DARDEN BUSINESS PUBLISHING
UNIVERSITY of VIRGINIA

UV6939
Feb. 19, 2015

ProShares Hedge Replication ETF

At the start of 2014, Joanne Hill was preparing to present at a conference focused on alternative investments for financial advisers. As head of institutional investment strategy at ProShares, Hill had been part of the research and development team behind the firm's lineup of exchange-traded funds (ETFs). ProShares was a leader in packaging liquid alternative strategies in ETFs, using combinations of securities and derivatives products. Hill's presentation on that day was titled "Hedge Fund Replication: A Closer Look," and it was focused on one of ProShares's liquid alternative strategy products: the Hedge Replication ETF (HDG). **Exhibit 1** provides selected slides from the presentation, which can also be watched online.[1] Hill wanted to showcase how HDG provided an exposure to hedge funds at low fees, with full transparency and providing daily liquidity. But she had to overcome some resistance in the audience because most hedge fund strategies had underperformed the overall stock market in recent years.[2] For example, HDG's return had been 4.4% in 2013 (with volatility of 4.8%), while the S&P 500 index had returned 32.4% over the same period (with 11% volatility).[3] Could 2014 be a comeback year for hedge fund strategies?

ProShares: The Alternative ETF Company

ProShares, based in Bethesda, Maryland, had established itself as the world's largest manager of short and leveraged exchange-traded funds, which the firm labeled as "geared" ETFs. Its affiliate, ProFunds, was founded in 1997, offering leveraged and inverse mutual funds across a range of equity and bond indexes. In 2006, ProShares introduced geared ETFs, the first of their kind ever offered. These geared ETFs sought to deliver multiples of the performance of the index or benchmark they tracked. Ultra (or leveraged) ETFs had daily objectives to produce 2× or 3× the daily return of an index. Short (or inverse) ETFs sought to deliver −1×, −2×, or −3× daily exposures and were designed to go up when market indices went down and vice versa. To accomplish their objectives, geared ETFs used collateralized positions in swaps, futures contracts, and other derivative instruments. Some ProShares ETFs tracked broad equity indices, some were sector specific, and still others were linked to bond, commodity, and currency indexes. These ETFs could be purchased and sold like stocks and allowed investors to take hedging and speculative positions without directly using any derivatives.

[1] The video presentation is available at "Joanne Hill, Head of Investment Strategy at ProShares and Profunds Advisors," YouTube video, 38:32, posted by "DardenPublishing," February 2, 2015, http://youtu.be/XEUa45fjOD4 (accessed Feb. 6, 2015).
[2] "Hedge Funds: Going Nowhere Fast," *Economist*, December 22, 2012.
[3] "Fact Sheet—ProShares Hedge Replication ETF," ProShares, December 31, 2013.

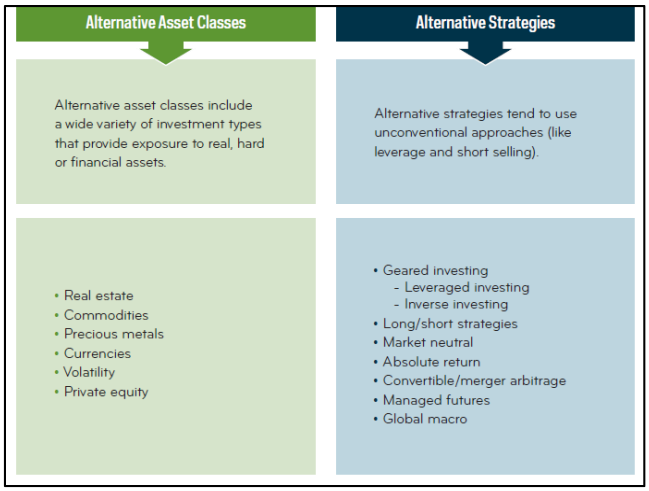
This case was prepared by Associate Professor Pedro Matos with the help of Anil Demir (MBA '14). It was written as a basis for class discussion rather than to illustrate effective or ineffective handling of an administrative situation. Copyright © 2015 by the University of Virginia Darden School Foundation, Charlottesville, VA. All rights reserved. *To order copies, send an e-mail to* sales@dardenbusinesspublishing.com. *No part of this publication may be reproduced, stored in a retrieval system, used in a spreadsheet, or transmitted in any form or by any means—electronic, mechanical, photocopying, recording, or otherwise—without the permission of the Darden School Foundation. The materials have been prepared only for educational purposes and not for any other purpose, including as an offer to sell or the solicitation of an offer to buy any securities. By using these materials, you agree that you will not display, reproduce, store in a retrieval system, or transmit these materials to any person for any use other than educational purposes.*

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

The geared ETFs were extremely successful, and ProShares had $20.5 billion in assets under management by 2008. But the financial crisis brought some challenges, namely the issue that most geared ETFs reset daily. Long-term investors in geared ETFs can experience returns that deviate from the multiple of the index returns for periods greater than one day as a result of the effects of compounding. These effects were magnified in the volatile markets of 2008–09. This led to some investor dissatisfaction and several class-action lawsuits. ProShares launched an educational campaign on its funds to stress that investors needed to monitor and rebalance their positions regularly to adjust for the effects of compounding over time. Investor appetite for its ETFs resumed when market volatility decreased to more normal levels.

By 2010, ProShares had entered a new stage focused on delivering ETFs that provided access to a broad array of alternative investments. Leading ETF providers iShares, State Street, and Vanguard provided traditional ETFs on asset classes such as equities or bonds. But ProShares was more of a boutique asset manager focused on alternative ETFs, a loose concept that generally included two types of investments: alternative asset classes (giving exposure to nonmainstream assets) and alternative strategies (pursuing investment processes that were not constrained and could use leverage, shorting, and derivatives). (See **Figure 1** for the most common types of alternative investments.) ProShares could leverage its expertise by going beyond geared investment products to deliver a full suite of tactical and strategic alternative investments with the liquidity transparency and cost effectiveness of ETFs.

Figure 1. Common types of alternative ETF investments.



Source: ProShares.

At the end of 2013, ProShares and its affiliates had more than $33 billion in assets and more than 140 ETFs.[4] It ranked as the sixth-largest ETF sponsor in the United States.[5] Beyond its core of geared ETFs, ProShares had launched three new categories of ETFs (**Figure 2**). First were the Global Fixed Income ETFs that delivered advanced fixed income strategies. Second were the Hedge Strategies ETFs that sought to replicate the risk-return profile of well-known hedge fund strategies. Finally, there were the Inflation and Volatility ETFs that consisted of tactical products designed to benefit from changes in inflation and implied market volatility.

[4] ETF.com, http://www.etf.com (accessed Feb. 6, 2015).
[5] "ETP Landscape," *BlackRock*, October 31, 2013.

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Figure 2. ProShares's lineup of ETFs at the end of 2013.

Global Fixed Income	Hedge Strategies	Geared	Inflation and Volatility
Provide opportunities to help diversify and enhance fixed income holdings	Provide advanced investment strategies to help enhance returns or manage risk	Provide inverse or magnified exposure to equities, fixed income, currencies and commodities	Provide exposure to expected inflation or implied market volatility
German Sovereign/Sub-Sovereign ETF	Large Cap Core Plus	Market Cap (30)	30 Year TIPS/TSY Spread
USD Covered Bond	Hedge Replication ETF	Style (12)	Short 30 Year TIPS/TSY Spread
High Yield–Interest Rate Hedged	RAFI® Long/Short	Sector (35)	UltraPro 10 Year TIPS/TSY Spread
Investment Grade–Interest Rate Hedged	Merger ETF	International (19)	UltraPro Short 10 Year TIPS/TSY Spread
Short Term USD Emerging Markets Bond ETF	Global Listed Private Equity ETF	Fixed Income (13)	Short VIX Short-Term Futures ETF
	S&P 500 Aristocrats ETF	Commodity (10)	Ultra VIX Short-Term Futures ETF
		Currency (7)	VIX Short-Term Futures ETF
			VIX Mid-Term Futures ETF

Source: ProShares.

Hedge funds had become popular after the bear market of the 1970s and started to gain greater attention from institutional investors such as endowments and pension funds in the early 1990s. These investors were eager to invest in hedge funds because of their ability to deliver absolute returns in varied market conditions. Increasingly, high-net-worth individuals and registered advisers had broader discretionary investment abilities and wanted to be able to access liquid alternatives. ProShares wanted to leverage its infrastructure to package derivatives-based ETFs in order to offer hedge strategies. These covered a fairly broad spectrum of strategies: from equity long/short with a target large-cap equity benchmark (i.e., with a beta of 1, which meant they should move up or down with the equity market) to market-neutral strategies (i.e., noncorrelated with the broader market). To capture the broad risk/return profile of a broad universe of hedge funds without some of the typical challenges of hedge fund investing, ProShares developed the Hedge Replication ETF (HDG).

ProShares Hedge Replication ETF (HDG)

Hill's presentation was part of ProShares's efforts to introduce hedge strategies ETFs to a broader group of investors. **Exhibit 1** provides selected slides from the presentation.[6] The main idea was that investors with a decent-sized portfolio should have a slice of hedge fund investments in an allocation to alternatives to improve their risk-adjusted returns (slide 4).

Hill proceeded to make the investment case for the role of hedge funds in a typical 60/40 equity and fixed income portfolio (slide 7). Using historical returns, a 20% reallocation of equities exposure into hedge funds (as proxied by the Hedge Fund Research index [HFRI]) would have provided risk diversification benefits.[7] The average returns remained about the same, but the risk of this hypothetical portfolio was greatly reduced.

[6] http://youtu.be/XEUa45fjOD4.

[7] Hedge Fund Research (HFR) managed the HFR Database, which was one of the most comprehensive resources available for hedge fund investors. HFRI was designed to reflect the collective performance of hedge funds through an equally weighted composite of over 2,000 constituent hedge funds that were available to accredited investors.

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

A key driver behind the surging popularity of hedge funds was their performance (slide 8). The chart in slide 8 showed what a $10,000 investment in stocks, bonds, or hedge funds would have returned from the beginning of 1994 through the end of 2013. Hedge funds had delivered about 10% higher returns than stocks and more than twice as much as bonds. Besides exceeding stocks over the previous two decades, the HFRI had provided a "smoother ride" along the way, although the stock market had actually outperformed hedge fund strategies in the previous five years.

Perhaps more important, HFRI exhibited attractive risk-return characteristics in terms of the Sharpe ratio (slide 9). Over the period from 1994 to 2013, the HFRI composite exhibited less than half the volatility of the S&P 500 and earned annualized returns less than 1% below those of the index. A hedge fund allocation could potentially push out the efficient frontier of a portfolio by incorporating the diversification benefits and the improved risk-adjusted returns of hedge fund exposure as represented by the HFRI index. Hedge fund investment returns also had better properties in terms of downside protection (i.e., maximum losses that investors would sustain [slide 10]). For example, hedge funds experienced about half the drawdown of equities during the 2008 crisis. Perhaps it was no surprise, then, that there was continued investor interest in hedge funds (slide 11). Assets in hedge funds had grown over the previous two decades, and, despite some concerns after the extreme market conditions in 2008, interest in hedge funds as an alternative asset class had continued to grow.

