TIFF INSIGHTS

TIFF
INVESTMENT MANAGEMENT

THIRTY YEARS
OF TIFF

Outrunning the Terminator:

Examining Returns Over the Long Run

Trevor Graham, Managing Director - Equities
Winter 2020

This paper was originally written in late 2020, and since its publication, much of what the author predicted in that paper has happened throughout 2021.

- Interest rates aren't going to keep declining forever.
- A higher volatility environment supports the case for active management.
- Various non-traditional diversifying asset classes (i.e., hedge funds) would start to do better and prove their value.

In this paper we cover three important ideas:

1. The next decade is likely to be very different from the last decade.
   The 2010s were a highly atypical period in capital markets. Expecting the 2020s to be similar is not consistent with history.

2. Over the long run, passive investments have not consistently delivered satisfactory results.
   Between 1950 and 2020, a simple passive 65% global stock[1] / 35% US 10-year Treasury bond portfolio has underperformed the non-profit portfolio performance objective of a 5% real return 41% of the time measured over trailing annualized 10-year returns. Earning a 5% real return from a purely passive portfolio is even less likely today due to the extremely low level of interest rates.

3. Rumors of the death of the endowment model are exaggerated.
   Short-term excess return versus stocks and bonds has never been the endowment model objective. The objective has been to generate at least a 5% real return over market cycles. Using the TIFF Comprehensive Endowment Strategy Composite ("TIFF Composite") as a proxy, the endowment model has exceeded a 5% real return 63% of the rolling ten-year periods since 1995. Over this same period, a simple passive 65% global stock / 35% Bloomberg Barclays US Aggregate Bond Index ("BB US Agg") [2]

[1] MSCI ACWI

[2] We use the 10-year Treasury bond for our long-term analysis because the inception date of our BB US Agg data is February 1976. For TIFF since inception analysis starting in 1995, we use BB US Agg, the more conventional benchmark.

Past performance is no guarantee of future results.

4. portfolio exceeded a 5% real return only 22% of the time, with most of these periods of good performance highly concentrated in the recent past. We believe that the current environment is an unusually bad time to abandon diversification and active management in favor of a purely passive traditional 65/35 portfolio.

Review of the 2010s in the Capital Markets

The 2010s were an excellent period for stock and bond returns. The MSCI All Country World Index ("ACWI") generated a 9.4% annualized return, and the BB US Agg generated a 3.7% annualized return over the ten-year period. US equities did even better, with the S&P 500 generating a 13.5% annualized return. In addition to the good point-to-point returns, the path was unusually free of interruptions and detours. Volatility was relatively low, especially on the downside. The only negative years for ACWI were 2011 and 2018. The 2010s were only the second calendar decade ever in which the S&P 500 did not suffer a 20% pullback and the first decade since at least 1920 without a US recession.

We revisited our analysis of long-term capital markets returns to put these results into context. Our frame of reference is annual global stock, ten-year Treasury bond and Treasury bill returns since 1950. We compared the recent ten-year period to the long-term history. As general background, most asset classes generate a Sharpe ratio[3] of roughly 0.3x over the long run. This general rule of thumb in investments appears to be consistent across a wide range of asset classes and eras.[4] The excess return over the risk-free rate to be captured from passive investments in stocks and bonds over the last decade was unusually high, especially in US markets. The excess return over the risk-free rate on US stocks and Treasury bonds was more than double the long-term average. Realized standard deviations of excess returns were well below the long-term averages, particularly in bonds. These conditions in combination resulted in trailing ten-year Sharpe ratios far above the norm. Sharpe ratios do vary but they tend to be mean reverting.

Sources: TIFF Analysis, Bloomberg, S&P, MSCI, NYU, and Bridgewater Associates.

Past performance is no guarantee of future results.

