

DOES LEVERAGE PAY OFF? THE CASE OF EQUITY-LEVERAGED MUTUAL FUNDS

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Abstract

In this study, we examine the risk-adjusted performance of a sample of U.S.-based enhanced index mutual funds that use leverage to generate return multiples of their benchmark. We study equity-leverage funds that follow four major market indices: the Dow Jones Industrial Average, the NASDAQ-100, the Russell 2000, and the Standard and Poor's 500. We consider two model specifications to measure risk-adjusted performance and different market conditions. The evidence shows that these funds fail to outperform. This is particularly true during favourable market conditions.

JEL Codes: G10; G11

Keywords: Mutual funds; enhanced index strategy; leverage; risk-adjusted performance

1. Introduction

Although financial innovations like exchange-traded funds (ETFs), cryptocurrencies, and zero-commission trading have revolutionized investors' portfolios, open-end mutual funds are still an important investment vehicle for U.S. investors. In fact, the U.S. mutual fund industry remains the largest in the world, with \$23.9 trillion in total assets at the end of 2020, and 89% of that is in the hands of retail investors¹. It is safe to say that, despite a very different U.S. investment landscape, mutual funds are still one of the go-to assets for most individual investors.

Generally, mutual funds offer investors access to a professionally managed, low-cost, diversified portfolio. Furthermore, as markets evolve, so do managers' tactics in their quest to generate value for funds' investors. A case in point is leverage. Although a tool commonly used by hedge funds, more than 70% of all hedge funds use it (Liang and Qiu, 2019), slowly but surely, open-end mutual funds are beginning to rely on leverage in their quest to generate excess returns. However, given the long list of restrictions they face, mutual funds continue to use many other trading tactics to compensate for the limited amount of leverage (no more than 33.33% of total assets) they can use². This study examines the risk-adjusted performance of a sample of enhanced index mutual funds (EIFs). EIFs use the return of a specified index as a reference point and attempt to provide a return higher than that of this index.

¹ Investment Company Institute 2021 Fact Book.

² 2011 Commission Concept Release: Use of Derivatives by Investment Companies under the Investment Company Act of 1940, Security and Exchange Commission.

Moreover, they are commonly described as a hybrid between actively and passively managed funds. Our sample of equity EIFs uses leverage to increase the fund's exposure to its benchmark to generate a multiple of the return generated by the index. A strategy that could pay off during good market conditions but be disastrous when markets fall. We examine equity-leverage EIFs that follow four major market U.S. indices: the Dow Jones Industrial Average (Dow), the NASDAQ-100, the Russell 2000 and the Standard and Poor's 500.

2. Literature Review

Our study contributes to the mature but still active literature on mutual funds risk-adjusted performance. In general, the academic literature indicates mutual fund managers do not have skill (Elton, Gruber, Das, and Hlvtka 1993; Gruber, 1996; Fama and French, 2010), but some studies suggest unique metrics and fresh datasets that can identify managers who outperform (Kacperczyk, Sialm, and Zheng, 2008; Cremers and Petajisto, 2009; Berk and Van Binsbergen, 2015).

We are not the first to examine the performance of EIFs. Riepe & Werner (1998) studied eight enhanced index funds (EIFs) and concluded that most funds did not provide a superior return compared to the S&P500 index. An examination of the EIFs in the Chinese market also showed that these funds performed worse than their benchmark (Weng & Wang, 2017). Chen et al. (2012) use the bootstrap technique to analyze the performance of EIFs over the 1996 to 2007 period and report positive and significant alphas.

In addition to comparing the performance of EIFs with that of their respective benchmarks, some studies compare EIFs against passive index mutual funds. Tower and Yang (2008) report that the enhanced-index strategy outperformed the passive index strategy over the eight-year period 1999-2006. Another comparison between enhanced and passive index strategies documents that, during index revision periods, enhanced index funds exhibit higher returns and lower trading costs (Frino et al., 2005). Chang and Krueger (2010) compare operating characteristics and performance measures with data up to 2009 and find that EIFs generally exhibit higher expense ratios, annual turnover rates, and lower risk-adjusted returns. Ahmed and Nanda (2005) compare the performance of EIFs and quantitative equity funds. They present evidence of outperformance by quantitatively managed growth funds.

