

**George White Design**

# Corporate Collateral



Investment Management

# The evolution of quantitative management



Evolution of Quantitative Management Brochure



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## Executive summary

Traditional active equity managers tend to fall into one of two camps: quantitative managers who use objective mathematical algorithms to rigorously perform a systematic assessment of fundamental and valuation factors for a large number of companies, or qualitative fundamental managers who take a human approach, seeking to gain an understanding of a company and its prospects through in-depth and sometimes more subjective research. While both seek to outperform a market index, the two approaches differ considerably. At Charles Schwab Investment Management, we believe there is merit in each approach, and we have refined our active equity investment approach in an attempt to combine the best of both.

In this paper, we discuss the evolution, strengths, and weaknesses of quantitative investing, as well as the benefits of combining a quantitative perspective and a human active equity investment approach that seeks to take advantage of the best of both approaches. Advantages of an integrated approach that combines both quantitative and qualitative strategies are:

- Breadth as well as specific analysis
- A consistent, systematic process
- An emphasis on risk management
- Systematic portfolio construction

### The roots of quantitative management

Quantitative strategies are driven by mathematical and statistical models using quantifiable data aimed at identifying common factors in returns, and are thus designed to remove emotional input from the process.

Quantitative investment strategies are based on the premise that historical relationships among investment factors persist over time. The strategies are driven by mathematical and statistical models using quantifiable data aimed at identifying common factors in returns, and are thus designed to remove emotional input from the process. Advantages of quantitative strategies include objectivity and reproducibility of the decision-making process, ability to cover a wider investment universe, protection from behavioral errors, and optimization of risk and returns.

Financial market historians attribute the beginning of quantitative strategies to Harry Markowitz's seminal work on portfolio theory in 1952. Following William Sharpe's 1963 winning of the Nobel Prize, effectively calculable alpha and beta, quantitative analysis began changing investor consensus among behavioral finance academics who, during the 1970s and 1980s, produced thousands of papers that presented the results of research in which anomalies were proposed and tested. Quantitative equity management grew out of the work of these researchers, bringing together quantitative and academics in search of factors and characteristics that would signal when a stock had the potential to beat the market on a risk-adjusted basis.

As they grew over more sophisticated, quantitative systems evolved that began using algorithms to sophisticated "black box" algorithm-based programs that could rapidly sift through billions of data points, follow a complex series of rules, and identify securities whose price anomalies among securities either without human intervention.

The quantitative strategies generally succeeded. In the early 2000s, having survived the dot-com bubble essentially unscathed, quantitative strategies gained widespread legitimacy. Strategies employing leverage were particularly successful. A 2005 study by Gary Gorton & Alexander Ljungqvist found that quantitative-driven processes offered better risk-adjusted performance than fundamental managers'. Indeed, the strategies were so successful that fundamental managers began to emulate them, because quantitative managers had performed so well, their strategies were believed to be nearly foolproof.

The setback

Quantitative management exhibited a striking net underperformance during the first half of that year, events in the subprime mortgage markets in the U.S. set the stage for the coming turmoil. As housing continued to weaken from its peak in 2006, some types of subprime loans began to default. In February 2007, Freddie Mac announced it would no longer buy the most risky subprime loans. In April of that year, the first large subprime lender filed for bankruptcy. In July 2007, Bear Stearns liquidated two of its mortgage-backed security hedge funds. The result was a credit crunch of mammoth proportions, leading quantitative managers—as well as the fundamental managers who had embraced quantitative strategies—to reduce their leverage and seek liquidity.

By that same time, many major strategy hedge funds running quantitative equity strategies were overvalued in highly leveraged credit environments as well as less liquid and more volatile equity markets. The success of quantitative strategies to the point had led to high correlations among quantitative and fundamental managers, who had been using the same screens, changing the same securities, and increasingly identifying the same companies. When the value of most investment securities began to fall, the funds were forced to raise cash to cover margin calls, but because the rapidly changing market values of those liquid securities

### Benefits of an integrated approach

Quantitative	Qualitative
<b>Breadth:</b> The ability to cover a large volume of stocks	<b>Specific company analysis:</b> The ability to analyze a company's financial statements, news, and corporate actions
<b>Timeliness:</b> Analysis can be performed quickly	<b>Forward-looking:</b> Adaptive and anticipatory of changes in the marketplace
<b>Unbiased:</b> Portfolio managers are not emotionally tied to stocks	<b>Inspection points:</b> Better able to deal with market upturns and downturns

A keen eye toward portfolio construction and how securities work together

### The philosophy behind our active equity strategies

Effective equity work will at different times and with different market conditions. For that reason, it is useful for managers to have discretion over purely statistical inputs. We believe that inefficiencies exist in the equity markets and that a disciplined investment process can exploit those inefficiencies. As such, we view active equity analysis as a dynamic process that demands both quantitative and qualitative analysis. Models have inflection points and blind spots. By melding a quantitative model with macroeconomic and qualitative insights, we strive to ensure that we are not missing anything. In taking both an approach, we affirm the value of quantitative analysis and, instead, the foundation of behavioral science, but recognize that the dynamic nature of the market makes human intervention useful. And with cycles growing shorter and vast amounts of data more readily available, continuing more forward-looking fundamentalism with the strengths of quantitative analysis—taking the best of both approaches—could best serve investors over a long time.

Our investment ideas for our active equity portfolios come from a combination of proprietary, academic, and self-made research. By applying an integrated

But the real benefit to investors of our integrated approach is that we are continuously monitoring and evaluating what is working and feeding those learnings back into our investment process.

Every day, we look at our portfolio with fresh eyes. That means we are open to reconsidering previously accepted companies in light of new findings or changing market conditions, and we critically evaluate current holdings to make sure that what initially attracted us still resonates. We also conduct extensive and detailed post-trade analysis, from which findings are applied to modify or adjust portfolio construction and future trading, along with thorough and regular attribution analysis. In so doing, our objective is to evaluate our portfolio management and research team's investment thesis and assess drivers of performance. The knowledge gained from incorporating our findings back into the investment process, combined with our flexibility, allows us to shift weights among regions, styles or other attributes, as well as to add, delete, and reoptimize signals when we determine that such signals will enhance performance potential.

We also understand that the backtesting inherent in quantitative analysis may be limiting at times because the unique environments that can skew the analysis are often few and far between. By layering qualitative insights into our quantitative analysis, we can create a more efficient portfolio that has the potential to perform over multiple market cycles with better risk-adjusted returns. Our goal for our portfolio is to be rewarded for taking intentional risks and to avoid unintentional ones.

But the real benefit of our integrated approach is that we are continuously monitoring and evaluating what concepts are working and feeding those learnings back into our investment process in an effort to continuously improve our evaluation process and optimize our portfolio. We believe that the ability to apply those lessons to evolve our investment thinking

With markets dynamically changing, assumptions need to be tested—not just once, but continuously.

### The evolution of quantitative management

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Investment Management

# Revisiting the role of long/short equity in a portfolio



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## Executive summary

Long/short equity, the most common form of liquid alternative strategy, allows for flexibility as to how much market exposure or "beta" a manager chooses to take on in various market environments. Long/short equity has much to offer investor portfolios, including the potential for improving the overall risk-return profile while dampening portfolio volatility. But as the range of long/short equity offerings expands, investors and other investment solution providers may find that they need a clearer process for evaluating wide-ranging options. Here, we offer a review of the conceptual benefits of long/short equity in the context of a portfolio, and include a checklist for assessing and comparing different strategies.