Comparison of Recent Results to Long-Term Averages

1950 - 2009	US Equity	World Equity	US Bonds	US Bills	65 US Equity /35 US Bonds	65 World Equity /35 US Bonds	CPI + 5% per annum
Annualized return	8.8%	10.4%	5.6%	4.7%	8.1%	9.3%	8.8%
Standard deviation	17.7%	17.6%	8.9%	2.8%	11.9%	11.3%	2.9%
Annualized excess return	4.0%	5.7%	0.9%		3.4%	4.5%	4.0%
Standard deviation of excess	18.0%	18.3%	8.5%		12.1%	11.9%	2.3%
Sharpe ratio	0.23x	0.31x	0.11x		0.28x	0.38x	
2010 – 2019							
Annualized return	13.5%	9.4%	3.7%	0.6%	10.5%	7.8%	6.8%
Standard deviation	12.5%	13.2%	2.9%	0.2%	7.8%	8.3%	0.7%
Annualized excess return	13.0%	8.7%	3.2%		9.7%	7.0%	6.3%
Additional return vs. history	221%	53%	250%		185%	54%	56%
Standard deviation of excess	12.5%	13.2%	2.9%		7.9%	8.5%	1.0%
Volatility of excess vs. history	-31%	-28%	-67%		-34%	-29%	-56%
Sharpe ratio	1.04x	0.66x	1.11x		1.22x	0.83x	

[3] Sharpe ratio is a common measure of risk-adjusted return. Sharpe ratio = annualized excess return over the risk-free rate (90-day Treasury bills in our analysis) divided by the annualized standard deviation of these excess returns.

[4] The US bond Sharpe ratios are negatively impacted by poor relative returns in the late 1960s. Over longer time periods, the Sharpe ratio for bonds is 0.3x.

In our view, generating similarly good returns in the 2020s, particularly from a simple passive 65/35 portfolio, seems highly unlikely due to the following factors:

1. The overall equity market is benefiting from historically high profit margins and current valuations are above long-term averages (even for low interest rate and low inflation environments).
2. Global debt to GDP is at relatively high levels, especially in developed economies, thereby reducing the likelihood of a further debt-fueled expansion.
3. Managing the fallout of COVID-19 is likely to generate some economic headwinds. There still is no clarity about the timing, long-term effectiveness nor distribution of a COVID-19 vaccine.
4. Most importantly, the extremely low levels of starting interest rates imply very unattractive returns from bonds. Starting yields to maturity tend to be an excellent leading indicator of future returns in this asset class. We believe that there is an argument to be made that traditionally "low risk" Treasury bonds may in fact be among the riskiest exposures available to investors. While bonds have low volatility and may help people sleep better at night, in the absence of materially negative interest rates in the US, the future returns are almost certain to fall far short of both recent returns and most investors' goals.

To illustrate the impact of low interest rates, we include a very simple forward return model below that assumes bonds generate a return equivalent to today's yield. We then solve for the passive equity return required to achieve CPI +5%. Penciling in an almost 10% annualized return from passive equity, particularly after the above average results of the 2010s and some of the potential headwinds listed above, seems very optimistic to us. Some form of active management is likely to be essential to generate CPI + 5%.

Simple Forward Return Model for the 2020s

Asset class	Allocation	Forward Return	Comment
Stocks	65.0%	9.69%	Shaded cell is the required return to achieve CPI + 5%.
Bonds	35.0%	1.22%	Forecast return is the current yield to maturity on the BB US Agg.
Total	100.0%	6.73%	
CPI + 5% target		6.73%	10-yr inflation breakevens on TIPS are at 1.73%.

Source: TIFF calculations, BB US Agg yield to maturity and 10-yr TIPS breakeven per Bloomberg as of October 2020.

Not a guarantee of future results.

Note: The above table is a simple single-period analysis. There may be some value to be gathered from rebalancing or tactical asset allocation. However, in our experience, these sources of value add tend to be modest and intermittent. Even assuming, one could add 25bps annually from tactical views with certitude, stocks would still need to generate 9.31% to meet CPI + 5% in this simple model.