There were benefits and challenges that came with investing in individual hedge funds (slide 13). The major benefits were fairly well chronicled—hedge funds had the potential to generate outsize returns if the investor was willing to be less diversified and could spend the due diligence time gathering information to make an informed decision.

As for the challenges, one was that most hedge funds had substantial minimum investments, so they were only accessible to large institutions and wealthy accredited investors.[8] Another challenge was that many hedge funds came with restrictive terms and notice periods regarding withdrawals. Also by design, there was little transparency because hedge fund strategies were largely trade secrets, and there might be delayed disclosures of fund holdings, which could prevent investors from fully understanding the risks. Then there were the high hedge fund fees, typically an annual fee in the neighborhood of 2% of assets, plus a performance fee of 20% of gains for the year. In a fund-of-funds structure, there could be additional submanager fees for the selection and ongoing evaluation of fund managers. It was difficult, even in a fund-of-hedge-funds structure, to broadly diversify hedge fund holdings across a significant number of different managers because of the minimum investment sizes required in any one fund. Hedge funds were less regulated than mutual funds and ETFs. And lastly, tax reporting for hedge funds generally involved K-1s, which some investors found could delay and complicate their tax filings.

Hedge fund replication ETFs were designed to democratize access to diversified hedge fund exposures (in effect to provide hedge fund beta). These ETFs followed a quantitative, rules-based investment strategy that sought to capture the risk/return characteristics of hedge funds as an asset class (slide 14). The ETFs charged lower fees than traditional hedge funds and were accessible to retail investors.

Hill's presentation was focused, in particular, on the ProShares HDG. Launched in July of 2011, HDG's assets had reached about $35 million at the end of 2013. ProShares faced competition from other funds such

[8] Broadly speaking, an accredited investor was a person who had more than $1 million net worth, or one whose income in each of the two previous years had exceeded $200,000 and who expected to continue to earn at that level.

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

as the IndexIQ Hedge Multi-Strategy Tracker ETF (QAI), the pioneer in the space of hedge fund replication, which had gathered nearly $660 million since its 2009 inception.

HDG strove for a high correlation with hedge fund beta by tracking the Merrill Lynch Factor Model, which targeted a high correlation to the HFRI (slide 16). To set up an ETF, it was important to license a benchmark index from a third party, and Merrill Lynch had been a pioneer in the field of hedge fund replication.

To replicate hedge fund risk and return characteristics without actually investing in hedge funds, the procedure used regression analysis to assign weights to market factors that contributed to hedge fund performance (slide 17). This type of statistical, returns-based procedure was similar to the style analysis introduced by Nobel Prize winner William F. Sharpe to determine an asset allocation that best described a fund's returns by deconstructing its fund returns using a variety of asset classes or factors.[9] There were six factors in the original Merrill Lynch Factor Model: S&P 500 (U.S. large-cap stocks), Russell 2000 (U.S. small-cap stocks), MSCI EAFE (developed stock markets), MSCI Emerging Markets, the Eurodollar/U.S. dollar exchange rate, and the three-month Eurodollar Deposit yields. Using a rolling regression of the previous 24 months of returns, the Merrill Lynch model allowed weights on six factors but imposed constraints.[10] Merrill Lynch updated the factor weightings on a monthly basis.

To provide a benchmark for HDG, Merrill Lynch created the Merrill Lynch Factor Model—Exchange Series (MLFM-ES) in 2011, which made some changes to the original Merrill Lynch Factor Model such that the six index components were tradable. The MLFM-ES substituted three-month Eurodollar deposit yields with U.S. Treasury Bills and the dollar/euro exchange rates with ProShares UltraShort Euro (EUO). To be approved as an ETF, it was also important that there was an arm's-length relationship with the index provider (Merrill Lynch) and that ProShares would disclose its holdings on a daily basis. This MLFM-ES index had tracked the Merrill Lynch Factor Model with near a perfect correlation of 99.7% since inception (slide 22).[11] To provide insight into the power of hedge fund replication, it was useful to compare the Merrill Lynch Factor Model with the HFRI. It had performed well in achieving a correlation coefficient of 90% (slide 18).[12] In 2008, it exhibited a positive tracking error, but in the more recent period from 2012 to 2013, it trailed behind the HFRI.

Liquid marketable securities or derivatives were used to gain exposure to these factors. The MLFM-ES index would have long or short exposure to each of the six market benchmarks. HDG had a choice to take long or short physical positions by investing in securities such as stocks or bonds. Alternatively, it could use synthetic positions via swaps and futures that would create each of these factor exposures (slide 19 conceptually summarizes the preferred investment choices to get exposure for each factor).

In order to dynamically replicate the HFRI, the MLFM-ES index would have to adjust its long or short exposure to each of the six factors over time (slide 20). The dynamic nature of the MLFM-ES weights

[9] William F. Sharpe, "Asset Allocation: Management Style and Performance Measurement—An Asset Class Factor Model Can Help Make Order Out of Chaos," *Journal of Portfolio Management* (1992). Interestingly, the article was adapted from the O'Neil-Abbott Distinguished Lecture given by Sharpe at the Darden School of Business in October 1990.

[10] The ranges of exposure permitted by the factor model's methodology at the monthly rebalance were: −100% to 100% for S&P 500, MSCI EAFE, and UltraShort Euro ETF; 0% to 100% (i.e., long only, it could not be shorted) for the emerging markets component; 0% to 200% for the Treasury bills factor; −30% to 100% for the Russell 2000 factor; excluding the Treasury bills factor, the sum of the all factor weights would be between −100% and 100% upon rebalancing.

[11] Of course, with changes in the relationship of LIBOR and T-bill returns over time, there was no guarantee that this high correlation would continue. These differences could potentially lead to material differences in the performance and correlation to the HFRI Index.

[12] The comparison was made between the Merrill Lynch Factor Model and the HFRI because the HDG and MLFM-ES had been created in 2011, and did not have much of a proven track record to compare it to the HFRI.

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

resulted from the different hedge fund styles in favor over time. Overall, the hedge fund beta to the stock market had been low and fairly stable (slide 21).

Hill closed her presentation with several important clarifications on HDG (slide 23) and a summary of its benefits (slide 24). Since HDG was an ETF, it was more accessible than hedge funds. It was transparent, because its hedge replication method was disclosed, and its fund holdings and model factors were published on ProShares.com on a daily basis. HDG had an expense ratio of 95 basis points. HDG was an ETF under the Investment Company Act of 1940, so it was subject to the same regulations and reporting requirements as mutual funds. Tax reporting involved Form 1099, which was an advantage since most retail investors were more familiar with this.

During the presentation, Hill encouraged audience members to seek additional information on HDG and the MLFM-ES (slide 25). She argued that HDG could play a role as a component of already existing asset allocation or as a separate allocation to alternatives (slide 26). She closed with the usual legal disclaimers (slides 27–29).

The Way Forward

At the conference, after the floor was opened for questions, there were a number of issues that were of interest to investors. The first was the lower levels of recent hedge fund performance (alpha). HFRI had substantially underperformed the S&P 500 index. Could 2014 be a comeback year for hedge fund strategies?

Second, hedge fund replication was still a relatively new concept, and there was some academic research to support its efficacy.[13] But questions were raised by the audience: Weren't the returns of skilled hedge fund managers related to their willingness to embrace illiquidity and complex risk premiums? How could this be captured by an ETF based on market factors? Was it purely delivering a hedge fund beta exposure and wasn't the whole point of investing in hedge funds to earn that alpha?

Third, the choice of the window of time and the number of factors used by MLFM-ES was subject to debate. It seemed that all six factors were returns of traditional betas (i.e., stocks and bonds), and MLFM-ES was missing important sources of returns from alternative betas such as credit spreads, carry returns, volatility, illiquidity, or other potential sources of returns. Also, it appeared that the dynamic regression used to construct the weights on the six factors was a backward-looking exercise because it was always lagging behind when adjusting to changes in hedge fund styles.

Fourth, there were also questions regarding the mechanics of how HDG worked. Most investors would start by looking at the HDG product fact sheet (**Exhibit 2**) and then find more details in the ProShares annual shareholder report. (**Exhibit 3** provides an extract with summary information on HDG, and **Exhibit 4** shows the actual schedule of investments as of May 31, 2013. **Exhibit 5** provides a short primer on how equity index swaps work.) Why did HDG choose different physical or synthetic positions to get the long or short exposures to replicate the MLFM-ES index? Why were some exposures built directly for investing in securities (e.g., stocks or bonds) while others used swaps or futures?

[13] Some academic references include William Fung and David A. Hsieh, "Hedge Fund Benchmarks: A Risk-Based Approach," *Financial Analysts Journal* 60, no. 5 (September/October 2004); Jasmina Hasanhodzic and Andrew W. Lo, "Can Hedge-Fund Returns be Replicated? The Linear Case," *Journal of Investment Management* 5, no. 2 (2007); and Garry B. Crowder, Hossein Kazemi, and Thomas Schneeweis, "Asset Class and Strategy Investment Tracking Based Approaches," *Journal of Alternative Investments* (2011).

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

The investment case for hedge fund replication and the specifics behind the HDG ETF deserved a closer examination.

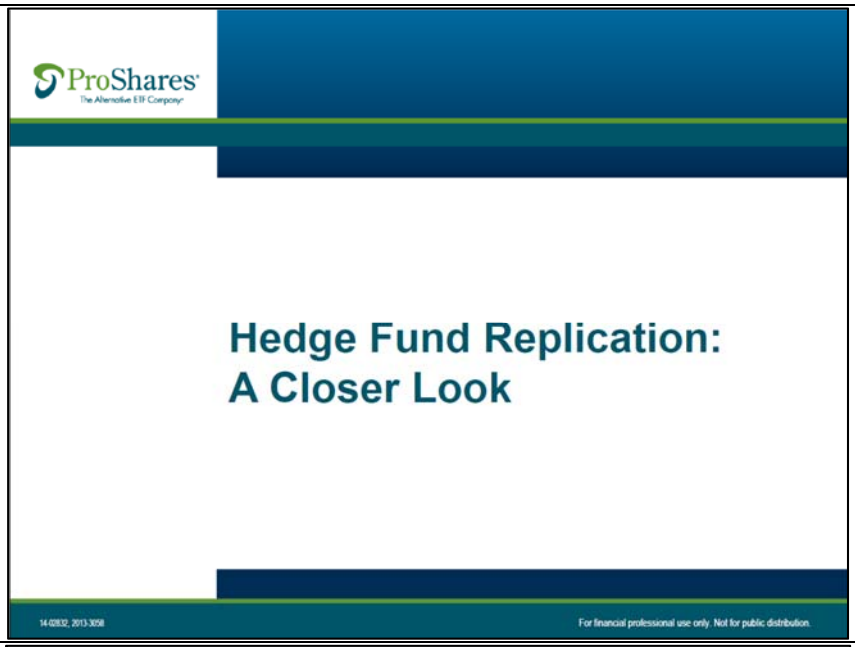
This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 1