## Key takeaways

- How long/short equity can potentially buffer downside exposure while exceeding the efficient frontier in portfolios
- Why a risk-adjusted return measure is the most appropriate metric
- Why to evaluate "upside-to-strange" options within the risk-return strategies
- Why long/short equity could be particularly attractive today

## Introduction

While many advisors and investors are familiar with the broad strokes of long/short equity strategies, they may have misconceptions or outdated assumptions about how such strategies actually work. After all, the early iterations by hedge funds often looked quite different than the regulated versions now available in mutual funds and other vehicles.

Thanks to its lower correlation to the broader equity market and ability to short stocks, long/short equity is designed to perform most favorably during periods of rising volatility or in declining markets – both backdrops that could emerge as policymakers reduce the extreme liquidity of the post-financial crisis environment. Therefore, we encourage advisors and other investment solution providers to use this primer as a review of long/short equity strategies, and as a guide for how to evaluate the ever-larger list of strategies competing for market share.

## How long/short equity can serve investor goals

In the context of overall portfolio construction, long/short equity strategies offer a number of attributes that may help investors reach portfolio goals.

## Attractive risk-adjusted returns


One of the most important metrics of historical performance for any strategy is risk-adjusted returns. Though long/short equity approaches and characteristics can vary widely across competing products, return per unit of risk offers a uniform way to compare historical performance, and is often evaluated using something known as "Sharpe ratio". Whatever the approach to long/short equity, the investor should establish that any long-term returns are commensurate with the level of risk introduced by the strategy.

## What is long/short equity

Long/short equity is an investing strategy of taking long positions in stocks that are expected to appreciate and short positions in stocks that are expected to decline, minimizing market exposure. Although this may not always be the case, the strategy would be profitable as a net trade as long as the long positions average more profit than the short positions, or the other way around. The long/short equity strategy is popular with hedge funds, many of which employ a market-neutral strategy where the dollar amounts of the long and short positions are approximately equal.

### Charles Schwab Investment Management

With a strong track record of innovative solutions and solutions for building the foundation of a portfolio, Charles Schwab Investment Management advocates for investors of all sizes with a diversified focus on lowering costs and reducing unnecessary complexity.



Investment Management

Hedged Equity Brochure

GEORGE WHITE DESIGN

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Corporate Collateral

Schwab Fundamental Global Real Estate Index Fund (SFREX)

Real estate is a growing segment of the global economy and is increasingly becoming an important part of investors' overall investment strategy.

- Key Takeaways
- Achieved 3 year milestone—October 22, 2017
  - Schwab Fundamental Index\* strategies weight each company using objective financial data—Not by market capitalization
  - Access to global real estate—Provides exposure to the real estate segment of the global equity market by selecting and weighting securities by fundamental measures of company size as opposed to market capitalization.
  - Opportunity to diversify—The Fund tracks an index which holds approximately 300 securities in 20 countries, including emerging markets
  - Strong performance—SFREX (the Fund) outperformed against the capitalization-weighted FTSE EPRA/NAREIT Global Index over three year period

Key point 1— SFREX outperformed against the cap-weighted index

Performance of the Fund compared to FTSE EPRA/NAREIT Global Index

Index Name	Symbol	Inception Date	Fund Net Assets \$ Millions (As of 12/31/18)	Cumulative				Annualized								Total Expense Ratio
				Total Returns for Periods Ended 12/31/18				Average Annual Total Returns For Periods Ended 12/31/18 (As of Month End)				Average Annual Total Returns For Periods Ended 12/31/18 (As of Calendar Quarter End)				
				1 Month	3 Months	YTD	1 Year	3 Years	5 Years	Since Inception	1 Year	3 Years	5 Years	Since Inception		
Schwab Fundamental Global Real Estate Index Fund	SFREX	10/22/14	166.6	-5.67%	-6.43%	-8.23%	-8.23%	5.88%	—	4.97%	-8.23%	5.88%	—	4.97%	0.39%	
Russell RAFI® Global Select Real Estate Index (Net)				-5.65%	-6.51%	-8.62%	-8.62%	5.54%	—	4.72%	-8.62%	5.54%	—	4.72%		
Russell RAFI® Global Select Real Estate Fair Value Index (Net)				-5.78%	-6.47%	-8.59%	-8.59%	5.64%	—	4.63%	-8.59%	5.64%	—	4.63%		
FTSE EPRA/NAREIT Global Index (Net)				-5.04%	-5.01%	-6.37%	-6.37%	3.46%	—	3.21%	-6.37%	3.46%	—	3.21%		

Performance data quoted represents past performance and is no guarantee of future results. Investment returns and principal value will fluctuate so that an investor's shares, when sold or redeemed, may be worth more or less than their original cost. Current performance may be lower or higher than performance data quoted. To obtain performance information current to the most recent month end, please visit [www.schwabfunds.com](http://www.schwabfunds.com). Index performance returns do not reflect any management fees, transaction costs or expenses, which would lower performance. They assume dividends and distributions were reinvested. Indices are unmanaged and cannot be invested in directly. The first index listed is the fund's primary benchmark, as shown in the prospectus. Additional indices shown are provided for comparative purposes.

Key point 2

The Russell RAFI® Global Select Real Estate Index selects and weights securities based on fundamental measures of company size: adjusted sales, retained operating cash flow and dividends plus buybacks. FTSE EPRA/NAREIT Global Index weights securities by market capitalization. While there was overlap in four of the top ten securities as of December 31, 2018, the methodologies behind the indexes can lead to different holdings and weights.

Fund performance does not reflect the deduction of taxes that a shareholder would pay on fund distributions or the redemption of fund shares. \*Schwab is a registered trademark of Charles Schwab & Co., Inc. Fundamental Index is a registered trademark of Research Affiliates LLC. †As stated in the prospectus. These figures may differ from those presented in a fund's shareholder report.

Sales Sheet

Securities Lending in CSIM Products: An Overview

At Charles Schwab Investment Management (CSIM), we believe that shareholders should benefit from the revenue earned from a fund lending its underlying securities. For this reason, 100% of securities lending revenues, net of total costs and expenses, are returned to the participating funds.

CSIM's approach to securities lending

- CSIM does not retain any of the revenue earned. 100% of net lending revenue is reinvested directly back into the funds.
- CSIM works with third-party lending agents to analyze and monitor which securities can be lent at any given point in time.
- CSIM's program focuses on lending "hard-to-borrow" securities that are in high demand, "specials-only".
- CSIM currently does not lend the Schwab ETFs™ held by our fund of funds products.
- CSIM minimizes risk by investing cash collateral in unaffiliated money market portfolios operating under Rule 2a-7 of the 1940 Act.<sup>1</sup>

CSIM does not retain any securities lending revenue

	CSIM Approach		
	Approach #1	Approach #2	Approach #3
Fund Lends Securities (Gross revenues)	✓	✓	✓
(—) Third-party Securities Lending Agent Fees	✓	✓	
Revenue Kept by Fund Manager and/or Affiliates			
Fee paid to affiliated lending agent			✓
Manager earns fees in affiliated cash collateral fund		✓	✓
= Net Revenue <sup>2</sup> Returned to the Fund	✓	✓	✓

<sup>1</sup> Rule 2a-7 of the Investment Company Act of 1940 (1940 Act), as amended (Investment Company Act). The unaffiliated money market funds have operating expenses.  
<sup>2</sup> Securities lending net revenue is the income earned from the investment of cash collateral plus any fees paid by borrowers less the fees paid to the lending agent and broker rebates which are subject to adjustments pursuant to the securities lending agreement.