EIFs have the dual objective of outperforming a benchmark index while maintaining a low tracking error. The portfolio selection strategy to enhance the index varies between EIFs. Roman et al. (2013) evaluate the Second order Stochastic Dominance (SSD) model of portfolio choice for data drawn from the following three indexes: FTSE 100, S&P500 and Nikkei 225. They conclude that SSD-based models consistently outperform these indexes and the passive index strategies. Clark et al. (2019) propose a new strategy called the utility-enhanced tracking technique that generates consistently higher after-expenses returns. Wu et al., 2007 propose a strategy based on goal programming that does not require a fund manager to buy and sell stocks actively to improve returns. Empirical results show that this strategy lowered transaction costs and produced sustainable risk-controlled enhanced returns.

Using leverage by mutual funds is still a relatively new research topic with only a few studies. Warburton and Simkovic (2019) compare mutual funds that use leverage (in the form of bank loans) versus their non-borrowing peers and find that borrowers underperform and incur greater risk. Finally, Molestina-Vivar et al. (2020) study the link between mutual fund leverage and investor flows and report greater outflows during stressed periods and after negative returns. To the best of our knowledge, no academic study examines the risk-adjusted performance of EIFs that use leverage to attempt to outperform their benchmark.

3. Data and Methods

We examine the risk-adjusted performance of U.S.-based enhanced index funds that use leverage to increase their exposure to a multiple of its benchmark to magnify the index return. The samples of funds come from the Chicago Research in Security Prices Mutual Fund Database (CRSP) and include all open-end mutual funds classified by Lipper as equity-leverage funds. We select funds with major indices as benchmarks. These include the Dow Jones Industrial Average (Dow), the NASDAQ-100, the Russell 2000 and the Standard and Poor's 500 (S&P 500). For funds with multiple classes, we include the class with the longest history in the sample. These filters yield a sample of 19 unique funds listed in Table 1 and distributed as Dow (5 funds), NASDAQ (8), Russell 2000 (2) and S&P 500 (4).

Table 1: List of Fund Names

	Family Name	Fund Name	Index Name
1	Rydex Series Funds	Russell 2000 1.5x Strategy Fund	Russell
2	Rydex Dynamic Funds	Russell 2000 2x Strategy Fund	Russell
3	Direxion Funds	Direxion Monthly S&P 500 Bull 2x Fund	SP500
4	Rydex Dynamic Funds	S&P 500 2x Strategy Fund	SP500
5	Advisors' Inner Circle Fund	Toews S&P 500 Hedged Index Fund	SP500
6	Rydex Variable Trust	S&P 500 2x Strategy Fund	SP500
7	Rydex Dynamic Funds	Dow 2x Strategy Fund	Dow
8	Rydex Variable Trust	Dow 2x Strategy Fund	Dow
9	ProFunds	UltraDow 30 ProFund	Dow
10	Potomac Funds	Potomac Dow 30 Plus Fund	Dow
11	Rydex Dynamic Funds	Dow 2x Strategy Fund	Dow
12	Direxion Funds	Direxion Monthly NASDAQ-100 Bull 2x Fund	Nasdaq
13	ProFunds	UltraNASDAQ-100 ProFund	Nasdaq
14	Rydex Dynamic Funds	NASDAQ-100 2x Strategy Fund	Nasdaq
15	ProFunds	ProFund VP UltraNASDAQ-100	Nasdaq
16	Rydex Variable Trust	NASDAQ-100 2x Strategy Fund	Nasdaq
17	Rydex Series Funds	Monthly Rebalance NASDAQ-100 2x Strategy Fund	Nasdaq
18	Direxion Funds	Direxion Monthly NASDAQ-100 Bull 1.25X Fund	Nasdaq
19	Advisors' Inner Circle Fund	Toews Nasdaq-100 Hedged Index Fund	Nasdaq

Since these funds are designed to magnify index returns daily, we use daily data for all the analyses. Daily fund returns are from CRSP, Bloomberg is used for the set of market indices, and the daily Fama-French factors are from the Kenneth R. French Data Library. The time period of the study runs from 2001 to 2022. We use several performance metrics, starting with excess returns and the Sharpe ratio. We then measure how frequently these funds meet their performance mandate. Funds in the sample seek to generate 1.5 to 2 times the daily return of their benchmark. To be conservative in measuring the number of times, the funds meet their mandate, we assume a mandate of 2X. This way, we do not exaggerate the good performance of any fund.