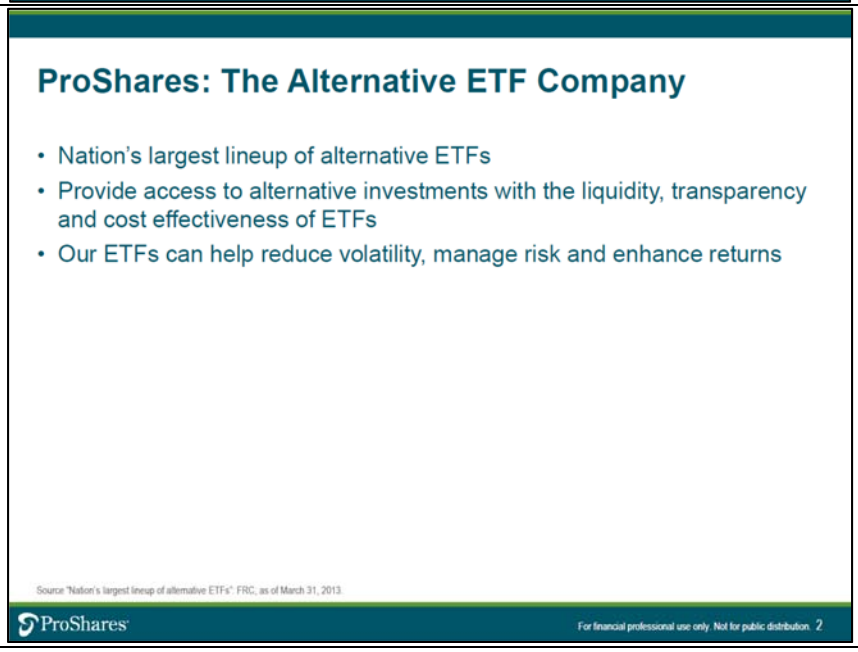
ProShares Hedge Replication ETF

ProShares Presentation: "Hedge Fund Replication: A Closer Look"

slide 1



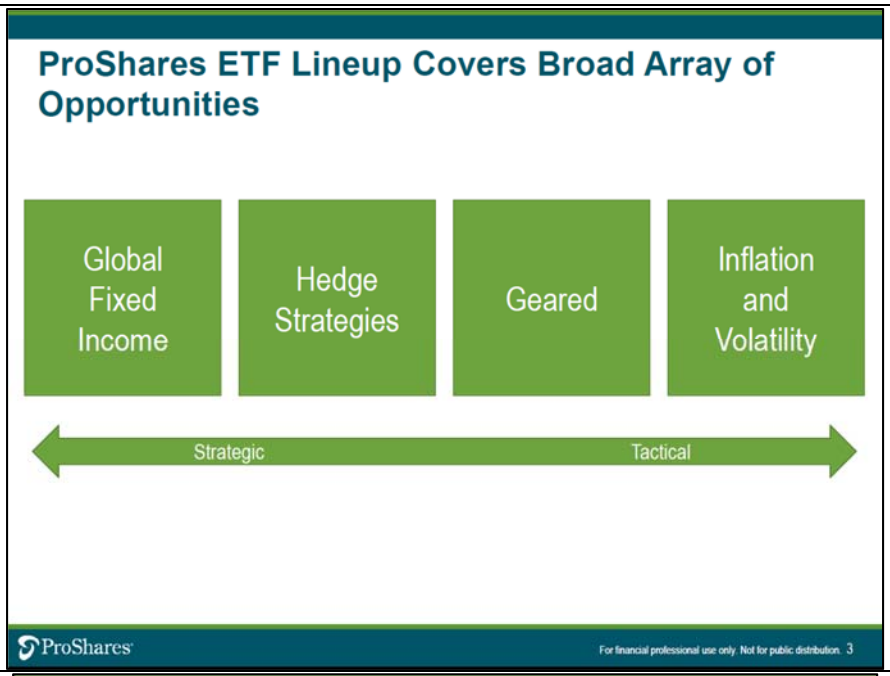
slide 2



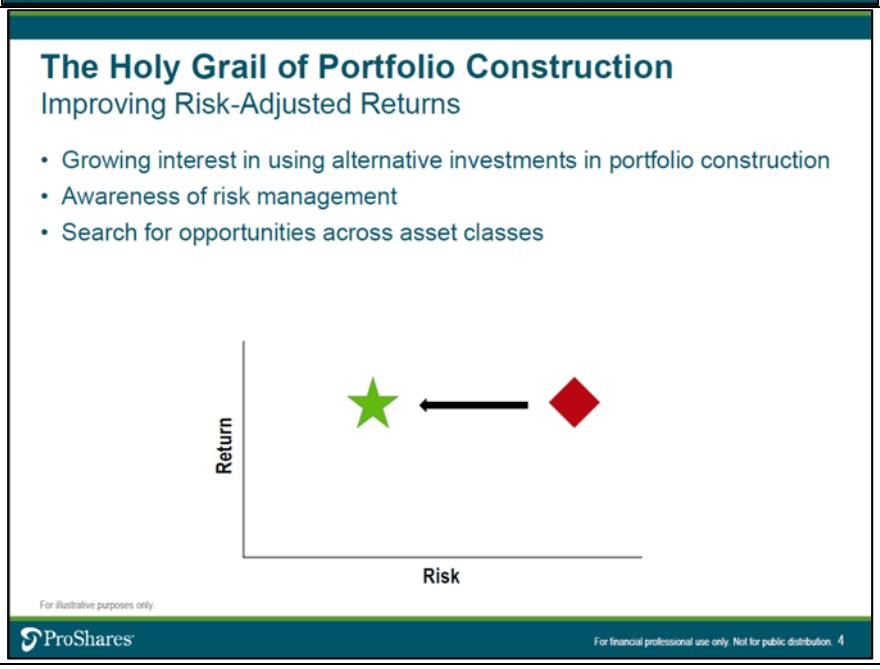
This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 1 (continued)

slide 3



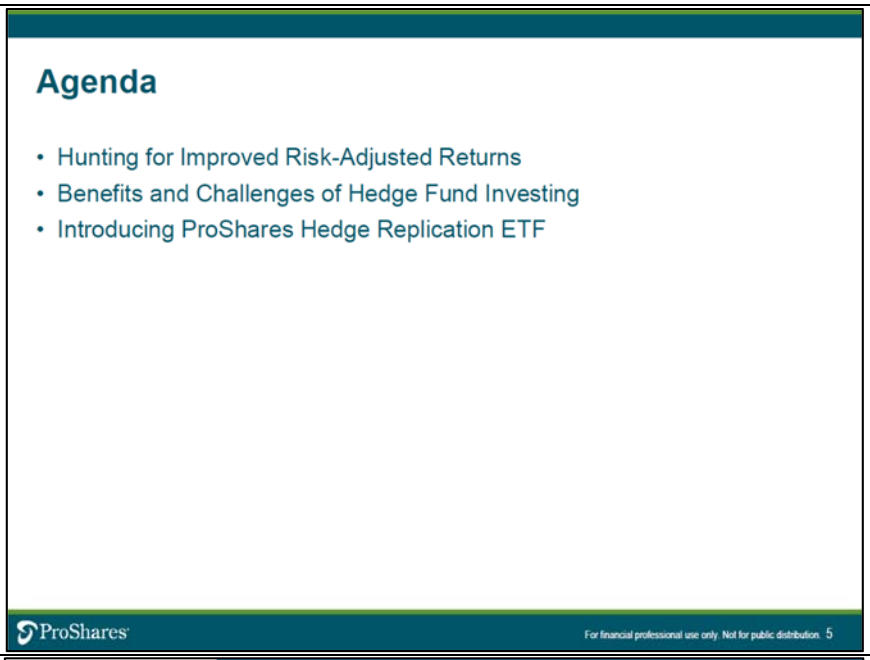
slide 4



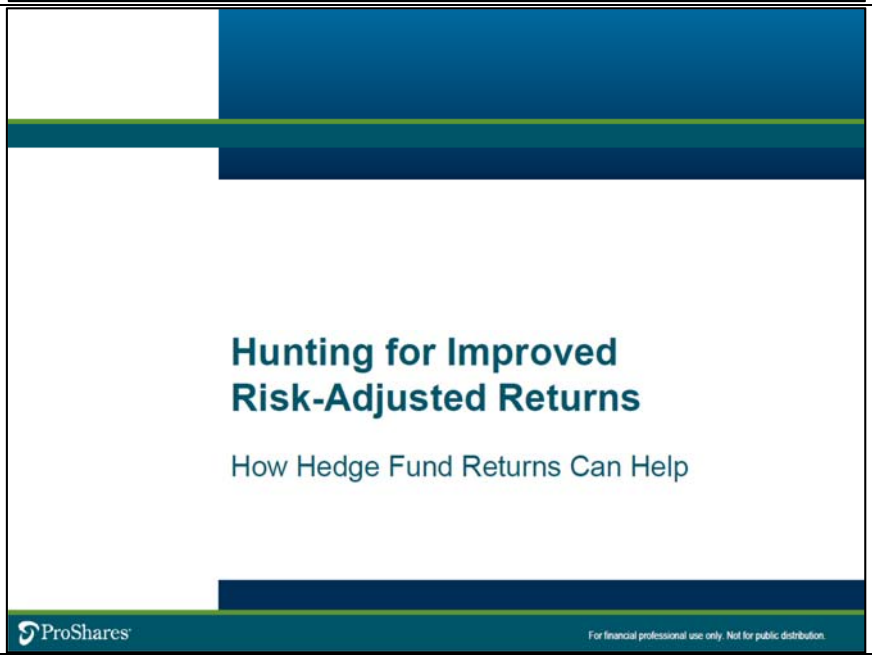
This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 1 (continued)