White Paper

Money Market Fund Reform: What you should know

Driven by events that occurred during the 2008 financial crisis, the Securities and Exchange Commission (SEC) implemented a series of changes to the regulations that govern money market funds. These rules were intended to increase fund liquidity and to protect investors.

Impact of the rules

Money Market Fund (MMF) Eligibility:

Investor Type vs. MMF Type

- The amendments introduced a distinction between Retail and Institutional Investors as well as Retail and Institutional MMFs.
- Generally, Retail Investors are: individual investors, end clients of registered investment advisers and participants in most 401K plans. Examples of Institutional Investors include corporations, defined benefit plans, and other entities.
- Retail Investors can invest in Retail MMFs, which are defined as funds with policies and procedures that limit beneficial ownership to those investors deemed as "natural persons."
- Institutional Investors are eligible to invest in Institutional MMFs with a variable net asset value (VNAV). Retail Investors may also choose to invest in these funds.
- Both Retail and Institutional Investors are eligible to invest in Government MMFs.

	Government Money Market Funds	Prime Money Market Funds	Municipal Money Market Funds		
	GOVERNMENT AND TREASURY MONEY MARKET FUNDS	RETAIL MONEY MARKET FUNDS	INSTITUTIONAL MONEY MARKET FUNDS	RETAIL MONEY MARKET FUNDS	INSTITUTIONAL MONEY MARKET FUNDS
Retail Investors	Eligible	Eligible	Eligible	Eligible	Eligible
Institutional Investors	Eligible	Not Eligible	Eligible	Not Eligible	Eligible

White Paper

ETF Education Collateral

Exchange-Traded Fund (ETF) Tax Efficiency

ETF Education Series

Own your tomorrow.

Corporate Collateral

Mutual Fund OneSource Select List® & Income Select List

Analysis and commentary on actively managed mutual funds by Charles Schwab Investment Advisory, Inc.

FIRST QUARTER 2017

Also available at schwab.com/selectlist

Why Buy a Mutual Fund?

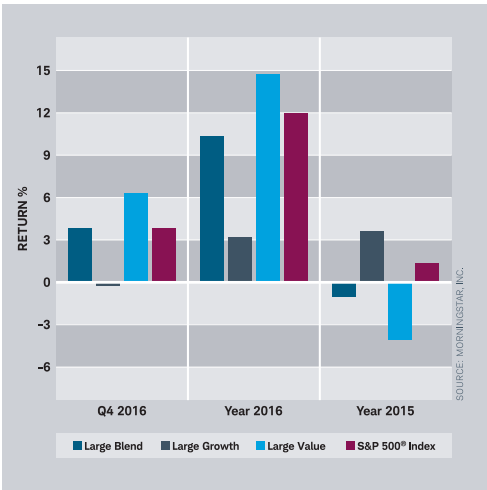
- Key points:
  - Investors have a number of choices when it comes to investment vehicles, but mutual funds typically offer many advantages, including built-in diversification, economies of scale, low minimums and liquidity.
  - Some mutual funds provide access to areas of the market otherwise difficult for individual investors to reach.
  - Investors can choose between passively managed index funds or actively managed funds that strive to outperform indexes
  - The ease and convenience of mutual funds can help investors avoid the risk that comes with inertia, getting and keeping them invested with a long-term focus.

Since their emergence nearly a century ago, mutual funds have proven to be a popular investment vehicle. Their simplicity along with other recognized attributes provide a host of benefits to a wide range of investors, from the uninitiated to the sophisticated. Even given the wide range of alternatives available to investors—from individual stocks and bonds to exchange traded funds—mutual funds have retained wide appeal, with over 55 million households owning funds (June 2016). Although some of the advantages

(continued on page 2)



LARGE-CAP U.S. STOCK FUNDS



PERSPECTIVES AND FOURTH QUARTER 2016 SUMMARY

We remain optimistic of an ongoing secular bull market in U.S. stocks; and we believe the risk of it ending swiftly is low. Earnings and economic momentum are picking up, while business, consumer and investor confidence are rising in the wake of the Presidential election. As such, we recently upgraded our view of U.S. stocks to outperform—offsetting a move to underperform for developed international stocks. However, the sharp gains seen in late-2016 may give way to more sideways movement and/or potential pullbacks. Not overreacting to short-term pullbacks is critical to long-term investing success.

- In 2016, US markets significantly outpaced Non-US developed markets. The S&P 500 Index returned 11.96% whereas the MSCI EAFE Index returned 1.00%.
- Value equities led the way with large-cap value funds returning 14.73%, large-cap blend funds returning 10.36% and large-cap growth funds returning 3.19%.
- Reversing course from a strong third quarter, large-cap growth funds were the poorest performing group in the fourth quarter with a return of -0.28%. Large-cap value funds outpaced blend and growth funds with a return of 6.31%.

All perspectives are as of January 13, 2017. For the latest up-to-date perspectives, please visit schwab.com

FOR THE QUARTER ENDED DECEMBER 31, 2016														
FUND NAME (FUND INCEPTION DATE)		MORNINGSTAR CATEGORY	QUOTE SYMBOL	AVERAGE ANNUALIZED TOTAL RETURN					UPSIDE MARKET CAPTURE	DOWNSIDE MARKET CAPTURE	GROSS EXPENSE RATIO*	NET EXPENSE RATIO*	TOTAL ASSETS (\$M)	
LEADING SCHWAB AFFILIATE FUNDS*				1 YEAR	3 YEARS	5 YEARS	10 YEARS	SINCE INCEPTION						
Laudus U.S. Large-Cap Growth Fund (10/14/97)		Large Growth	LGILX	0.77	5.20	13.63	9.22	6.29	91.75	118.45	0.75	0.75	1,721	
FUNDAMENTAL INDEX FUNDS														
Schwab Fundamental U.S. Large Company Index Fund (4/2/07)		Large Value	SFLNX	16.31	8.21	14.62	—	7.60	97.30	101.09	0.39	0.35	5,007	
MARKET CAP-WEIGHTED INDEX FUNDS														
Schwab* S&P 500 Index Fund (5/19/97)		Large Blend	SWPPX	11.82	8.75	14.55	6.91	7.05	99.40	99.98	0.09	0.09	24,018	
LEADING 3RD PARTY FUNDS														
INTECH US Mgd Volatility T (7/6/09)*		Large Blend	JRSTX	8.00	6.74	13.70	5.72	14.70	73.47	71.41	0.86	0.86	520	
■	American Funds Invmt Co of Amer F1 (3/15/01)	Large Blend	AICFX	14.49	8.09	14.07	6.32	6.52	99.16	105.50	0.67	0.67	81,665	
Lord Abbott Calibrated Dividend Gr A (12/27/01)*		Large Blend	LAMAX	8.51	5.73	11.32	6.10	7.16	90.91	93.00	1.07	0.85	2,279	
Parnassus Core Equity Investor (8/31/92)		Large Blend	PRBLX	10.41	7.92	14.22	9.47	10.50	91.84	93.83	0.88	0.87	15,027	
Glenmede Large Cap Core Port (2/27/04)		Large Blend	GTLOX	11.06	9.52	16.28	8.01	8.92	99.09	92.59	0.87	0.87	2,200	
Parnassus (12/27/84)		Large Growth	PARNX	13.45	9.26	17.15	9.65	10.12	110.63	115.52	0.84	0.84	883	
■	American Funds AMCAP F1 (3/16/01)	Large Growth	AMPFX	8.99	7.15	14.26	7.59	6.93	91.71	100.60	0.73	0.73	51,498	
Jensen Quality Growth J (8/3/92)		Large Growth	JENSX	12.01	8.32	13.81	7.58	8.52	86.43	80.58	0.88	0.88	5,498	
■	Prudential Jennison Growth Z (4/15/96)	Large Growth	PJFZX	-1.19	6.47	13.96	7.95	7.75	89.82	103.36	0.73	0.73	3,509	
Madison Investors Y (11/1/78)		Large Growth	MINVX	12.97	8.09	13.21	6.20	10.52	86.10	82.00	0.95	0.95	284	
■	American Funds American Mutual F1 (3/15/01)	Large Value	AMFFX	14.07	7.61	12.33	6.65	7.13	91.03	95.19	0.67	0.67	41,556	
■	JPMorgan Large Cap Value A (2/18/92)*	Large Value	OLVAX	15.48	8.93	15.31	5.61	7.46	107.84	96.04	1.13	0.93	842	
Commerce Value (3/3/97)		Large Value	CFVLX	19.24	9.27	14.26	6.25	6.73	92.96	83.81	0.75	0.72	309	
BMO Low Volatility Equity A (5/27/14)*		Large Value	BLVAX	4.17	7.05	—	—	6.34	74.95	54.55	1.06	0.91	156	
Columbia Dividend Opportunity A (8/1/88)*		Large Value	INUTX	6.87	4.52	10.19	5.80	8.66	85.36	94.13	1.01	1.01	4,315	
PERFORMANCE BENCHMARKS														
Schwab 1000 Index* (Dividends Reinvested)				11.81	8.51	14.56	7.10	—						
S&P 500 Index* (Dividends Reinvested)				11.96	8.87	14.66	6.95	—						
■ New to the Select List this quarter														