The Long-Term Truth About Passive Investing

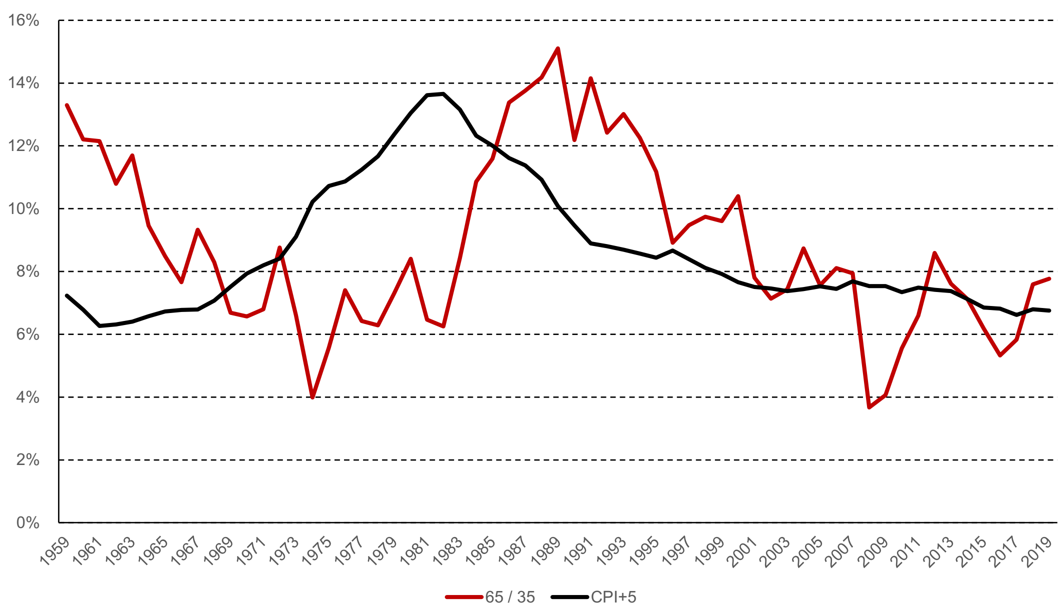
To put the performance of passive over the past decade into perspective, Berkshire Hathaway shareholders enjoyed a Sharpe ratio of "only" 0.56x over the same period. If an investor could generate great results, arguably better results than Warren Buffett, without having to waste any time or money on inconveniences like security analysis, industry research, and actual decisions, why not? Unfortunately, when something seems too good to be true, it usually is. Our typical client's goal is to generate a return of at least CPI + 5% across market cycles. How often has a simple passive 65/35 portfolio delivered on this objective? Not very often.

The brutal truth is that outperforming CPI + 5% is challenging. CPI + 5% is like the Terminator. The Terminator is a machine. It does not have bad days or get tired or distracted. The Terminator is consistently strong and does not deviate from its objective. CPI + 5% has a positive return every year. (While we could experience a period of deflation, persistent deflation greater than 5% per year seems unlikely.) CPI + 5% has almost zero volatility. Passive investments that track actual financial instruments are more like the human beings that influence their values. Eventually they will stumble and face emotion-driven challenges. And when they do, the Terminator will run them down. "Give me your boots, your clothes and your excess return." Our analysis of the data back to 1950 indicates that a passive 65% global equity/35% US bond portfolio has outperformed CPI + 5% in only 50% of the rolling five-year periods and in only 59% of the rolling ten-year periods. Importantly, this series utilizes 10-year Treasury bonds for the 35% fixed income allocation. Many investors have a shorter duration bond portfolio, which makes keeping up with CPI + 5% even less likely. Alternatively, many investors have a bond portfolio more like the BB US Agg. Our long-term analysis of BB US Agg returns indicates that this series has outperformed 10-year Treasuries by only 0.20% per year. The addition of modest credit exposure would not change the conclusion.

Sources: S&P, MSCI, NYU, Bridgewater Associates.

Past performance is no guarantee of future results.

Rolling 10-year Annualized Returns of Passive 65% Global Equity/35% US 10-Year Treasury Bond Portfolio and CPI + 5%
Annual Equal-Weighted Results Through 2019



Active Management and the Endowment Model

If 1) passive portfolios historically have not consistently beaten CPI + 5% and 2) because of the strong returns of the last decade, passive portfolios are even less likely (in our view) to do so going forward, what should an investor do? At TIFF, we execute investments using variations of the so called "endowment model" (some of our solutions omit illiquid options). In simple terms, the endowment model attempts to add value compared to a simple passive stock and bond portfolio through two strategic adjustments: additional diversification and active management. The diversification comes from the inclusion of additional asset classes in the portfolio, most notably hedge funds and various private investments. The endowment model attempts to generate an excess return from active management via security selection, mostly through partnerships with specialist third-party managers, and tactical and strategic adjustments to portfolio construction over time.