On the contrary, our empirical results have a downward bias, as we impose a higher standard on some of the funds in the sample. Given the investment objective of this sample of funds, that is, to leverage up to generate a higher performance than that of the index they follow, it is important to

examine their performance in a wide range of market conditions. To that end, we consider weak (Bear) versus strong (Bull) market conditions. Bear and Bull markets are based on data provided by www.thedowtheory.com. We also consider market condition partitions based on NBER recession data obtained from <https://fred.stlouisfed.org> and index return percentiles.

4. Empirical Results

Table 2: Excess Return Statistics and Sharpe Ratio

Panel A: by Market Condition (Bull vs. Bear)									
Portfolio	Market Condition	Number of Obs.	Index Return Mean	Excess Return Mean		Excess Return Std Dev	Excess Return Median	Portfolio Sharpe Ratio	Index Sharpe Ratio
Dow	Bear	1068	-0.0014	-0.0012	**	0.0153	-0.0005	-0.0788	-0.0779
Dow	Bull	4467	0.0007	0.0006	***	0.0090	0.0007	0.0685	0.0652
Nasdaq	Bear	1068	-0.0020	-0.0019	**	0.0276	-0.0002	-0.0755	-0.0729
Nasdaq	Bull	4467	0.0010	0.0008	***	0.0107	0.0007	0.0760	0.0776
Russell	Bear	626	-0.0023	-0.0017	**	0.0199	-0.0010	-0.0886	-0.0898
Russell	Bull	4095	0.0008	0.0005	***	0.0098	0.0008	0.0546	0.0536
SP500	Bear	922	-0.0018	-0.0012		0.0225	-0.0003	-0.0767	-0.0907
SP500	Bull	4467	0.0007	0.0006	***	0.0099	0.0004	0.0681	0.0689
Panel B: by Market Condition (NBER Recession)									
Portfolio	Market Condition	Number of Obs.	Index Return Mean	Excess Return Mean		Excess Return Std Dev	Excess Return Median	Portfolio Sharpe Ratio	Index Sharpe Ratio
Dow	Recession	586	-0.0006	-0.0005		0.0207	-0.0002	-0.0256	-0.0274
Dow	No Recession	4949	0.0004	0.0004	***	0.0086	0.0005	0.0390	0.0337
Nasdaq	Recession	586	0.0000	-0.0008		0.0328	-0.0001	-0.0158	-0.0037
Nasdaq	No Recession	4949	0.0005	0.0004	**	0.0119	0.0004	0.0313	0.0293
Russell	Recession	420	-0.0007	-0.0005		0.0246	0.0003	-0.0220	-0.0239
Russell	No Recession	4301	0.0005	0.0003	**	0.0095	0.0006	0.0325	0.0321
SP500	Recession	502	-0.0008	-0.0006		0.0292	0.0001	-0.0255	-0.0314
SP500	No Recession	4887	0.0004	0.0004	***	0.0099	0.0003	0.0410	0.0348
Panel C: by Market Return Percentile (Bottom25%, Top25%)									
Portfolio	Market Condition	Number of Obs.	Index Return Mean	Excess Return Mean		Excess Return Std Dev	Excess Return Median	Portfolio Sharpe Ratio	Index Sharpe Ratio
Dow	Bottom	1385	-0.0127	-0.0108	***	0.0100	-0.0083	-1.1540	-1.1897
Dow	Top	1383	0.0127	0.0109	***	0.0094	0.0088	1.2245	1.2379
Nasdaq	Bottom	1385	-0.0173	-0.0144	***	0.0174	-0.0106	-1.1220	-1.2404
Nasdaq	Top	1383	0.0170	0.0138	***	0.0141	0.0110	1.1334	1.1623
Russell	Bottom	1116	-0.0175	-0.0128	***	0.0107	-0.0106	-1.2360	-1.2608
Russell	Top	1153	0.0169	0.0124	***	0.0095	0.0103	1.3427	1.3558
SP500	Bottom	1332	-0.0139	-0.0103	***	0.0153	-0.0085	-1.0128	-1.2903
SP500	Top	1343	0.0137	0.0104	***	0.0146	0.0095	1.0868	1.3528

Note: All the results are based on daily returns. ***, **, * corresponds to 1%, 5%, and 10% statistical significance.