ASSET CLASS AND PERFORMANCE BENCHMARK DEFINITIONS

Large-cap U.S. stock funds invest primarily in stocks that fall in the top 70% of the U.S. market capitalization range as defined by Morningstar, Inc. Growth funds invest in companies that may be experiencing rapid growth in earnings, sales or return on equity. Value funds invest in companies that may have share prices below estimated fair market value, undervalued assets, an opportunity to "turnaround" or lower price-to-earnings or price-to-book ratios. Blend funds invest in a combination of value and growth stocks.

The S&P 500® index includes common stocks of 500 widely held companies. S&P 500 is a registered trademark of The McGraw-Hill Co., Inc.

If an expense waiver was in place during the period, the net expense ratio was used to calculate fund performance. A net expense ratio lower than the gross expense ratio may reflect a cap on or contractual waiver of fund expenses. Please read the fund prospectus for details on limits or expiration dates for any such waivers.

Performance quoted is past performance and is no guarantee of future results. Current performance may be lower or higher. Visit schwab.com for month's end performance information. Investment value will fluctuate, and shares, when redeemed, may be worth more or less than original cost.

Upside and downside capture ratios: a measure of how much a fund moves in comparison to the broad market when the market goes up or down

Upside capture ratio: For the months in which the market return was positive, what was the ratio of the fund's returns to the market's returns? Upside capture of 110% means that in up markets, the fund went up 10% more than the market did. For investors who are concerned with growth in rising markets, looking for a fund with a high upside capture ratio (above 100%) can be useful.

Downside capture ratio: For the months in which the market return was negative, what was the ratio of the fund's returns to the market's returns? Downside capture of 110% means that in down markets, the fund went down 10% more than the market did. For investors who are concerned with minimizing losses, looking for a fund with a low downside capture ratio (below 100%) can be helpful.

Generally speaking, it's good for a fund to have an upside capture ratio at least as high as its downside capture ratio, and preferably higher. A fund delivering 110% of the market's positive returns but only 105% of the negative returns means that the fund has delivered more of the market's upside than downside (which is desirable).

The "holy grail" for many investors is a fund with a low downside capture ratio that has an upside capture ratio of 100% or more.

The absolute level of upside capture and downside capture can be important as well, providing an overall indication of the fund's risk relative to the market. If both ratios are around 120%, it means that the fund has been more volatile than the market (even if upside is higher than downside). If both ratios are around 80%, it means that the fund has been less volatile than the market.

As with most metrics, these ratios are backward looking (in this case, over the past three years). Just because a fund has delivered a certain percentage of the market's returns in past up markets and down markets doesn't mean that it is guaranteed to do the same in future up or down markets.

In a three-year period with very few up months or very few down months, the upside or downside capture ratio can be hard to measure.

These ratios provide no information about the fund's overall returns and are simply a measure of performance relative to the market in up periods and in down periods.

Additional important information

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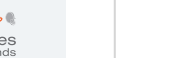
  