Based on our information from peer institutions and NACUBO, average endowment and foundation annualized returns for the trailing decade were roughly 7-8% with better results for larger organizations, most of which have sizeable allocations to private equity. In general, the 2010s were a solid decade for the endowment model in absolute terms, but not a great decade in relative terms. Most endowments have a goal of generating CPI +5% across market cycles. On that measure, 7-8% is a success. CPI + 5% generated a return of 6.8% for the decade. However, the passive benchmark we see most often, 65% ACWI and 35% BB US Agg (the "65% ACWI / 35% Agg") generated a return of 7.3%. The complexity, cost and illiquidity of the endowment approach does not seem to have been worth the trouble. Should institutional investors abandon this strategy in favor of a passive stock/bond portfolio? We do not think so.

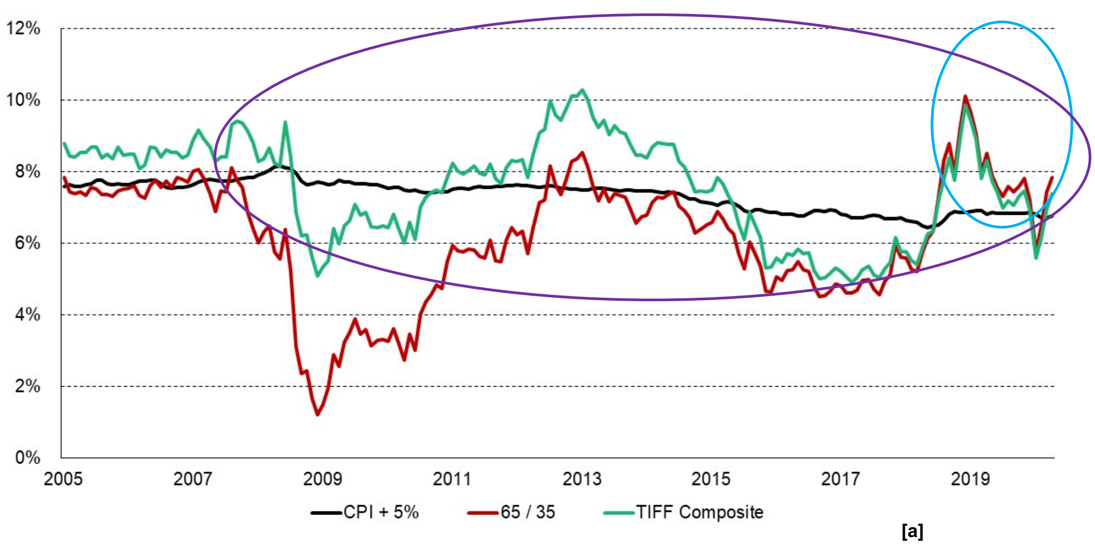
One of TIFF's advantages is its long history. We have managed the TIFF comprehensive endowment strategy since March 1995. TIFF's strategy is actively managed. The strategy has utilized a variety of diversifying (relative to the 65% ACWI / 35% Agg passive portfolio) positions including but not limited to hedge funds, private equity, commodities, real estate, Treasury Inflation Protected Securities and performing and distressed credit. An analysis of a composite of all investment vehicles within TIFF's comprehensive endowment strategy ("TIFF Composite") since inception yields some interesting findings. Of the 184 rolling ten-year periods since inception, passive 65 ACWI /35% Agg[5] outperformed CPI + 5% only 22% of the time (these periods of outperformance for passive are concentrated in the very recent past). TIFF's Composite outperformed CPI + 5% in 63% of these periods.