We employ daily returns to examine the risk-adjusted performance of a sample of 19 EIFs that use as benchmark one of the four U.S. major stock indices: Dow Jones Industrial Average (Dow), the NASDAQ-100, the Russell 2000 and the Standard and Poor's 500 (S&P 500). We start by computing an equally weighted portfolio of all the funds that follow each particular index. Table 2 shows the analyses based on excess returns, that is, the difference between the return of each portfolio of funds and that of their index benchmark. This first set of results considers a variety of market conditions. Panel A presents the results for Bull versus Bear market conditions. We find significant excess returns that are positive during Bull markets and negative during Bear markets. All mean excess returns significantly differ from zero at 1 or 5 percent levels. The only insignificant excess return is for the SP 500 portfolio during Bear market conditions. The results for the Sharpe Ratio in Panel A are similar to that of the excess returns. The Sharpe ratio is positive during Bull market conditions and negative during Bear market conditions. This behaviour of the Sharpe is consistent through the other two panels of the table where the measure of market conditions is the NBER recessions marker (Panel B) and top versus bottom market return (Panel C).

In Panel B of Table 2, we show the analysis of excess returns during periods when the economy was in a recession or not. We find positive and statistically significant excess returns during non-recession periods. During recessions, excess returns are all insignificant. Again, the significance level ranges between 1 and 5 percent. Finally, Panel C considers the top and bottom market return percentiles. Results are similar to those in Panel A; however, all excess returns are higher in magnitude and significant at the 1 percent level. Again, excess returns are significantly positive when the market reaches top performance and negative during periods of worse performance. Regardless of the index, all funds perform significantly better during good market conditions than during challenging times. This is particularly true for partitions based on the actual market return. It is worth mentioning that the results in Table 2 show that in terms of magnitude, excess returns during bear markets are negative and 2 to 4 times larger than the positive excess returns in bull markets. Thus, the additional leverage these funds employ manifests more during difficult bad times than during good times.

As a second step in gauging the performance of this sample of equity-leverage enhanced index funds, we measure the number of trading days each portfolio meets its mandate in terms of amplifying its benchmark daily return. Results are presented in Table 3. Panel A of Table 3 shows this frequency based on a mandate of 2X the benchmark daily return. Considering the full sample, funds meet their mandate 44 percent of the time. The most effective group is the Russell portfolio (47%), followed by the SP 500 (46%), Nasdaq (43%) and finally, the Dow (42%). Panel B of Table 3 presents the results of the same analysis but considering Bull versus Bear market conditions. Comparing the results presented in both panels, we can see that have the funds meet their mandate more frequently during Bear markets conditions than during Bull markets. The Dow portfolio is an example of this. The Dow funds meet their mandate 46 percent during Bear markets versus 41 percent during Bull markets. The same happens with the Russell portfolio (53% versus 46%). For both, the Nasdaq and the SP 500, funds meet their mandate more frequently during Bull markets.

We now turn to measuring funds' risk-adjusted performance. To that end, we rely on two model specifications: a daily single-factor alpha and the daily Fama-French five-factor model. Table 4 shows the results for the single factor, and again, we consider three measures of market conditions. Panel A presents the results for the Bull/Bear market partition. The only significant single-factor alpha is that of the Russell portfolio during Bull market conditions. This alpha is negative and significant. The Gibbons, Ross, and Shanken (1989) GRS test rejects the null hypothesis that the alphas of the portfolios are jointly zero, but only during Bull market conditions. Panel B shows the results based on whether the economy is facing a recession or not. These results are extremely similar to those in Panel A, and we reach the same conclusions. However, the results on Panel C are very different from those of Panel A and B. The partition here is based on the Top versus Bottom market index return. We find that all alphas, but one (Nasdaq during Top Market Return Percentile), are significant at the 1 percent level. For both the Dow and SP 500 portfolios, the single-factor alpha is positive for the bottom percentile and negative for the top percentile. For the Russell portfolio, the contrary is true. Alpha is positive for the top percentile

and negative for the bottom. Regardless of the percentile, the GRS test rejects the null hypothesis that the alphas of the portfolios are jointly zero.