slide 5



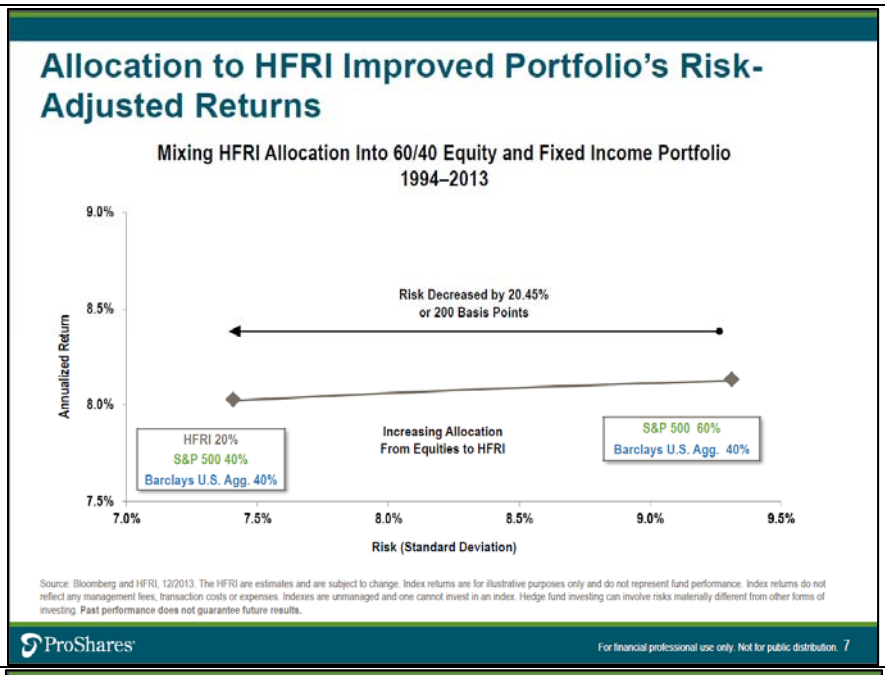
slide 6



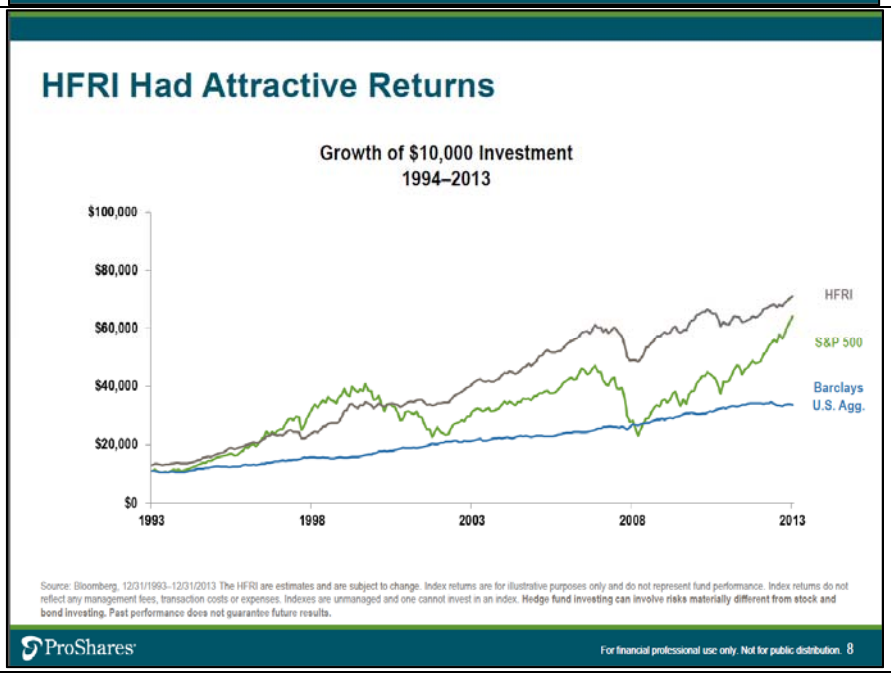
This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 1 (continued)

slide 7



slide 8



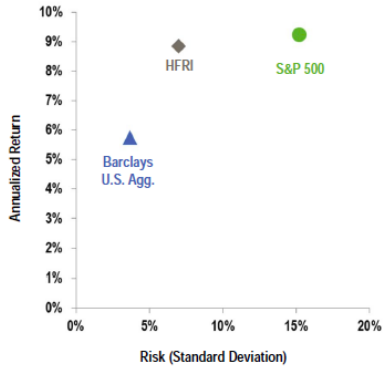
This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 1 (continued)

slide 9

Historically, HFRI Exhibited Attractive Risk-Adjusted Returns

HFRI vs. Stocks and Bonds
1994–2013



1994–2013			
	Return	Volatility	Sharpe Ratio
S&P 500	9.21%	15.22%	0.41
HFRI	8.83%	6.99%	0.84
Barclays U.S. Agg.	5.74%	3.69%	0.76

Source: Bloomberg, 12/31/1993–12/31/2013. The HFRI are estimates and are subject to change. Index returns are for illustrative purposes only and do not represent fund performance. Index returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest in an index. Hedge fund investing can involve risks materially different from stock and bond investing. Past performance does not guarantee future results.

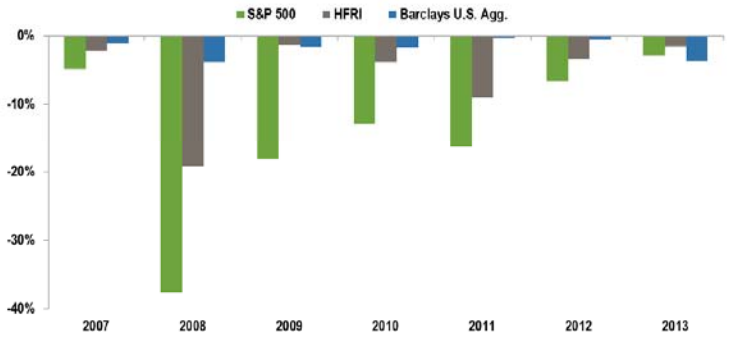
ProShares

For financial professional use only. Not for public distribution. 9

slide 10

HFRI Generally Had Smaller Drawdowns Than Stocks

Maximum Drawdowns of U.S. Stocks, HFRI and U.S Bonds
2007–2013



Source: Bloomberg, 12/2013. based on monthly data. The HFRI are estimates and are subject to change. Index returns are for illustrative purposes only and do not represent fund performance. Index returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest in an index. Maximum drawdown measures the worst price decline from a security's historical peak to its low during a year. Duration of the drawdown will vary by security. Hedge fund investing can involve risks materially different from stock and bond investing. Past performance does not guarantee future results.

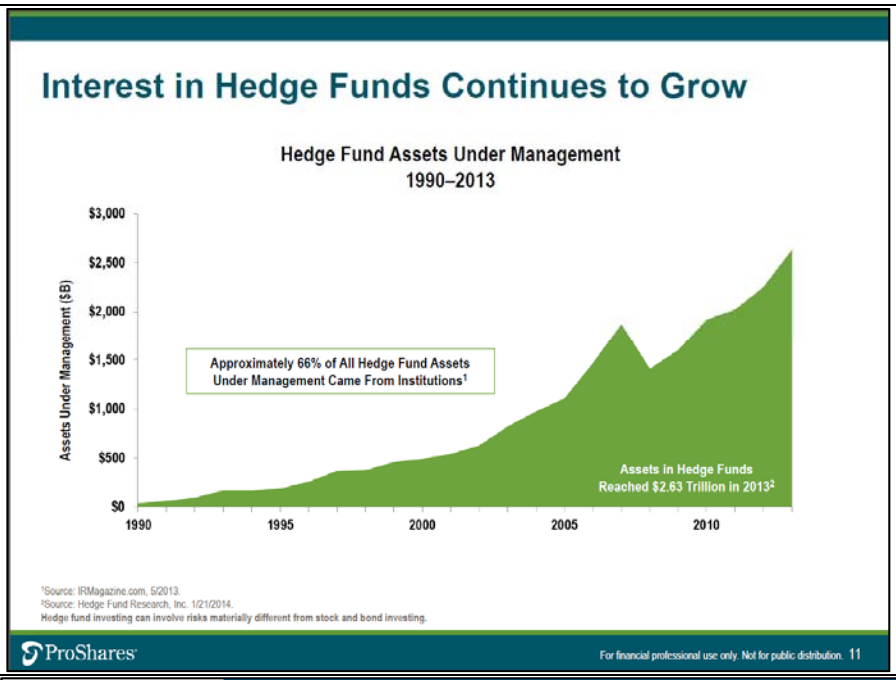
ProShares

For financial professional use only. Not for public distribution. 10

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 1 (continued)

slide 11



slide 12

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 1 (continued)

slide 13

Benefits and Challenges of Individual Hedge Funds

	Benefits	Challenges
Possibility of generating outsized returns	✓	
Ability to generate favorable risk-adjusted returns	✓	
Accessibility		X
Availability of funds		X
Transparency		X
Fee structure		X
Manager diversification		X
Regulatory oversight		X
Tax reporting		X

ProShares For financial professional use only. Not for public distribution. 13

slide 14

Hedge Fund Replication: Overcoming Some of the Challenges of Hedge Fund Investing

- Hedge fund replication
  - A quantitative, rules-based investment strategy
  - Attempts to capture the risk/reward characteristics of a broad set of hedge funds[1]
  - Uses readily available, liquid and marketable securities or derivatives

[1]Before fees and expenses.

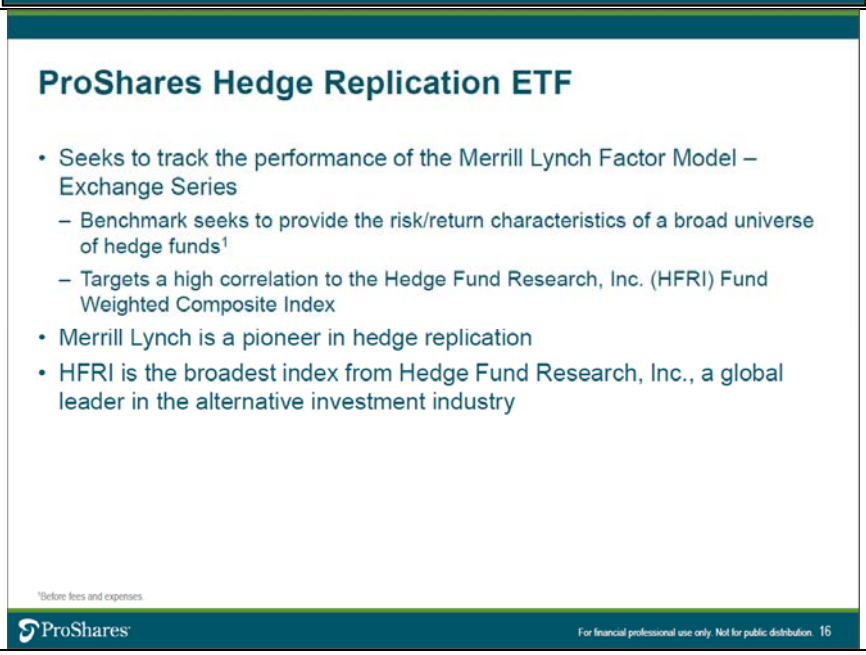
ProShares For financial professional use only. Not for public distribution. 14