Sources: TIFF analysis, Bloomberg. [a] One of the investment vehicles within TIFF's comprehensive endowment strategies investment mandate has material exposure to private equity, private realty, and private natural resources (collectively, "private investments"), typically through underlying private investment funds. Because the TIFF composite performance includes exposure to private investments, it may vary, perhaps significantly, from the performance of the 65/35 Mix, which is comprised of public market indices and included by TIFF as a passive market index comparison. TIFF does not believe that suitable passive market indices exist for private investments.

Past performance is no guarantee of future results

Rolling 10-Year Annualized Returns

Monthly Equal-Weighted Results Through June 2020



[5] Our long-term capital markets data is an annual series. For the trailing 20-year evaluation of the TIFF Composite we use monthly benchmark data: ACWI for equities and BB US Agg for bonds. As a result, the 65/35 results will not be the same as the 65/35 results for our longer-term analyses.

Astute chart-readers likely will point out that TIFF did not do as well versus passive in the 2010's as during prior periods. That observation is fair, but we think it overlooks an interesting and timely point. TIFF's comprehensive endowment strategy is, by design, a more diversified approach than just stocks and bonds. It will struggle to keep up when a simple stock and bond portfolio is in favor. However, for emphasis, 65% ACWI / 35% Agg has outperformed CPI +5 % for only 22% of the rolling 10-year periods since April of 1995. What about the rest of the time periods? This is the interesting part. Using trailing ten-year returns, TIFF's comprehensive endowment strategy outperformed a passive 65% ACWI / 35% Agg portfolio about half the time when stocks and bonds were outperforming CPI + 5%. However, when passive 65% ACWI / 35% Agg did not keep up with CPI + 5% (78% of the time), TIFF outperformed that passive portfolio 98% of the time. Notably, TIFF has generated these results with an average equity exposure of less than 65% over the sample period. TIFF's excess returns vs. passive 65% ACWI / 35% Agg are not due to simply taking more equity risk.

TIFF Composite vs. Passive 65% ACWI / 35% Agg in Different Environments
Monthly Results, April 1995 – June 2020

			% of Periods TIFF Composite[a] Outperforms 65/35	
Look-back periods	**Number of Observations**	**% of Periods Passive 65/35 Outperforms CPI + 5%**	**When Passive 65/35 Outperforms CPI + 5%**	**When Passive 65/35 Underperforms CPI + 5%**
Three-year periods	268	52%	50%	75%
Five-year periods	244	39%	39%	72%
Ten-year periods	184	22%	50%	98%

Source: TIFF calculations. 65/35 based on monthly total returns of ACWI/BB US Agg.

Past performance is no guarantee of future results.

[a] TIFF Composite based on linked monthly averages of all investment vehicles within TIFF's comprehensive endowment strategies investment mandate. One of the investment vehicles within TIFF's comprehensive endowment strategies investment mandate has material exposure to private equity, private realty, and private natural resources (collectively, "private investments"), typically through underlying private investment funds. Because the TIFF composite performance includes exposure to private investments, it may vary, perhaps significantly, from the performance of the 65/35 Mix, which is comprised of public market indices and included by TIFF as a passive market index comparison. TIFF does not believe that suitable

Which of the two environments described in the columns on the right of the above chart do you think is more likely in next decade?

We think that mediocre results relative to passive 65% ACWI / 35% Agg for brief periods is the price we pay to produce CPI + 5% or better returns over the long run. The light blue oval in the Rolling 10-Year Annualized Returns Annualized 10-year graph is the tail. The purple oval is the dog. Why has TIFF done so much better in tougher environments than passive 65% ACWI / 35% Agg? First, our more diverse asset allocation tends to do comparatively better. For example, a big part of the recent outperformance of passive 65% ACWI / 35% Agg is due to the outstanding results from nominal bonds. If rates stop falling, this tailwind for the passive 65% ACWI / 35% Agg portfolio disappears and alternative forms of diversification such as hedge funds may generate better relative performance. Second, and probably more importantly, TIFF's approach to active management is atypical and has added value over time. For example, many of the studies that criticize the relative performance of active management in equities rely on mutual fund data. Most equity mutual funds charge their investors a relatively high flat management fee. Most equity mutual funds are generalist strategies that hold greater than fifty stocks. Our equity portfolio looks nothing like these mutual funds – by design. Of the sixteen current equity managers in our portfolio, eight are highly focused sector or geographic specialists. Four are highly concentrated, meaning that they consistently hold no more than ten stocks. Fourteen have a fee structure that includes a performance fee on excess return over a benchmark in return for a lower than average management fee. In two of these fourteen cases, the management fee is zero and in two others it is 0.10%.