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Ticker	ETF Name	Morningstar Category	Description
U.S. EQUITY			
IBLN	Direxion iBillionaire Index ETF	Large Blend	Equal-weighted index of 30 US companies from the portfolios of 10 asset managers with ≥ \$1 billion of personal net worth
VSPY	Direxion S&P 500® Volatility Response Shares	Large Blend	Adjusts the weight of holdings between stocks and cash based on the recent volatility of the S&P 500
XLG	Guggenheim Russell Top 50® Mega Cap ETF	Large Blend	A mega cap ETF that tracks the cap-weighted performance of the 50 largest companies in the Russell 3000 index
RSP	Guggenheim S&P 500® Equal Weight ETF	Large Blend	Compared to market cap weighted indexes, this ETF has lower exposure to the largest companies; index is rebalanced quarterly
PKW	PowerShares BuyBack Achievers™ Portfolio	Large Blend	Tracks a market-cap index of U.S. firms that have repurchased at least 5% of outstanding shares in the previous 12 months
NDDL	ProShares S&P 500 Aristocrats ETF	Large Blend	Tracks an equal-weighted index of S&P 500 constituents that have increased dividend payments annually for at least 25 yrs
SCHB	Schwab U.S. Broad Market ETF*	Large Blend	Holds over 1500 large to small-cap firms; covers virtually the entire U.S. stock market (by capitalization)
SDGX	Schwab U.S. Large-Cap ETF*	Large Blend	Index covers over 700 largest U.S. firms, which comprise about 80% of the U.S. market (by capitalization)
DGRW	WisdomTree US Dividend Growth Fund	Large Blend	Invests in large and mid-cap stocks with growth characteristics; holdings weighted annually based on expected dividends
QQQE	Direxion NASDAQ-100® Equal Weighted Index Shares	Large Growth	Tracks an index of the 100 largest non-financial securities listed on NASDAQ®; holdings are weighted equally
RPG	Guggenheim S&P 500® Pure Growth ETF	Large Growth	Holds large- and mid-cap stocks with strong growth characteristics; this fund has no common holdings with RPV
SDG	Schwab U.S. Large-Cap Growth ETF*	Large Growth	ETF has diversified exposure to large growth names such as Apple, Microsoft, Wal-Mart, PepsiCo
SYG	SPDR® MFS Systematic Growth Equity ETF	Large Growth	This actively managed fund holds U.S. large-cap stocks selected based on their growth potential
SDOG	ALPS Sector Dividend Dogs ETF	Large Value	Tracks an index which selects 5 U.S. stocks with the highest dividend yields in each of 10 economic sectors
DEF	Guggenheim Defensive Equity ETF	Large Value	Tracks an index of 100 stocks; Largest sectors are utilities, consumer staples and energy
CVI	Guggenheim Multi-Asset Income ETF	Large Value	Holdings may include U.S. stocks, ADRs, REITs, MLPs, closed-end funds and/or Canadian royalty trusts; Top sector is financials
SPVL	PowerShares S&P 500® Low Volatility Portfolio	Large Value	Holds 100 stocks from the S&P 500® Index with the lowest realized volatility over the past 12 months
FNDX	Schwab Fundamental U.S. Broad Market Index ETF	Large Value	Provides broad U.S. market exposure by tracking an index that weights stocks by sales, cash flows, dividends and buybacks
FNDX	Schwab Fundamental U.S. Large Company Index ETF	Large Value	Provides exposure to large U.S. companies based on an index that weights stocks by sales, cash flows, dividends and buybacks
SDHD	Schwab U.S. Dividend Equity ETF*	Large Value	Holds 100 U.S. companies weighted by market cap. Top holdings are Procter & Gamble, Johnson & Johnson and Coca-Cola
SCHV	Schwab U.S. Large-Cap Value ETF*	Large Value	ETF has diversified exposure to large value names such as ExxonMobil, GE, Johnson & Johnson, Pfizer
SYE	SPDR® MFS Systematic Core Equity ETF	Large Value	This actively managed fund holds U.S. large-cap stocks selected based on fundamental and quantitative analysis
SVV	SPDR® MFS Systematic Value Equity ETF	Large Value	This actively managed fund holds U.S. large-cap stocks that the manager believes are undervalued
KNOW	Direxion AI Cap Insider Sentiment Shares	Mid-Cap Blend	Tracks an index of 100 S&P 1500 companies based on public information on trading by corporate insiders
PXMC	PowerShares Fundamental Pure Mid Core Portfolio	Mid-Cap Blend	Holds U.S. mid-caps that are neither value nor growth; weighted fundamentally by book value, cash flow, sales and dividends
SPRB	PowerShares S&P 500® High Beta Portfolio	Mid-Cap Blend	Holds 100 stocks from the S&P 500® Index with the highest sensitivity to market movements, or beta, over the past 12 months
SDCM	Schwab U.S. Mid-Cap ETF*	Mid-Cap Blend	Over 480 holdings providing U.S. equity exposure to the mid-cap portion of the broader U.S. stock market
RSCD	SPDR® Russell Small Cap Completeness ETF	Mid-Cap Blend	Tracks a market-cap weighted index of US small-mid-cap stocks. Holds Russell 3000 stocks not included in the S&P 500
RFG	Guggenheim S&P MidCap 400® Pure Growth ETF	Mid-Cap Growth	Holds mid-cap stocks with strong growth characteristics; This fund has no common holdings with RPV
PDP	PowerShares DWA Momentum ETF	Mid-Cap Growth	Tracks an index of 100 US large and mid-cap companies selected and weighted by relative stock performance
MDVG	SPDR® S&P 400 Mid Cap Growth ETF	Mid-Cap Growth	Holds mid-cap stocks with growth characteristics based on: sales growth, earnings change to price, and momentum
RPV	Guggenheim S&P 500® Pure Value ETF	Mid-Cap Value	Holds large- and mid-cap stocks with strong value characteristics; this fund has no common holdings with RPG
MDYV	SPDR® S&P 400 Mid Cap Value ETF	Mid-Cap Value	Holds mid-cap stocks with value characteristics based on: book value to price, earnings to price, and sales to price ratios
EWRS	Guggenheim Russell 2000® Equal Weight ETF	Small Blend	Holds small caps; Nine industry sectors are equally weighted, next the stocks within each sector are equally weighted
FNDX	Schwab Fundamental U.S. Small Company Index ETF	Small Blend	Provides exposure to small U.S. companies based on an index that weights stocks by sales, cash flows, dividends and buybacks
SDXA	Schwab U.S. Small-Cap ETF*	Small Blend	Focuses on over 1700 small-cap companies; index excludes the smallest micro-cap stocks
WMCR	Wisshire Micro-Cap ETF	Small Blend	Tracks a market-cap weighted index of the smallest 2,500 U.S. stocks by market capitalization
DGRS	WisdomTree US Small Cap Dividend Growth ETF	Small Blend	Invests in small-cap stocks with growth characteristics; holdings weighted annually based on expected dividends
RZG	Guggenheim S&P SmallCap 600® Pure Growth ETF	Small Growth	Holds small-cap stocks with strong growth characteristics; This fund has no common holdings with RZV
DWAS	PowerShares DWA SmallCap Momentum ETF	Small Growth	Holds small-cap securities with the best relative strength indicators set by Dwyer Wright's proprietary methodology
SVUG	SPDR® S&P 600® Small Cap Growth ETF	Small Growth	Holds stocks with growth characteristics selected from the S&P SmallCap 600 index
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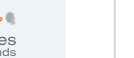
  
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U.S. EQUITY			
IBLN	Direxion iBillionaire Index ETF	Large Blend	Equal-weighted index of 30 US companies from the portfolios of 10 asset managers with ≥ \$1 billion of personal net worth
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RSP	Guggenheim S&P 500® Equal Weight ETF	Large Blend	Compared to market cap weighted indexes, this ETF has lower exposure to the largest companies; index is rebalanced quarterly
PKW	PowerShares BuyBack Achievers™ Portfolio	Large Blend	Tracks a market-cap index of U.S. firms that have repurchased at least 5% of outstanding shares in the previous 12 months
NDDL	ProShares S&P 500 Aristocrats ETF	Large Blend	Tracks an equal-weighted index of S&P 500 constituents that have increased dividend payments annually for at least 25 yrs
SCHB	Schwab U.S. Broad Market ETF*	Large Blend	Holds over 1500 large to small-cap firms; covers virtually the entire U.S. stock market (by capitalization)
SDGX	Schwab U.S. Large-Cap ETF*	Large Blend	Index covers over 700 largest U.S. firms, which comprise about 80% of the U.S. market (by capitalization)
DGRW	WisdomTree US Dividend Growth Fund	Large Blend	Invests in large and mid-cap stocks with growth characteristics; holdings weighted annually based on expected dividends
QQQE	Direxion NASDAQ-100® Equal Weighted Index Shares	Large Growth	Tracks an index of the 100 largest non-financial securities listed on NASDAQ®; holdings are weighted equally
RPG	Guggenheim S&P 500® Pure Growth ETF	Large Growth	Holds large- and mid-cap stocks with strong growth characteristics; this fund has no common holdings with RPV
SDGJ	Schwab U.S. Large-Cap Growth ETF*	Large Growth	ETF has diversified exposure to large growth names such as Apple, Microsoft, Wal-Mart, PepsiCo
SYG	SPDR® MFS Systematic Growth Equity ETF	Large Growth	This actively managed fund holds U.S. large-cap stocks selected based on their growth potential
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FNDX	Schwab Fundamental U.S. Large Company Index ETF	Large Value	Provides exposure to large U.S. companies based on an index that weights stocks by sales, cash flows, dividends and buybacks
SDJD	Schwab U.S. Dividend Equity ETF*	Large Value	Holds 100 U.S. companies weighted by market cap. Top holdings are Procter & Gamble, Johnson & Johnson and Coca-Cola
SCHV	Schwab U.S. Large-Cap Value ETF*	Large Value	ETF has diversified exposure to large value names such as ExxonMobil, GE, Johnson & Johnson, Pfizer
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FNDA	Schwab Fundamental U.S. Small Company Index ETF	Small Blend	Provides exposure to small U.S. companies based on an index that weights stocks by sales, cash flows, dividends and buybacks
SDJA	Schwab U.S. Small-Cap ETF*	Small Blend	Focuses on over 1700 small-cap companies; index excludes the smallest micro-cap stocks
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ETF OneSource Brochure