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 1 (continued)

slide 15

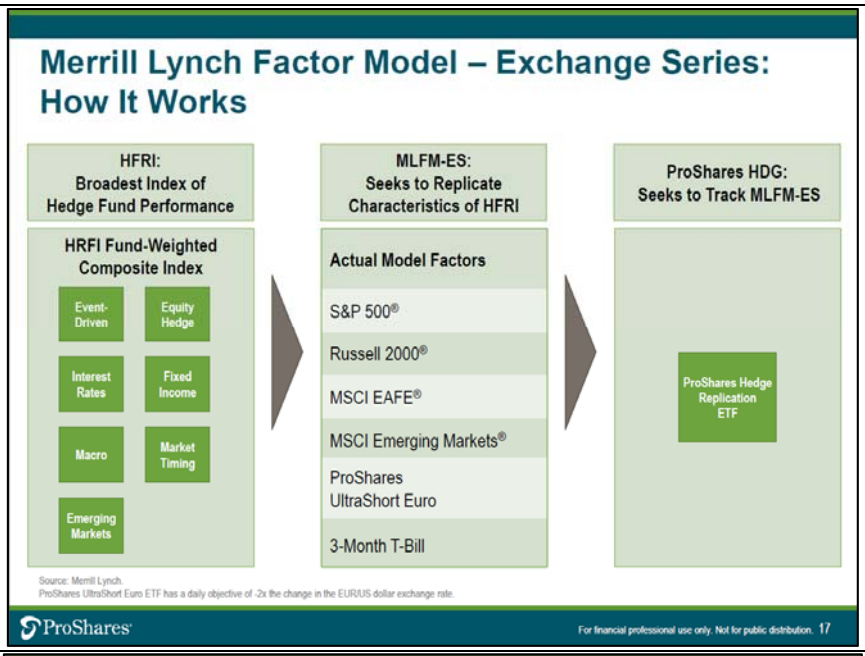
slide 16



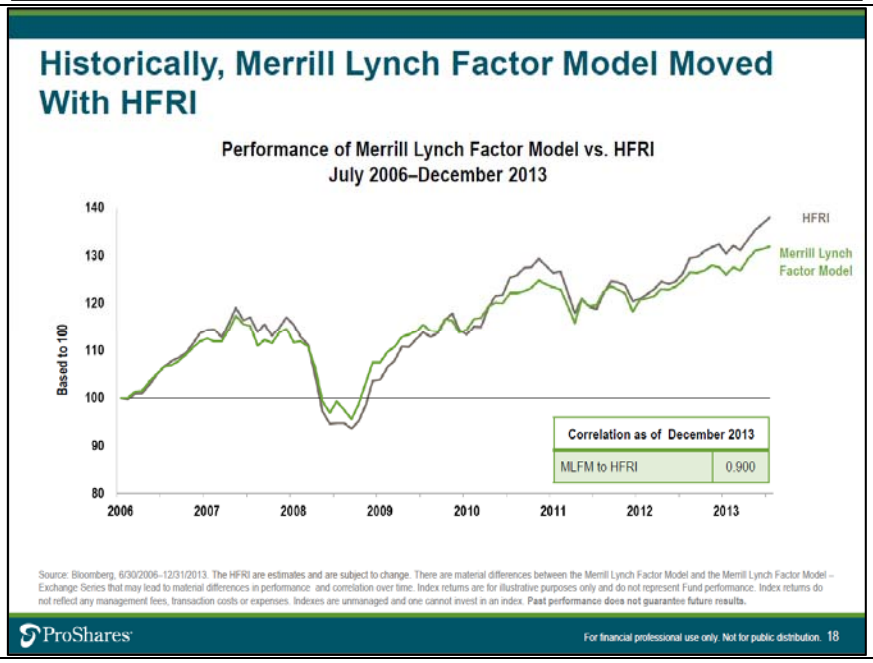
This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 1 (continued)

slide 17



slide 18



This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 1 (continued)

slide 19

ProShares ETF Portfolio Management: How HDG Invests

Factor Weights (as of 1/6/2014)	20.00%	3.80%	-3.50%	14.70%	-1.50%	66.50%

Long Exposure	S&P 500	Russell 2000	MSCI EAFE	MSCI Emerging	EUO	3-Month T-Bills
Option #1	Swap	Swap	Equities	Swap	Futures	T-Bills
Option #2	Equities	Futures	Swap	Equities	Forwards	
Option #3	Futures	Equities				

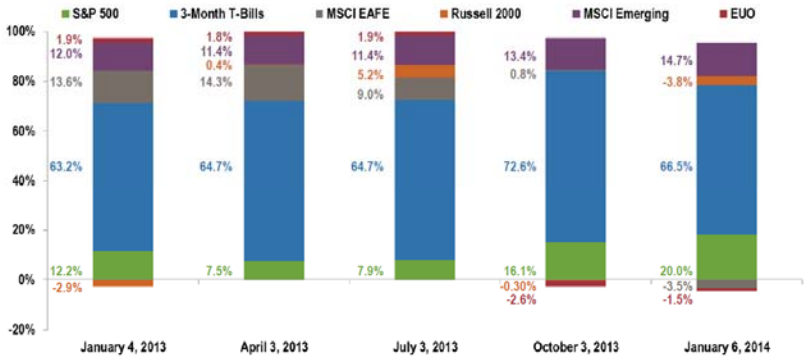
Short Exposure	S&P 500	Russell 2000	MSCI EAFE		EUO	
Option #1	Swap	Swap	Swap		Futures	
Option #2	Futures	Futures			Forwards	

ProShares UltraShort Euro (EUO) is used as a proxy for the euro-U.S. dollar exchange rate. HDG will typically achieve this exposure through futures or forwards linked to the euro-U.S. dollar exchange rate and will not typically hold shares of EUO.

ProShares For financial professional use only. Not for public distribution. 19

slide 20

Changes in Merrill Lynch Factor Model – Exchange Series Factor Weights



ProShares UltraShort Euro (EUO) is used as a proxy for the euro-U.S. dollar exchange rate. HDG will typically achieve this exposure through futures or forwards linked to the euro-U.S. dollar exchange rate and will not typically hold shares of EUO.

ProShares For financial professional use only. Not for public distribution. 20

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 1 (continued)

slide 21

Correlation and Beta of Equities and Fixed Income to Hedge Fund Indexes

Correlation				
	S&P 500		Barclays U.S. Aggregate	
Time Period	ML Factor	HFRI	ML Factor	HFRI
Jan-07–Dec-13	0.87	0.83	0.14	0.03
Jan-07–Dec-09	0.89	0.80	0.29	0.19
Jan-10–Dec-13	0.85	0.89	-0.14	-0.23
Beta				
	S&P 500		Barclays U.S. Aggregate	
Time Period	ML Factor	HFRI	ML Factor	HFRI
Jan-07–Dec-13	0.33	0.34	0.26	0.07
Jan-07–Dec-09	0.36	0.34	0.56	0.40
Jan-10–Dec-13	0.30	0.36	-0.24	-0.46

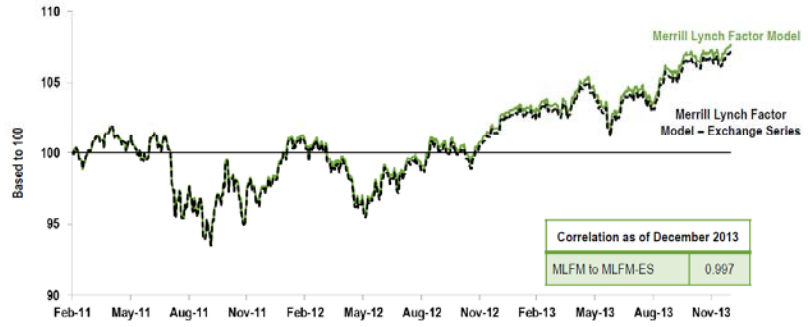
Source: Bloomberg, 12/2013. The HFRI are estimates and are subject to change. There are material differences between the Merrill Lynch Factor Model and the Merrill Lynch Factor Model – Exchange Series that may lead to material differences in performance and correlation over time. Index returns are for illustrative purposes only and do not represent fund performance. Index returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest in an index. **Past performance does not guarantee future results.**

ProShares For financial professional use only. Not for public distribution. 21

slide 22

Merrill Lynch Factor Model Has Closely Tracked Exchange Series Since Inception

Daily Returns
February 2011–December 2013



Correlation as of December 2013	
MLFM to MLFM-ES	0.997

Source: Bloomberg, 2/28/2011–12/31/2013. Index returns are for illustrative purposes only and do not represent Fund performance. Index returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest in an index. **Past performance does not guarantee future results.**

ProShares For financial professional use only. Not for public distribution. 22

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 1 (continued)

slide 23

Key Notes: What HDG Is Not

- Does not invest in any hedge funds or funds-of-hedge-funds
  - HDG is not expected to provide materially higher or lower returns than the broad universe of hedge funds
- Not based on ML Factor Model; based on ML Exchange Series
  - Performance differences between MLFM-ES and HFRI are expected to be material at times
- May not produce the risk/return characteristics of a broad universe of hedge funds
  - No guarantee that it will successfully achieve its investment objective or that MLFM-ES will successfully provide the risk/return characteristics of a broad universe of hedge funds or achieve a high correlation with HFRI

ProShares For financial professional use only. Not for public distribution. 23

slide 24

Benefits and Challenges of Hedge Replication

	Benefits	Challenges
Possibility of generating outsized returns		✗
Ability to generate favorable risk-adjusted returns	✓	
Accessibility	✓	
Availability of funds	✓	
Transparency	✓	
Fee structure	✓	
Manager diversification	✓	
Regulatory oversight	✓	
Tax reporting	✓	

ProShares For financial professional use only. Not for public distribution. 24

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 1 (continued)

slide 25

Additional Information

ProShares Hedge Replication ETF	
Trading symbol:	HDG
Intra-Day Value Symbol (IIV Symbol):	HDG.IV
Exchange:	NYSE Arca
Website:	ProShares.com

Merrill Lynch Factor Model – Exchange Series	
Index Bloomberg symbol:	MLEIFCTX
Index website:	gmi.ml.com/factormodelxs/index.asp

ProShares For financial professional use only. Not for public distribution. 25

slide 26

Role Within a Portfolio

ProShares For financial professional use only. Not for public distribution. 26

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 1 (continued)

slide 27

To Get a Prospectus

Carefully consider the investment objectives, risks, and charges and expenses of ProShares before investing. This and other information can be found in their summary and full prospectuses. Read them carefully before investing. For a ProShares ETF prospectus, please visit ProShares.com.

ProShares Hedge Replication ETF (HDG) does not invest in any hedge funds or funds-of-hedge-funds. There is no guarantee that HDG will successfully achieve its investment objective or that the "Merrill Lynch Factor Model® – Exchange Series" (MLFM-ES) will successfully provide the risk/return characteristics of a broad universe of hedge funds or achieve a high correlation with the HFRI Fund Weighted Composite Index (HFRI). Performance differences between MLFM-ES and HFRI are expected to be material at times. Even if HDG achieves its benchmark tracking objective, MLFM-ES may not produce the risk/return characteristics of a broad universe of hedge funds, as measured by HFRI or any other hedge fund benchmark. Individual hedge funds or funds-of-hedge-funds have the potential to provide materially higher or lower returns than HDG, MLFM-ES or the average return of a broad universe of hedge funds.

ProShares are distributed by SEI Investments Distribution Co., which is not affiliated with the fund's advisor.

ProShares For financial professional use only. Not for public distribution. 27

slide 28

A Reminder About Risk

Investing involves risk, including the possible loss of principal. ProShares are non-diversified and entail certain risks, including risk associated with the use of derivatives (swap agreements, futures contracts and similar instruments), imperfect benchmark correlation, leverage and market price variance, all of which can increase volatility and decrease performance. Short positions lose value as security prices increase. Leverage can increase market exposure and magnify investment risk. Please see ProShares' summary and full prospectuses for a more complete description of risks. **There is no guarantee any ProShares ETF will achieve its investment objective.**

ProShares For financial professional use only. Not for public distribution. 28

slide 29

A Reminder About Risk (continued)

The closing levels of the individual benchmark components are calculated at various times during the trading day, while ProShares Hedge Replication ETF's NAV is calculated at the close of trading on NYSE Arca (generally 4:00 p.m.). As a result, the daily percentage change in the closing level of the benchmark may not match the daily percentage change in ProShares Hedge Replication ETF's NAV.