Table 3: Performance versus Funds' Mandate

Panel A: Frequency of Days with Return above Mandate by Portfolio			
Portfolio	No	Yes	Total
Dow	3,187 58%	2,348 42%	5,535 100%
Nasdaq	3,152 57%	2,383 43%	5,535 100%
Russell	2,522 53%	2,199 47%	4,721 100%
SP500	2,900 54%	2,489 46%	5,389 100%
Total	11,761 56%	9,419 44%	21,180 100%

Panel B: Frequency of Days with Return above Mandate by Portfolio and Market Condition (Bull vs. Bear)			
Market Condition = Bear			
Portfolio	No	Yes	Total
Dow	572 54%	496 46%	1,068 100%
Nasdaq	577 63%	491 38%	1,068 100%
Russell	295 47%	331 53%	626 100%
SP500	588 64%	334 36%	922 100%
Total	2,032 55%	1,652 45%	3,684 100%

Market Condition = Bull			
Portfolio	No	Yes	Total
Dow	2,615 59%	1,852 41%	4,467 100%
Nasdaq	2,575 58%	1,892 42%	4,467 100%
Russell	2,227 54%	1,868 46%	4,095 100%
SP500	2,312 52%	2,155 48%	4,467 100%
Total	9,729 56%	7,767 44%	17,496 100%

Note: All the results are based on daily returns. The above mandate means that the portfolio return is greater than twice the index return.

Table 4: Single-factor Alpha

Panel A: Market Condition (Bull vs. Bear)						
Portfolio	Market Condition	Number of Obs.	Alpha	t statistic	p-value	
Dow	Bear	1068	0.0000	0.1298	0.8967	
Dow	Bull	4467	-0.0001	-1.1984	0.2308	
Nasdaq	Bear	1068	-0.0002	-0.2853	0.7755	
Nasdaq	Bull	4467	0.0001	0.9045	0.3658	
Russell	Bear	626	-0.0001	-0.1428	0.8865	
Russell	Bull	4095	-0.0003	-2.4469	0.0144	
SP500	Bear	922	0.0002	0.2993	0.7648	
SP500	Bull	4467	-0.0001	-1.2684	0.2047	
		Number of Obs.	Average Alpha	GRS statistic	GRS p-value	
GRS test	Bear	626	0.0000	0.0272	0.9986	
GRS test	Bull	4095	-0.0001	2.9614	0.0187	
Panel B: Market Condition (NBER Recession)						
Portfolio	Market Condition	Number of Obs.	Alpha	t statistic	p-value	
Dow	Recession	586	-0.0002	-0.5413	0.5885	
Dow	No Recession	4949	0.0000	0.4386	0.6610	
Nasdaq	Recession	586	0.0002	0.1330	0.8942	
Nasdaq	No Recession	4949	-0.0001	-0.5045	0.6139	
Russell	Recession	420	0.0001	0.1497	0.8810	
Russell	No Recession	4301	-0.0003	-2.0505	0.0404	
SP500	Recession	502	0.0001	0.1271	0.8989	
SP500	No Recession	4887	0.0000	0.3421	0.7323	
		Number of Obs.	Average Alpha	GRS statistic	GRS p-value	
GRS test	Recession	420	0.0001	0.2919	0.8832	
GRS test	No Recession	4301	-0.0001	2.4296	0.0456	
Panel C: Market Return Percentile (Bottom 25%, Top 25%)						
Portfolio	Market Condition	Number of Obs.	Alpha	t statistic	p-value	
Dow	Bottom	1385	0.0018	5.3706	0.0000	
Dow	Top	1383	-0.0019	-5.5100	0.0000	
Nasdaq	Bottom	1385	-0.0041	-4.7446	0.0000	
Nasdaq	Top	1383	-0.0002	-0.3094	0.7571	
Russell	Bottom	1116	-0.0023	-4.4351	0.0000	
Russell	Top	1153	0.0036	6.1644	0.0000	
SP500	Bottom	1332	0.0038	7.5206	0.0000	
SP500	Top	1343	-0.0028	-4.9426	0.0000	
		Number of Obs.	Average Alpha	GRS statistic	GRS p-value	
GRS test	Bottom	1116	-0.0002	35.8180	0.0000	
GRS test	Top	1153	-0.0003	63.8000	0.0000	

Note: All the results are based on daily returns.