In addition to our managers being atypical, our internal processes also are unconventional. We think specialists who are motivated to produce great returns, not gather assets, have a higher probability of outperforming. However, specialist and concentrated managers have very off benchmark portfolios which requires us to manage overall portfolio exposures versus our benchmark. TIFF's size and resources enable us to handle this task responsibly. Also, we are unconstrained by many of the industry norms in selecting our manager partners. Roughly 25% of our equity capital is invested with partners for whom TIFF was the first institutional investor. In addition, we are willing to add capital after poor relative performance, even if there has not been a prior working relationship. We initially invested capital with two of our current partners directly after a quarter in which they had a drawdown of greater than 20%. Over the past five-year period ending October 31, 2020, our equal-weight marketable equity segment of the TIFF Composite has outperformed MSCI ACWI by 1.5% per year net of fees. We produced these results while being underweight technology stocks, underweight the US market (both relative to MSCI ACWI) and maintaining a balanced exposure to growth and value for the period. We do not think these excess returns are the result of systematically accepting more than market risk or getting a big top-down call correct. Excess returns of this magnitude are important. They keep our results solid when our asset allocation is out of favor and they give us the opportunity to outperform when our asset allocation is more in sync with the prevailing market sentiment.

While we have used marketable equities as an example to highlight the differences in our portfolio versus mutual funds, we utilize many of these same strategies in other asset classes. Investing with specialists or those willing to be highly concentrated, negotiating terms, backing talented people early and giving great investors more capital when their securities are out favor can all significantly enhance returns. For various reasons, many other investors either cannot or will not execute this way.

The 2010s were an outstanding period for a simple passive portfolio and a tougher environment for the endowment model. We think the next ten years are unlikely to be a replay of the last ten years. A different environment, which would really be a return to normalcy, should play to the strengths of TIFF's strategy.

The Terminator does not care about COVID or the myriad distractions of working from home or the US election results. The relentless compounding of the Terminator is coming for all of us. If passive results are no longer exceptionally good, how are you going to stay ahead of it?

Disclosures

Composite Description

Composite Name	Reporting Date	Composition Inception Date	Composition Creation Date
TIFF Comprehensive Endowment Strategies	June 30, 2020	March 31, 1995	January 2019

The TIFF composite returns represent the total returns of all investment vehicles within TIFF's comprehensive endowment strategies investment mandate. The investment vehicles within TIFF's comprehensive endowment strategies investment mandate have different eligibility criteria and potential investors may not be eligible to invest in all such vehicles.

The investment or performance objective of the investment vehicles within TIFF's comprehensive endowment strategies investment mandate is to achieve a total return (price appreciation plus dividends and interest income) net of expenses that, over a majority of market cycles, exceeds inflation as measured by the Consumer Price

Index, plus 5% per annum. The investment vehicles within TIFF's comprehensive endowment strategies investment mandate generally seek to achieve this objective through two principal means: (1) diversification across multiple asset classes globally and (2) active security selection. The investment vehicles within TIFF's comprehensive endowment strategies investment mandate generally engage independent money managers to manage a portion of their assets (each such manager, a "Money Manager"). The assets may be managed in a separately managed account or in other collective investment vehicles, such as exchange-traded funds, open-end mutual funds, and private investment funds (each a "CIV" and collectively, "CIVs"). The CIVs may include investment vehicles managed or sponsored by TIFF or its affiliates. Asset class allocations and allocations to Money Managers and CIVs will change from time to time.

Calculation of Composite Performance
The TIFF **Equal Weighted Composite** shown is an average of the returns of all investment vehicles within TIFF's comprehensive endowment strategies investment mandate, weighted equally and rebalanced monthly. Weights for each vehicle are included starting from the first full month of performance of each vehicle.