"Merrill Lynch Factor Model® – Exchange Series," "Merrill Lynch Factor Model,®" and "Merrill Lynch International™" are intellectual property of Merrill Lynch, Pierce, Fenner & Smith Incorporated™ or its affiliates ("BofAML") and have been licensed for use by ProShares. Certain trademarks and other marks are property of Standard & Poor's Financial Services LLC, MSCI, Inc., Russell Investments, or their respective affiliates (collectively, "the Index Entities") and have been licensed for use by BofAML. ProShares have not been passed on by BofAML or the Index Entities as to their legality or suitability. ProShares are not sponsored, endorsed, recommended, sold or promoted by BofAML or the Index Entities, and they make no representation regarding the advisability of investing in ProShares. **THE ML FACTOR MODEL AND THE MARKS ARE LICENSED ON AN "AS IS" BASIS. BOFAML AND THE INDEX ENTITIES MAKE NO WARRANTIES AND BEAR NO LIABILITY WITH RESPECT TO THE ML FACTOR MODEL OR MARKS, THEIR USE, OR PROSHARES.**

ProShares For financial professional use only. Not for public distribution. 29

Source: All slides in **Exhibit 1** are from ProShares and are used with permission. The video presentation is available at http://youtu.be/XEUa45fjOD4.

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 2

ProShares Hedge Replication ETF

Fact Sheet—ProShares Hedge Replication ETF (HDG), as of December 31, 2013

ProShares
The Alternative ETF Company.

HDG

FACT SHEET As of 12/31/13

PROSHARES HEDGE REPLICATION ETF

Fund objective

ProShares Hedge Replication ETF seeks investment results, before fees and expenses, that track the performance of the Merrill Lynch Factor Model® – Exchange Series (MLFM-ES).

Fund details

Inception Date	7/12/11
Trading Symbol	HDG
Intraday Symbol	HDG.IV
Bloomberg Index Symbol	MLEIFCTX
CUSIP	74347X294
Net Assets	$35.51 million
Gross Expense Ratio	1.63%
Net Expense Ratio[1]	0.95%

HDG
LISTED
NYSE ARCA

About the fund

ProShares Hedge Replication ETF (HDG) can be a valuable component of an alternative asset allocation.

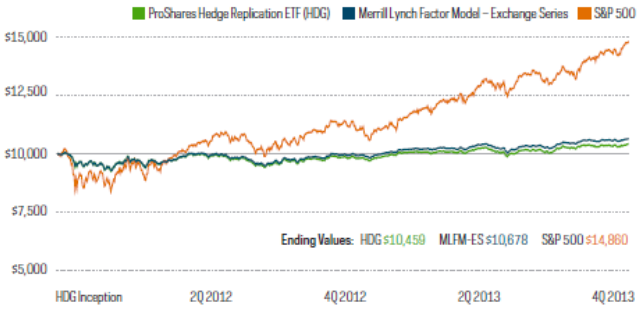
The fund:

- Is a flexible way to access the risk/return characteristics of hedge fund investing, without many of the challenges.
- Offers the potential for improved risk-adjusted returns.
- Can serve as an important complement to core portfolio holdings.
- Benefits from the expertise of Merrill Lynch, a pioneer in hedge fund replication, and ProShares, a premier provider of alternative ETFs.

Fund performance and benchmark history

	4Q 2013	Year to Date	1-Year	3-Year	5-Year	Since Inception[2]
ProShares Hedge Replication ETF NAV Total Return	1.97%	4.35%	4.35%	—	—	1.83%
ProShares Hedge Replication ETF Market Price Total Return	1.83%	4.48%	4.48%	—	—	1.77%
Merrill Lynch Factor Model – Exchange Series	2.05%	5.53%	5.53%	—	—	2.69%
S&P 500	10.51%	32.39%	32.39%	—	—	17.36%

Growth of $10,000 since Inception[3]



The performance quoted represents past performance and does not guarantee future results. Investment return and principal value of an investment will fluctuate so that an investor's shares, when sold or redeemed, may be worth more or less than the original cost. Current performance may be lower or higher than the performance quoted. Performance data current to the most recent month-end may be obtained by calling 866.776.5125 or visiting ProShares.com. Index performance does not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest directly in any index.

Carefully consider the investment objectives, risks, charges and expenses of ProShares before investing. This and other information can be found in their summary and full prospectuses. Read them carefully before investing. Obtain them from your financial advisor or broker/dealer representative or visit ProShares.com. ProShares are not suitable for all investors.

[1]Expenses with Contractual Waiver through September 30, 2014. [2]Since inception returns are annualized. Market returns are based on the composite closing price and do not represent the returns you would receive if you traded shares at other times. The first trading date is typically several days after the fund inception date. Therefore, NAV is used to calculate market returns prior to the first trade date. [3]NAV total returns for the fund are used to calculate Growth of $10,000. © 2013 PSA 2013-5870

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 2 (continued)

Benchmark description

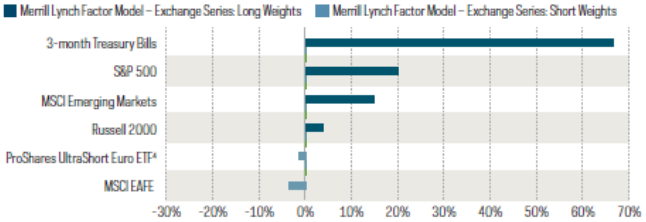
- The Merrill Lynch Factor Model – Exchange Series (the benchmark), established by Merrill Lynch International, seeks to provide the risk and return characteristics of the hedge fund asset class by targeting a high correlation to the HFRI Fund Weighted Composite Index (HFRI).
- In seeking to maintain a high correlation with the HFRI, the benchmark utilizes a systematic model to establish, each month, weighted long or short (or, in certain cases, long or flat) positions in six underlying factors.
- The benchmark is not composed of, and the fund does not invest in, any hedge fund or group of hedge funds.
- The closing levels of the individual benchmark components are calculated at various times during the trading day, while the fund's NAV is calculated at the close of trading on NYSE Arca (generally 4:00 p.m.). As a result, the daily percentage change in the closing level of the benchmark may not match the daily percentage change in the fund NAV.

For more information, visit ProShares.com or ask your financial advisor or broker.

How hedge fund replication works

Hedge Fund Index	Replication Model (Benchmark)
HFRI Fund Weighted Composite Index	Merrill Lynch Factor Model – Exchange Series
Inception: 1/90	Inception: 2/11
Broadest index of hedge fund performance: • Tracks performance of more than 2,000 hedge funds • Represents about $2 trillion in assets under management • Covers a variety of investment strategies	Seeks a high correlation to the HFRI, using these model factors, adjusted monthly: • S&P 500 • Russell 2000 • MSCI EAFE • MSCI Emerging Markets • ProShares UltraShort Euro ETF[4] • 3-month Treasury Bills

Model factors[5]



[4]ProShares UltraShort Euro ETF (EUO) is used as a proxy for the euro/U.S. dollar exchange rate. HDG will typically achieve this exposure through futures or forwards linked to the euro/U.S. dollar exchange rate and will not typically hold shares of EUO. [5]Index data is as of January 6, 2014.

Investing involves risk, including the possible loss of principal. ProShares are generally non-diversified and entail certain risks, including risk associated with the use of derivatives (swap agreements, futures contracts and similar instruments), imperfect benchmark correlation, leverage and market price variance. These risks may pose risks different from, or greater than, those associated with a direct investment in the securities underlying the funds' benchmarks, can increase volatility, and may dramatically decrease performance. Short positions lose value as security prices increase. Leverage can increase market exposure and magnify investment risk. Please see the summary and full prospectuses for a more complete description of risks. **There is no guarantee any ProShares ETF will achieve its investment objective.**

ProShares Hedge Replication ETF (HDG) does not invest in any hedge funds or funds-of-hedge-funds. There is no guarantee that HDG will successfully achieve its investment objective or that the "Merrill Lynch Factor Model® – Exchange Series" (MLFM-ES) will successfully provide the risk/return characteristics of a broad universe of hedge funds or achieve a high correlation with the HFRI Fund Weighted Composite Index (HFRI). Performance differences between MLFM-ES and HFRI are expected to be material at times. Even if HDG achieves its benchmark tracking objective, MLFM-ES may not produce the risk/return characteristics of a broad universe of hedge funds, as measured by HFRI or any other hedge fund benchmark. Individual hedge funds or funds-of-hedge-funds have the potential to provide materially higher or lower returns than HDG, MLFM-ES, or the average return of a broad universe of hedge funds. "Merrill Lynch Factor Model® – Exchange Series," "Merrill Lynch Factor Model®" and "Merrill Lynch International™" are intellectual property of Merrill Lynch, Pierce, Fenner & Smith Incorporated™ or its affiliates ("BofAML") and have been licensed for use by ProShares. Certain trademarks and other marks are property of Standard & Poor's Financial Services LLC, MSCI Inc., Russell Investments, or their respective affiliates (collectively, "the Index Entities") and have been licensed for use by BofAML. ProShares have not been passed on by BofAML or the Index Entities as to their legality or suitability. ProShares are not sponsored, endorsed, recommended, sold or promoted by BofAML or the Index Entities, and they make no representation regarding the advisability of investing in ProShares. **THE ML FACTOR MODEL AND THE MARKS ARE LICENSED ON AN "AS IS" BASIS. BOFAML AND THE INDEX ENTITIES MAKE NO WARRANTIES AND BEAR NO LIABILITY WITH RESPECT TO THE ML FACTOR MODEL OR MARKS, THEIR USE, OR PROSHARES.** ProShares are distributed by SEI Investments Distribution Co., which is not affiliated with the fund's advisor.

Source: ProShares; used with permission.

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 3

ProShares Hedge Replication ETF

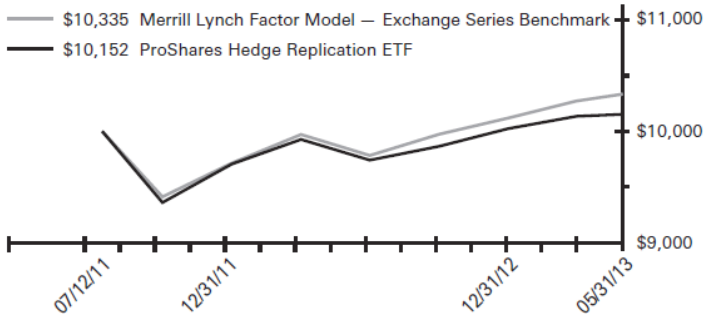
ProShares Annual Report (May 31, 2013)—HDG ETF

ProShares Hedge Replication ETF (the "Fund") seeks investment results, before fees and expenses, that track the performance of the Merrill Lynch Factor Model – Exchange Series (the "Benchmark"). For the year ended May 31, 2013, the Fund had a total return of 6.53%[1]. For the same period, the Benchmark had a total return of 7.80%[2] and a volatility of 3.88%. For the period, the Fund had an average daily volume of 7,461 and an average daily statistical correlation of over 0.99 to the daily performance of the Benchmark.[3]

The Fund takes positions in securities and/or derivatives that, in combination, should have similar return characteristics as the Benchmark. The Benchmark, established by Merrill Lynch International, seeks to provide the risk and return characteristics of the hedge fund asset class by targeting a high correlation to the HFRI Fund Weighted Composite Index (the "HFRI"). The HFRI is designed to reflect hedge fund industry performance through an equally weighted composite of over 2000 constituent funds. In seeking to maintain a high correlation with the HFRI, the Benchmark utilizes a synthetic model to establish, each month, weighted long or short (or, in certain cases, long or flat) positions in six underlying factors ("Factors"). The Factors that comprise the Benchmark are the (1) S&P 500 Total Return Index, (2) MSCI EAFE US Dollar Net Total Return Index, (3) MSCI Emerging Markets US Dollar Net Total Return Index, (4) Russell 2000 Total Return Index, (5) Three-month U.S. Treasury Bills, and (6) ProShares UltraShort Euro ETF.