# Packaging

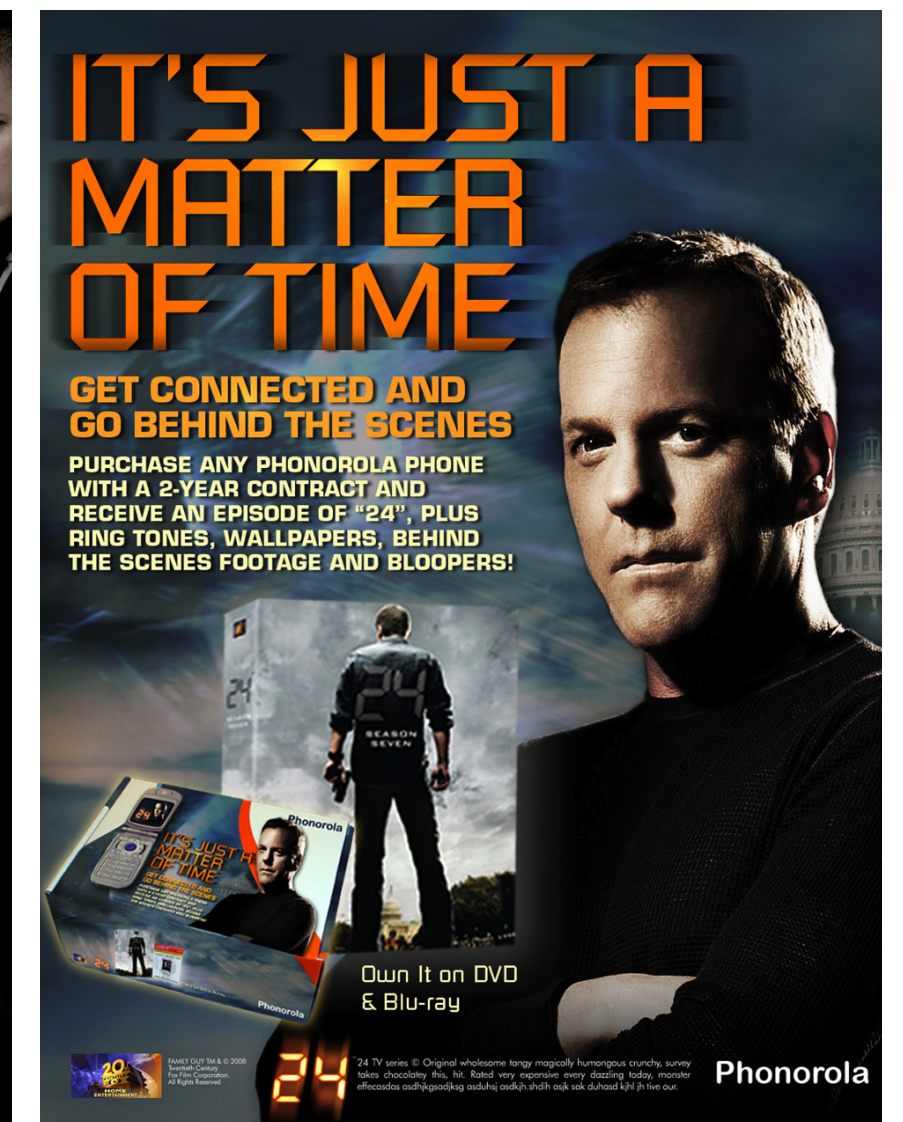
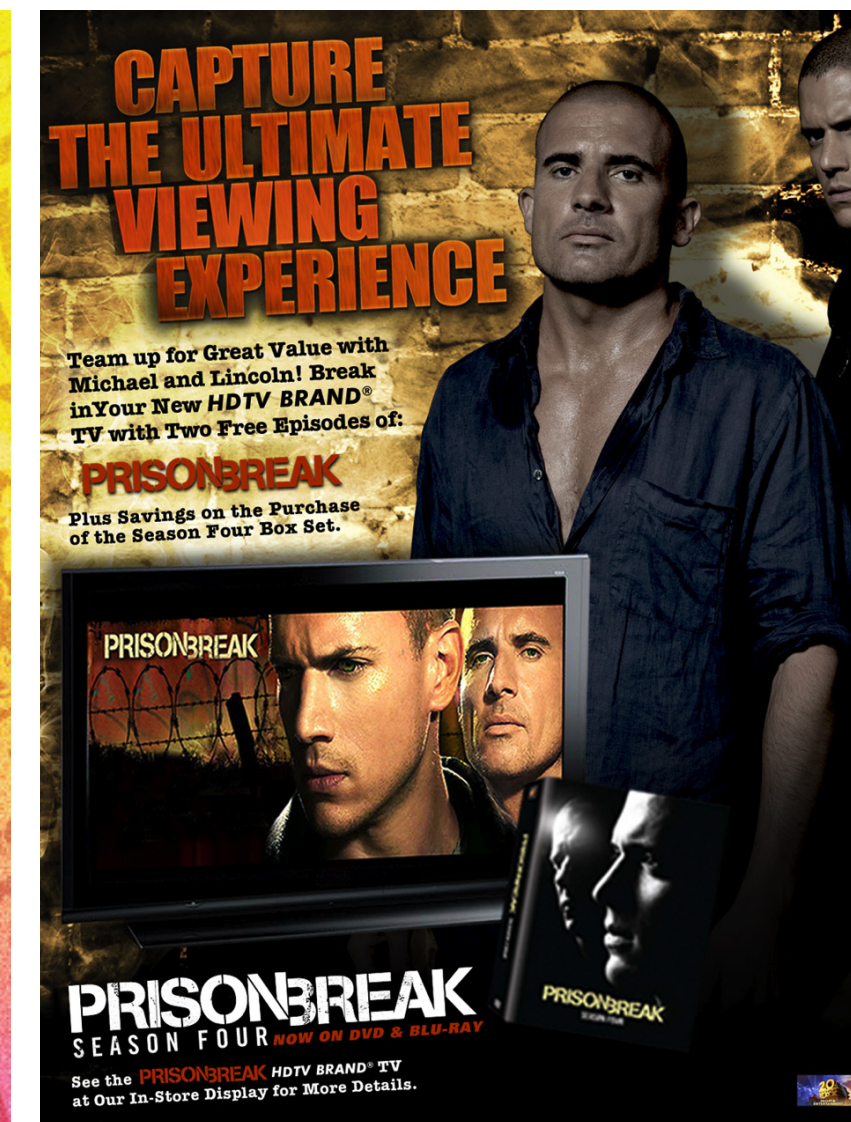