The TIFF composite performance shown is net of fees and reflects the deduction of all actual management fees (including performance fees, as applicable) and expenses incurred by the investment vehicles comprising the TIFF composite (however, the TIFF composite performance returns do not reflect the deduction of any entry and exit fees that may be payable directly to any of those investment vehicles). The TIFF composite and benchmark returns also are reported net of foreign withholding taxes on dividends, interest and capital gains. Returns shown include reinvestment of dividends and other earnings (as applicable). **Performance data quoted represent past performance; past performance does not guarantee future results. Current performance of the investment vehicles comprising the TIFF composite may be lower or higher than the performance quoted. Actual client performance results are likely to differ from TIFF composite results depending upon the size of the account, the inception date of the account, the actual mix of underlying investment vehicles comprising the account, and other factors.**

Current Fee Schedule
TIFF's current advisory fee for its comprehensive endowment strategies investment mandate is 0.35% per annum (0.45% per annum if the investment mandate directly or indirectly includes private investments such as venture capital, buyouts, real estate, and resources). In addition, TIFF will waive or reduce a client's advisory fee by an amount equal to the management fees (but not incentive or performance-based fees) attributable to such client's assets that are invested in investment vehicles managed or sponsored by TIFF or an affiliate. **TIFF's 0.35% (or 0.45%) advisory fee is not reflected in the TIFF composite performance shown.** The management fees of certain of the investment vehicles comprising the TIFF composite differ from the 0.35% (or 0.45%) advisory fee that TIFF currently charges for its comprehensive endowment strategies investment mandate. **Therefore, clients paying TIFF's current 0.35% (or 0.45%) advisory fee for TIFF's comprehensive endowment strategies investment mandate may experience higher or lower performance results than the TIFF composite performance results shown.**

Composite Description

Composite Name	Reporting Date	Composition Inception Date	Composition Creation Date
TIFF Marketable Equity Segment of TIFF Comprehensive Endowment Strategies	October 31, 2020	January 1, 2009	December 2020

The TIFF marketable equity segment composite returns represent the total returns of the marketable equity segment of each investment vehicle within TIFF's comprehensive endowment strategies investment mandate. See the description of the TIFF Comprehensive Endowment Strategies Composite above. Each Money Manager or CIV within the marketable equity segment has its own investment or performance objective. Collectively, the segment is benchmarked to the MSCI All Country World Index.

Calculation of Composite Performance
The TIFF **Equal Weighted Composite** is an average of the returns of the marketable equity segment of each of the investment vehicles within TIFF's comprehensive endowment strategies investment mandate, weighted equally and rebalanced monthly.

The TIFF marketable equity segment composite performance is net of fees and reflects the deduction of all actual management fees (including performance fees, as applicable) and a pro-rata amount of the expenses incurred by the investment vehicles comprising the TIFF composite. **Performance data quoted represent past performance; past performance does not guarantee future results. Current performance of the marketable equity segment may be lower or higher than the performance quoted. One cannot invest in the TIFF marketable equity segment composite.**

Past performance is no guarantee of future results and the opinions presented cannot be viewed as an indicator of future performance.

All investments involve risk, including possible loss of principal.

Not all strategies are appropriate for all investors. There is no guarantee that any particular asset allocation or mix of strategies will meet your investment objectives.

Diversification does not ensure a profit or protect against a loss.

Radnor, PA
170 N. Radnor Chester Road
Suite 300
Radnor, PA 19087

Boston, MA
200 State Street 15th Floor
Boston, MA 02109

Phone
610-684-8200

Email
info@tiff.org

About TIFF

TIFF is a mission-driven, not-for-profit organization dedicated to delivering comprehensive investment solutions to foundations, endowments, and other charitable institutions. Since its inception in 1991, TIFF has exclusively served the non-profit community by providing experienced manager selection and access, risk-sensitive asset allocation, and integrated member service to institutions with long-term investment horizons.

www.tiff.org

THIRTY YEARS OF TIFF