During the year ended May 31, 2013, the Fund invested in swap agreements and futures contracts as a substitute for investing directly in or taking short positions in the Factors of the Benchmark. These derivatives generally tracked the performance of their underlying benchmark and were generally negatively impacted by financing costs associated with their use. The Fund entered into swap agreements with counterparties that the Fund's advisor determined to be large, well capitalized and well established financial institutions. If a counterparty becomes insolvent or otherwise fails to perform on its obligations, the value of investments in the Fund may decline. The Funds have sought to mitigate this risk by generally requiring counterparties for each Fund to post collateral for the benefit of each Fund, marked to market daily, in an amount approximately equal to the amount the counterparty owed the Fund, subject to certain minimum thresholds.

Value of a $10,000 Investment Since Inception at Net Asset Value*



*The line graph represents historical performance of a hypothetical investment of $10,000 in the ProShares Hedge Replication ETF from July 12, 2011 to May 31, 2013, assuming the reinvestment of distributions.

Cumulative Total Return as of 5/31/13

Fund	One Year	Since Inception (7/12/11)
ProShares Hedge Replication ETF	6.53%	0.79%
Merrill Lynch Factor Model — Exchange Series Benchmark	7.80%	1.76%

Expense Ratios**

Fund	Gross	Net
ProShares Hedge Replication ETF	1.96%	0.95%

**Reflects the expense ratio as reported in the Prospectus dated October 1, 2012. Contractual fee waivers are in effect through September 30, 2013.

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 3 (continued)

Allocation of Portfolio Holdings & Index Composition as of 5/31/13

Market Exposure

Investment Type	% of Net Assets
Equity Securities	11%
U.S. Treasury Bill	70%
Swap Agreements (Long)	23%
Short Euro Futures Contracts	(4%)

"Market Exposure" includes the value of total investments (including the contract value of any derivatives) and excludes any short-term investments and cash equivalents.

Largest Equity Holdings

Company	% of Net Assets
Novartis AG (ADR)	0.3%
Toyota Motor Corp. (ADR)	0.3%
Nomura Holdings, Inc. (ADR)	0.3%
BHP Billiton Ltd. (ADR)	0.2%
Siemens AG (ADR)	0.2%

Merrill Lynch Factor Model – Exchange Series – Composition

	% of Benchmark
On-The-Run T-Bill	64.1%
MSCI EAFE® US Dollar Net Total Return Index	12.9%
MSCI Emerging Markets Free US Dollar Net Total Return Index	10.6%
S&P 500® Total Return Index	7.8%
Russell 2000® Total Return Index	2.8%
ProShares UltraShort Euro ETF	1.8%

Past performance does not guarantee future results. Return calculations assume the reinvestment of distributions and do not reflect taxes that a shareholder would pay on Fund distributions or on the redemption of Fund shares. The performance data quoted represents past performance and current returns may be lower or higher. The investment return and net asset value ("NAV") will fluctuate so that an investor's shares, when redeemed, may be more or less than the original cost. The performance above reflects any fee reductions during the applicable periods. If such fee reductions had not occurred, the quoted performance would be lower. To obtain performance current to the most recent month please visit www.proshares.com.

1 Fund returns are based on the NAV of the Fund. This calculation reflects the theoretical reinvestment of distributions, if any, in the Fund as of the ex-date. The impact of transaction costs and the lack of ability to reinvest fractional shares are not reflected in the calculations.

2 The total return and any graph or table reflect the theoretical reinvestment of dividends on securities in the Benchmark. The impact of transaction costs and the deduction of expenses associated with an exchange-traded fund such as investment management and accounting fees are not reflected in the Benchmark calculation. It is not possible to invest directly in the Benchmark.

3 1.00 equals perfect correlation. Because the level of certain Factors of the Benchmark are not determined at the same time that the Fund's NAV is calculated, correlation to the Benchmark is measured by comparing a combination of the daily total return of: (a) the Factors that are determined at the same time that the Fund's NAV is determined; and (b) one or more U.S. exchange-traded securities or instruments that reflect the values of the Factors that are not determined at the same time that the Fund's NAV is determined (as of the Fund's NAV calculation time), to the daily total return of the NAV per share of the Fund.

The above information is not covered by the Report of the Independent Registered Public Accounting Firm.

Source: SEC EDGAR ProShares Trust Form N-CSR (Certified Shareholder Report).

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 4

ProShares Hedge Replication ETF

HDG ETF—Schedule of Portfolio Investments (May 31, 2013)

Shares		Value
	Common Stocks — 10.6%	
	Consumer Discretionary — 1.6%	
1,062	Carnival plc (ADR)	$ 36,065
1,943	Honda Motor Co., Ltd. (ADR)	72,998
2,827	InterContinental Hotels Group plc (ADR)	81,191
1,989	Luxottica Group S.p.A. (ADR)	102,692
9,837	Panasonic Corp. (ADR)	75,647
2,986	Pearson plc (ADR)	55,480
3,214	Reed Elsevier N.V. (ADR)	105,419
1,741	Reed Elsevier plc (ADR)	78,415
2,484	Sony Corp. (ADR)	50,053
1,183	Toyota Motor Corp. (ADR)	139,062
983	WPP plc (ADR)	83,624
		880,646
	Consumer Staples — 1.0%	
1,363	Anheuser-Busch InBev N.V. (ADR)	125,287
922	British American Tobacco plc (ADR)	101,208
979	Coca Cola Hellenic Bottling Co. S.A. (ADR)*	26,071
1,167	Delhaize Group S.A. (ADR)	74,140
927	Diageo plc (ADR)	109,627
2,145	Unilever plc (ADR)	90,111
		526,444
	Energy — 1.0%	
1,449	BP plc (ADR)	62,176
1,224	CGG (ADR)*	30,392
919	Eni S.p.A. (ADR)	41,640
1,269	Repsol YPF S.A. (ADR)	29,035
1,258	Royal Dutch Shell plc, Class A (ADR)	83,493
1,205	Royal Dutch Shell plc, Class B (ADR)	82,940
3,111	Statoil ASA (ADR)	70,060
1,153	Tenaris S.A. (ADR)	48,495
1,529	Total S.A. (ADR)	76,221
		524,452
	Financials — 1.7%	
3,913	Banco Bilbao Vizcaya Argentaria S.A. (ADR)	36,508
5,123	Banco Santander S.A. (ADR)	36,886
1,580	Barclays plc (ADR)	30,320
2,725	Credit Suisse Group AG (ADR)*	80,224
349	Governor & Co. of the Bank of Ireland (The) (ADR)*	3,316
2,182	HSBC Holdings plc (ADR)	119,705
5,694	ING Groep N.V. (ADR)*	52,954
4,778	Lloyds Banking Group plc (ADR)*	17,822
12,154	Mitsubishi UFJ Financial Group, Inc. (ADR)	72,195

Shares		Value
	Common Stocks (continued)	
20,396	Mizuho Financial Group, Inc. (ADR)	$ 79,340
236	National Bank of Greece S.A. (ADR)*	1,702
17,948	Nomura Holdings, Inc. (ADR)	138,918
2,087	Prudential plc (ADR)	70,561
1,606	Royal Bank of Scotland Group plc (ADR)*	16,429
11,163	Sumitomo Mitsui Financial Group, Inc. (ADR)	90,085
834	Westpac Banking Corp. (ADR)	112,106
		959,071
	Health Care — 1.6%	
1,863	AstraZeneca plc (ADR)	95,479
2	Biolase, Inc.*	10
1,775	Elan Corp. plc (ADR)*	22,472
2,260	Fresenius Medical Care AG & Co. KGaA (ADR)	76,365
1,982	GlaxoSmithKline plc (ADR)	102,608
2,433	Novartis AG (ADR)	174,592
753	Novo Nordisk A/S (ADR)	121,308
2,276	Sanofi (ADR)	120,833
654	Shire plc (ADR)	64,399
1,483	Smith & Nephew plc (ADR)	86,518
738	Teva Pharmaceutical Industries Ltd. (ADR)	28,192
		892,776
	Industrials — 1.1%	
4,620	ABB Ltd. (ADR)*	100,670
2,516	Koninklijke Philips Electronics N.V.	71,127
1,659	Kubota Corp. (ADR)	124,242
201	Mitsui & Co., Ltd. (ADR)	51,357
2,689	Nidec Corp. (ADR)	45,928
1,859	Ryanair Holdings plc (ADR)	90,794
1,236	Siemens AG (ADR)	129,904
		614,022
	Information Technology — 0.7%	
2,556	Advantest Corp. (ADR)	38,902
5,101	Alcatel-Lucent (ADR)*	8,570
802	ARM Holdings plc (ADR)	35,192
878	Canon, Inc. (ADR)	30,098
1,079	Hitachi Ltd. (ADR)	73,642
1,328	NICE Systems Ltd. (ADR)	49,003
2,741	Nokia Oyj (ADR)*	9,429
1,234	SAP AG (ADR)	90,625
3,105	Telefonaktiebolaget LM Ericsson (ADR)	36,235
		371,696

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 4 (continued)

10 :: Schedule of Portfolio Investments :: May 31, 2013 Hedge Replication ETF (HDG)