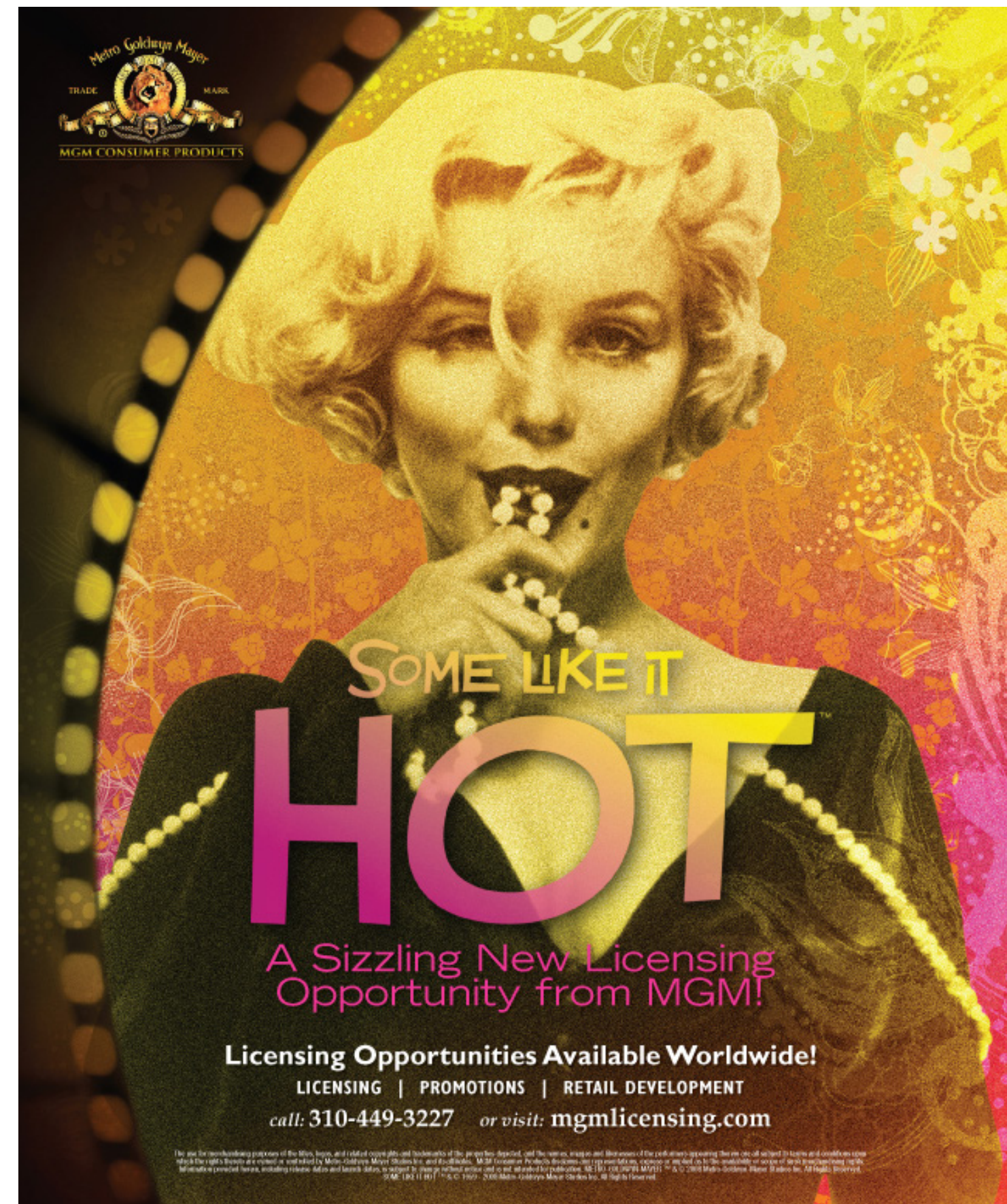
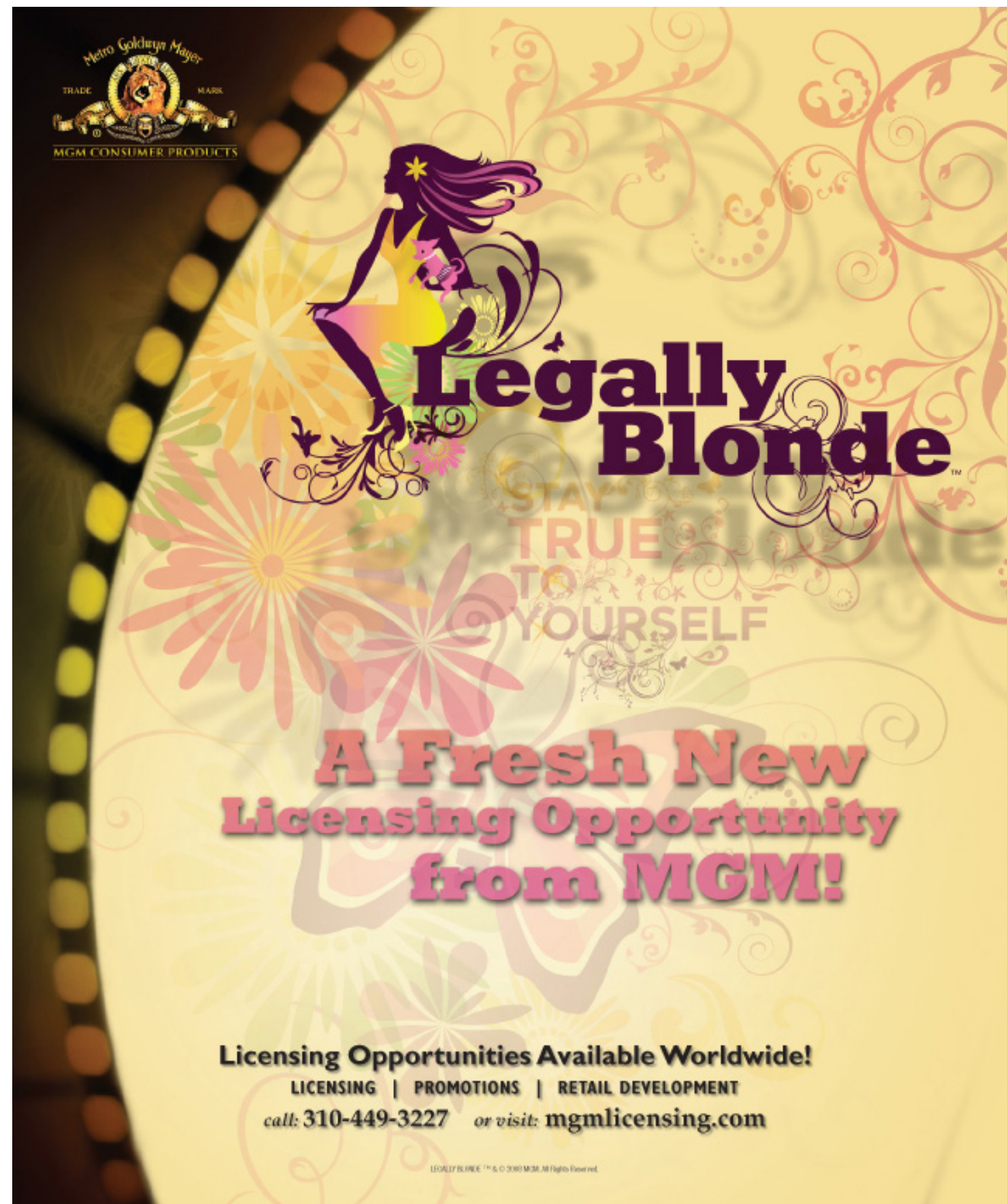