Table 5: Five-factor Alpha

Panel A: Market Condition (Bull vs. Bear)						
Portfolio	Market Condition	Number of Obs.	Alpha	t statistic	p-value	
Dow	Bear	1068	-0.0004	-1.8476	0.0649	
Dow	Bull	4467	-0.0002	-2.5975	0.0094	
Nasdaq	Bear	1068	0.0005	0.7186	0.4725	
Nasdaq	Bull	4467	0.0001	1.2113	0.2259	
Russell	Bear	626	0.0002	1.5231	0.1282	
Russell	Bull	4095	-0.0002	-5.4158	0.0000	
SP500	Bear	922	-0.0002	-0.3689	0.7123	
SP500	Bull	4467	-0.0001	-1.7568	0.0790	
		Number of Obs.	Average Alpha	GRS statistic	GRS p-value	
GRS test	Bear	626	0.0000	1.4566	0.2139	
GRS test	Bull	4095	-0.0001	8.9578	0.0000	
Panel B: Market Condition (NBER Recession)						
Portfolio	Market Condition	Number of Obs.	Alpha	t statistic	p-value	
Dow	Recession	586	-0.0004	-1.2340	0.2177	
Dow	No Recession	4949	-0.0001	-1.8847	0.0595	
Nasdaq	Recession	586	0.0004	0.3987	0.6903	
Nasdaq	No Recession	4949	0.0002	1.4250	0.1542	
Russell	Recession	420	0.0000	0.1917	0.8480	
Russell	No Recession	4301	-0.0001	-4.7308	0.0000	
SP500	Recession	502	0.0000	-0.0999	0.9204	
SP500	No Recession	4887	0.0000	-0.2163	0.8288	
		Number of Obs.	Average Alpha	GRS statistic	GRS p-value	
GRS test	Recession	420	0.0000	0.6235	0.6459	
GRS test	No Recession	4301	-0.0001	7.1304	0.0000	
Panel C: Market Return Percentile (Bottom 25%, Top 25%)						
Portfolio	Market Condition	Number of Obs.	Alpha	t statistic	p-value	
Dow	Bottom	1385	0.0003	0.8985	0.3691	
Dow	Top	1383	-0.0010	-3.6139	0.0003	
Nasdaq	Bottom	1385	-0.0017	-2.1956	0.0283	
Nasdaq	Top	1383	-0.0006	-0.9744	0.3300	
Russell	Bottom	1116	0.0010	6.5355	0.0000	
Russell	Top	1153	-0.0012	-8.0331	0.0000	
SP500	Bottom	1332	0.0028	5.4809	0.0000	
SP500	Top	1343	-0.0023	-4.2173	0.0000	
		Number of Obs.	Average Alpha	GRS statistic	GRS p-value	
GRS test	Bottom	1116	0.0004	17.2284	0.0000	
GRS test	Top	1153	-0.0010	40.7956	0.0000	

Note: All the results are based on daily returns.

The last set of results are presented in Table 5. This table shows the results of alpha based on the Fama-French five-factor specification. In the Bull/Bear partition case, all significant alphas are negative. Regardless of market conditions, the alphas of the Nasdaq portfolio are not statistically significant. Also insignificant is the Russell alpha during Bear markets. The GRS test rejects the null hypothesis that the portfolios earn zero abnormal returns jointly during bull markets. The analysis that considers market conditions with NBER partitions in Panel B presents only two alphas (Dow and Russell) that are statistically significant, both negative and both during non-recession periods. Again, the GRS test rejects the null hypothesis that the portfolios jointly earn zero abnormal returns during no-recessions. Finally, Panel C shows only two insignificant alphas. The Dow portfolio attained a negative and significant alpha for the top percentile. This is also the case for the Russell and SP 500 portfolios. Two alphas are positive and significant for the bottom percentile (Russell and SP 500). In line with the results for the single-factor alpha, for both percentiles, the GRS test rejects the null hypothesis that the alphas of the portfolios are jointly zero. In sum, alphas are mostly negative. Based on the single-factor specification, there are only nine instances where a portfolio attained a significant alpha, six negative. Twelve alphas are significant when the five-factor model is employed; eleven are negative. Thus, regardless of market conditions, this sample of equity-leverage enhanced index funds fails to consistently beat their respective market benchmarks in the aggregate.

5. Conclusion

This study examines the risk-adjusted performance of a sample of equity-leverage mutual funds with enhanced index investment mandates. The sample includes funds that follow the Dow Jones Industrial Average, the NASDAQ-100, the Russell 2000 and the Standard and Poor's 500. We examine performance during a variety of market conditions. Our results show that this sample of equity-leverage funds generates significant excess returns, mostly positive during good market conditions and negative during adverse conditions. We also ask whether this sample of funds meets their mandate of generating x times the index's return. In that regard, the results show that funds meet their mandate on average during less than half of the total trading days included in the sample period.

Regarding risk-adjusted performance, we consider two model specifications, a single-factor and a Fama-French five-factor formulation. The evidence shows that these funds fail to outperform their market index in the aggregate. This is particularly true during periods of favourable market conditions. An important limitation of the study is the sample size. Future studies should aim to examine a larger sample.

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