Shares		Value
	Common Stocks — 10.6%	
	Consumer Discretionary — 1.6%	
1,062	Carnival plc (ADR)	$ 36,065
1,943	Honda Motor Co., Ltd. (ADR)	72,998
2,827	InterContinental Hotels Group plc (ADR)	81,191
1,989	Luxottica Group S.p.A. (ADR)	102,692
9,837	Panasonic Corp. (ADR)	75,647
2,986	Pearson plc (ADR)	55,480
3,214	Reed Elsevier N.V. (ADR)	105,419
1,741	Reed Elsevier plc (ADR)	78,415
2,484	Sony Corp. (ADR)	50,053
1,183	Toyota Motor Corp. (ADR)	139,062
983	WPP plc (ADR)	83,624
		880,646
	Consumer Staples — 1.0%	
1,363	Anheuser-Busch InBev N.V. (ADR)	125,287
922	British American Tobacco plc (ADR)	101,208
979	Coca Cola Hellenic Bottling Co. S.A. (ADR)*	26,071
1,167	Delhaize Group S.A. (ADR)	74,140
927	Diageo plc (ADR)	109,627
2,145	Unilever plc (ADR)	90,111
		526,444
	Energy — 1.0%	
1,449	BP plc (ADR)	62,176
1,224	CGG (ADR)*	30,392
919	Eni S.p.A. (ADR)	41,640
1,269	Repsol YPF S.A. (ADR)	29,035
1,258	Royal Dutch Shell plc, Class A (ADR)	83,493
1,205	Royal Dutch Shell plc, Class B (ADR)	82,940
3,111	Statoil ASA (ADR)	70,060
1,153	Tenaris S.A. (ADR)	48,495
1,529	Total S.A. (ADR)	76,221
		524,452
	Financials — 1.7%	
3,913	Banco Bilbao Vizcaya Argentaria S.A. (ADR)	36,508
5,123	Banco Santander S.A. (ADR)	36,886
1,580	Barclays plc (ADR)	30,320
2,725	Credit Suisse Group AG (ADR)*	80,224
349	Governor & Co. of the Bank of Ireland (The) (ADR)*	3,316
2,182	HSBC Holdings plc (ADR)	119,705
5,694	ING Groep N.V. (ADR)*	52,954
4,778	Lloyds Banking Group plc (ADR)*	17,822
12,154	Mitsubishi UFJ Financial Group, Inc. (ADR)	72,195

Shares		Value
	Common Stocks (continued)	
20,396	Mizuho Financial Group, Inc. (ADR)	$ 79,340
236	National Bank of Greece S.A. (ADR)*	1,702
17,948	Nomura Holdings, Inc. (ADR)	138,918
2,087	Prudential plc (ADR)	70,561
1,606	Royal Bank of Scotland Group plc (ADR)*	16,429
11,163	Sumitomo Mitsui Financial Group, Inc. (ADR)	90,085
834	Westpac Banking Corp. (ADR)	112,106
		959,071
	Health Care — 1.6%	
1,863	AstraZeneca plc (ADR)	95,479
2	Biolase, Inc.*	10
1,775	Elan Corp. plc (ADR)*	22,472
2,260	Fresenius Medical Care AG & Co. KGaA (ADR)	76,365
1,982	GlaxoSmithKline plc (ADR)	102,608
2,433	Novartis AG (ADR)	174,592
753	Novo Nordisk A/S (ADR)	121,308
2,276	Sanofi (ADR)	120,833
654	Shire plc (ADR)	64,399
1,483	Smith & Nephew plc (ADR)	86,518
738	Teva Pharmaceutical Industries Ltd. (ADR)	28,192
		892,776
	Industrials — 1.1%	
4,620	ABB Ltd. (ADR)*	100,670
2,516	Koninklijke Philips Electronics N.V.	71,127
1,659	Kubota Corp. (ADR)	124,242
201	Mitsui & Co., Ltd. (ADR)	51,357
2,689	Nidec Corp. (ADR)	45,928
1,859	Ryanair Holdings plc (ADR)	90,794
1,236	Siemens AG (ADR)	129,904
		614,022
	Information Technology — 0.7%	
2,556	Advantest Corp. (ADR)	38,902
5,101	Alcatel-Lucent (ADR)*	8,570
802	ARM Holdings plc (ADR)	35,192
878	Canon, Inc. (ADR)	30,098
1,079	Hitachi Ltd. (ADR)	73,642
1,328	NICE Systems Ltd. (ADR)	49,003
2,741	Nokia Oyj (ADR)*	9,429
1,234	SAP AG (ADR)	90,625
3,105	Telefonaktiebolaget LM Ericsson (ADR)	36,235
		371,696

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 4 (continued)

HDG Hedge Replication ETF

May 31, 2013 :: Schedule of Portfolio Investments :: 11

Shares		Value
	Common Stocks (continued)	
	Materials — 0.9%	
7,595	Alumina Ltd. (ADR)*	$ 29,393
2,042	BHP Billiton Ltd. (ADR)	133,382
2,147	CRH plc (ADR)	44,958
1,491	James Hardie Industries plc (ADR)	68,810
148	Randgold Resources Ltd. (ADR)	11,600
720	Rio Tinto plc (ADR)	30,758
3,772	Sims Metal Management Ltd. (ADR)	34,514
1,469	Syngenta AG (ADR)	114,347
		467,762
	Telecommunication Services — 0.8%	
1,335	BT Group plc (ADR)	60,956
5,796	France Telecom S.A. (ADR)	58,540
4,639	Nippon Telegraph & Telephone Corp. (ADR)	114,862
5,477	NTT DoCoMo, Inc. (ADR)	80,402
1,945	Partner Communications Co., Ltd. (ADR)	11,806
5,070	Portugal Telecom, SGPS, S.A. (ADR)	21,345
2,270	Telecom Italia S.p.A. (ADR)	17,502
3,753	Telefonica S.A. (ADR)*	51,228
1,536	Vodafone Group plc (ADR)	44,467
		461,108
	Utilities — 0.2%	
1,441	National Grid plc (ADR)	85,826
1,026	Veolia Environnement S.A. (ADR)	12,620
		98,446
	Total Common Stocks (Cost $5,063,694)	5,796,423

Principal Amount		Value
	U.S. Government & Agency Securities — 74.9%	
$ 2,508,895	Federal Home Loan Bank 0.00%, due 06/03/13	$ 2,508,895
38,500,000	U.S. Treasury Bill 0.00%, due 08/01/13	38,498,306
	Total U.S. Government & Agency Securities (Cost $41,005,750)	41,007,201
	Repurchase Agreements (a) — 11.1%	
6,093,293	Repurchase Agreements with various counterparties, rates 0.02% - 0.08%, dated 05/31/13, due 06/03/13, total to be received $6,093,320	6,093,293
	Total Repurchase Agreements (Cost $6,093,293)	6,093,293
	Total Investment Securities (Cost $52,162,737) — 96.6%	52,896,917
	Other assets less liabilities — 3.4%	1,843,120
	Net Assets — 100.0%	$ 54,740,037

* Non-income producing security.

(a) The Fund invests in Repurchase Agreements jointly with other funds in the Trust. See "Repurchase Agreements" under Note 2 in the Notes to Financial Statements to view the details of each individual agreement and counterparty as well as a description of the securities subjected to repurchase.

ADR American Depositary Receipt

As of May 31, 2013, the gross unrealized appreciation (depreciation) of investments based on the aggregate cost of investments for federal income tax purposes was as follows:

Aggregate gross unrealized appreciation	$ 840,723
Aggregate gross unrealized depreciation	(134,418)
Net unrealized appreciation	$ 706,305
Federal income tax cost of investments	$ 52,190,612

Futures Contracts Sold

Hedge Replication ETF had the following open short futures contracts as of May 31, 2013:

	Number of Contracts	Expiration Date	Notional Amount at Value	Unrealized Depreciation
E-Mini Euro Futures Contracts	25	06/17/13	$ 2,031,406	$ (2,653)

Cash collateral in the amount of $31,716 was pledged to cover margin requirements for open futures contracts as of May 31, 2013.

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 4 (continued)

12 :: Schedule of Portfolio Investments :: May 31, 2013 Hedge Replication ETF (HDG)

Swap Agreements

Hedge Replication ETF had the following open swap agreements as of May 31, 2013:

	Notional Amount at Value	Unrealized Appreciation/ (Depreciation)
Equity Index Swap Agreement with Credit Suisse International, based on the Russell 2000® Total Return Index	$ 1,617,581	$ 74,401
Equity Index Swap Agreement with Credit Suisse International, based on the S&P 500® Total Return Index	4,392,919	359,278
Swap Agreement with Credit Suisse International, based on the iShares® MSCI EAFE Index Fund	1,093,927	(21,124)
Swap Agreement with Credit Suisse International, based on the iShares® MSCI Emerging Markets Index Fund	5,570,464	(398,687)
		$ 13,868

Source: SEC EDGAR ProShares Trust Form N-CSR (Certified Shareholder Report).

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 5

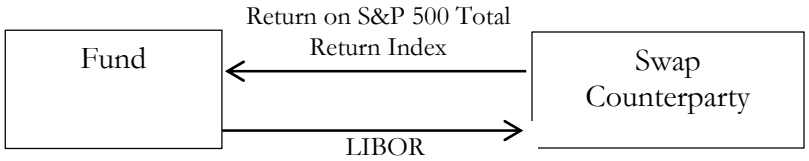
ProShares Hedge Replication ETF

Primer on Equity Index Swaps

This short note reviews how a fund can use over-the-counter equity index swaps to gain a synthetic exposure to an underlying index without requiring direct ownership. An equity index swap is a derivative contract that conveniently packages a series of futures/forward contracts on an index, allowing a fund manager to increase or reduce its index exposure without buying and selling the underlying securities. The table below summarizes the main differences between index futures and swaps.

	Index Futures	**Index Swaps**
Contract	Standardized contract between two parties that agree to buy (or sell) an underlying index at a future date for a given price	Swaps are customized agreements between two counterparties to exchange two sets of cash flows over a specified time period. In an equity index swap, one party agrees to receive/pay cash equal to the total return on an index as calculated at market close. In exchange, the counterparty often receives a floating interest rate.
Long position	The buyer or holder of the contract	The party that receives the total return of the underlying index
Short position	The contract seller	The party that pays the index return
Trading	Exchange-traded: the exchange's clearinghouse acts as the counterparty on all contracts and provides the mechanism for contract settlement.	Over-the-counter: cash flows are calculated relative to a particular "notional amount" that is usually not exchanged between the two parties. Using swaps imposes risk that a counterparty may default on a payment date.

An example of an equity-for-floating index swap is depicted in the diagram below. The equity swap is a bilateral financial contract in which one party pays the return on a specified stock index (e.g., six-month S&P500 index) applied to a given principal amount, and the other party pays a given interest rate (e.g., six-month LIBOR) applied to the same principal amount. The principal itself is not exchanged and, therefore, the term "notional" is typically used.



For an equity-for-floating swap, the value of the contract at the start of its life is zero. The swap counterparty can replicate without cost the cash flows by borrowing the principal on each payment date at LIBOR (i.e., issue a floating rate note) and invest it in the index until the next payment date. A similar argument shows that the swap is always worth zero at all payment dates.

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.

Exhibit 5 (continued)

The equity return is not known ahead of time, and the net payment is known only at the end of each payment period. At each payment date, the fund will have to pay the difference between LIBOR and the total return on the S&P 500 (including dividends) which equals $Notional × [Return(S&P 500) − LIBOR]. If the S&P 500 index return is below the LIBOR, then the fund makes a net payment. If the S&P 500 index return is higher than LIBOR, then the fund receives a net payment from the swap counterparty.

There are many variations on the basic equity-for-floating swap: the swap of equity returns for a fixed interest rate (rather than the LIBOR floating rate), the swap of one equity return index for another, swaps involving foreign equity indices, the principal may vary over time (the principal could be periodically reset to reflect realized equity returns), and so forth.

Source: Created by case writer.

This document is authorized for use only by Charles Benello (cmbenello@gmail.com). Copying or posting is an infringement of copyright. Please contact customerservice@harvardbusiness.org or 800-988-0886 for additional copies.