Performance is based on trade-date valuation and is size weighted. Net performance results are presented before custodial fees but after actual management fees and all trading costs. Some accounts include a performance-based fee; net performance results are presented after actual performance-based fees. The management fee schedule is as follows:

MID CAP GROWTH ACCOUNT FEES

1.00% on the first \$5 million
0.75% on the next \$20 million

Over \$25 million fees are negotiable

- The historical rates of return should not be relied on as indicative of future results.
- The Mid Cap Growth strategy is to invest in equities with market capitalizations between \$1 billion and \$10 billion at initial purchase. The primary investment objective is to achieve long-term capital appreciation. The Mid Cap Growth composite is an equity-only composite with cash. The composite contains all fully-invested, tax-exempt discretionary portfolios in the strategy. Accounts are included in the composite after the first calendar month of fully invested performance. No alteration of the composite as presented here has occurred because of changes in personnel or other reasons at any time. A complete list of firm composites and performance results is available upon written request. A minimum account size of \$1 million was removed as of 9/30/2012.
- DGI's Policies and procedures for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request.
- Three-year annualized standard deviation:

Year	DGI Mid Cap Growth Composite	Russell Mid Cap Growth Index	Russell Mid Cap Index
2011	22.95	20.82	21.55
2012	18.93	17.91	17.20
2013	15.98	14.62	14.03
2014	12.01	10.87	10.14
2015	11.99	11.31	10.85
2016	12.63	12.18	11.55
2017	11.07	10.89	10.36

- This presentation was updated in March 2018 to correct an error. In a previous version, the 2015 and 2016 annual returns for the RussellMidcap Benchmark Index and the Russell Midcap Growth Index were transposed. For more information, please contact Disciplined Growth Investors at (612) 317-4100.

MID CAP GROWTH