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# Magazine Ads



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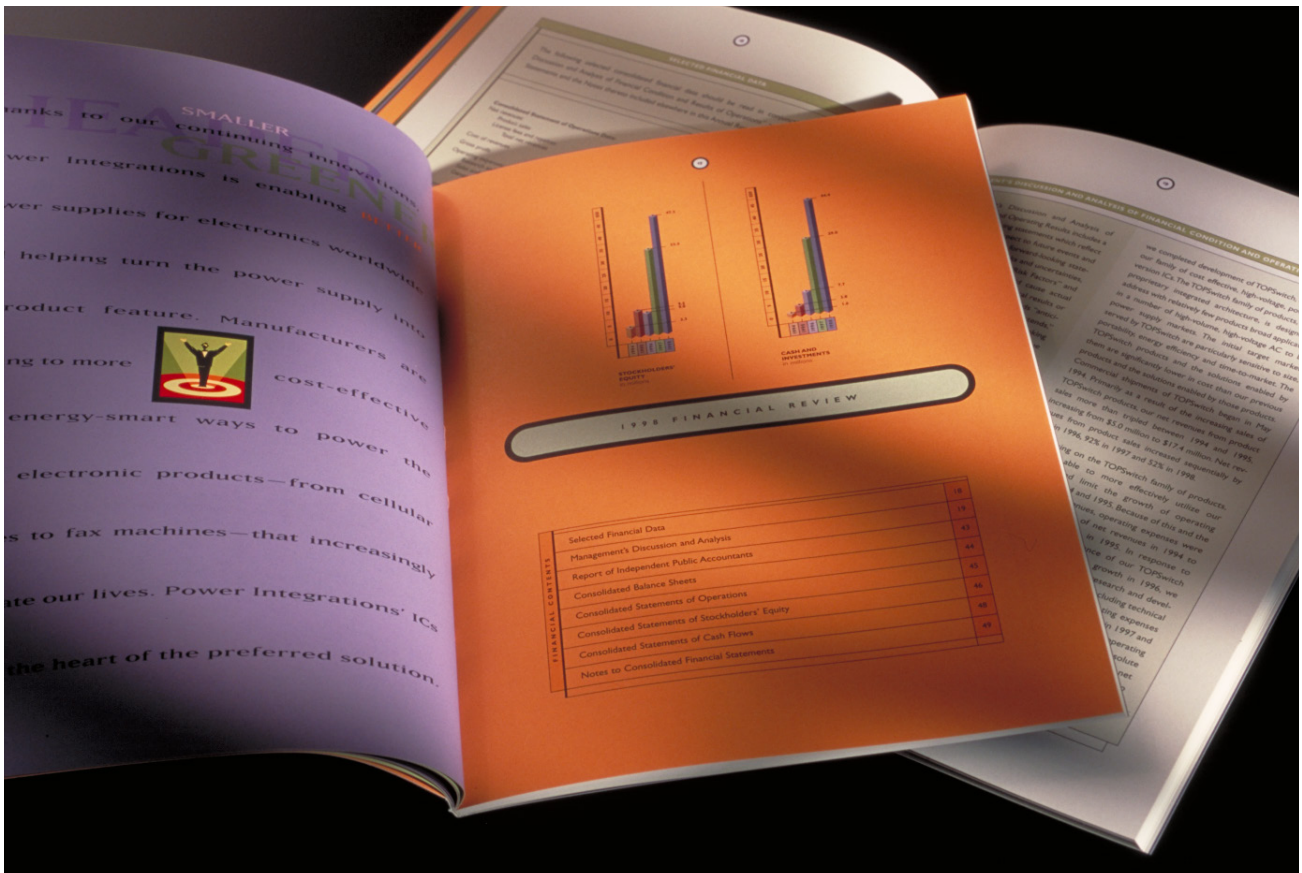
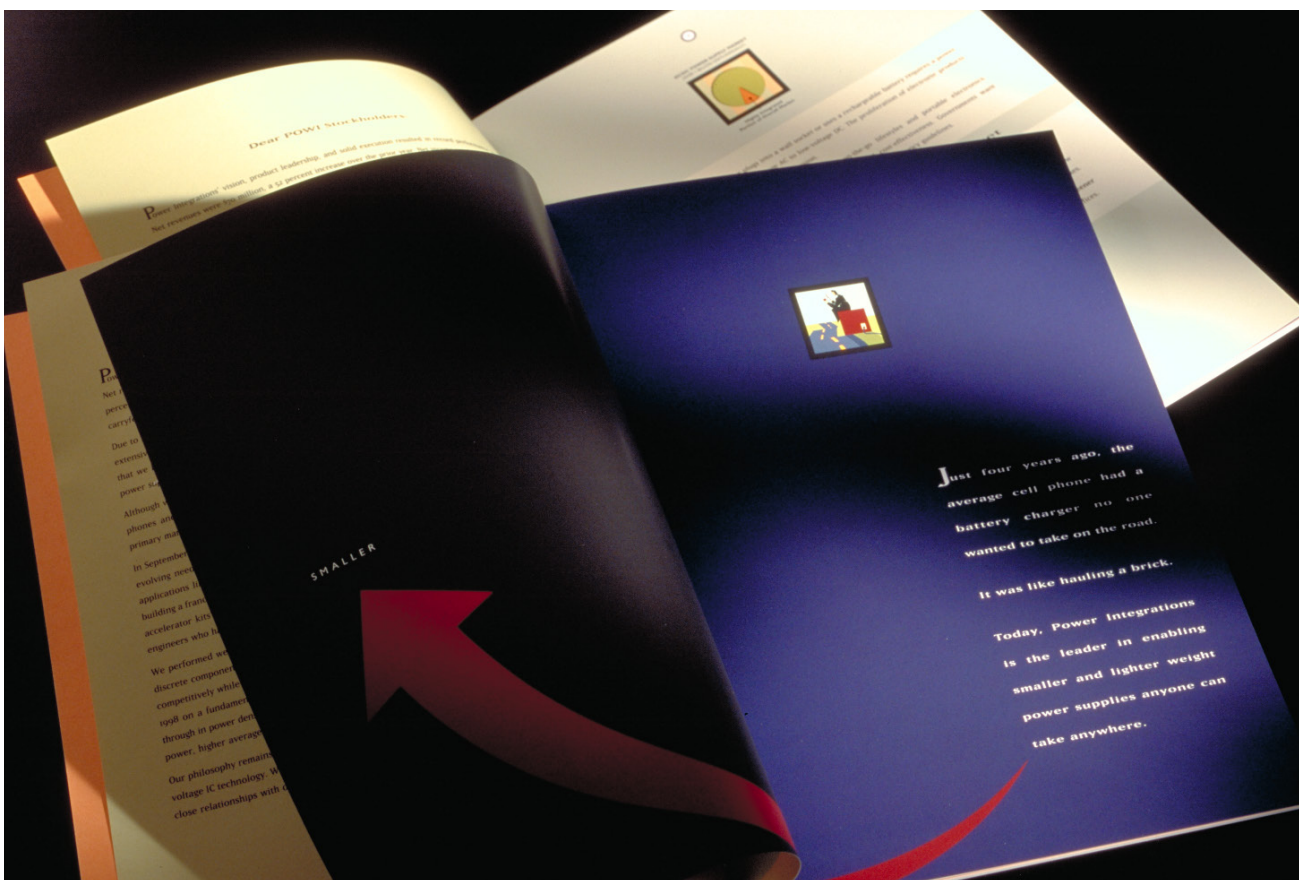


Backlit Signage



Shopping Bag

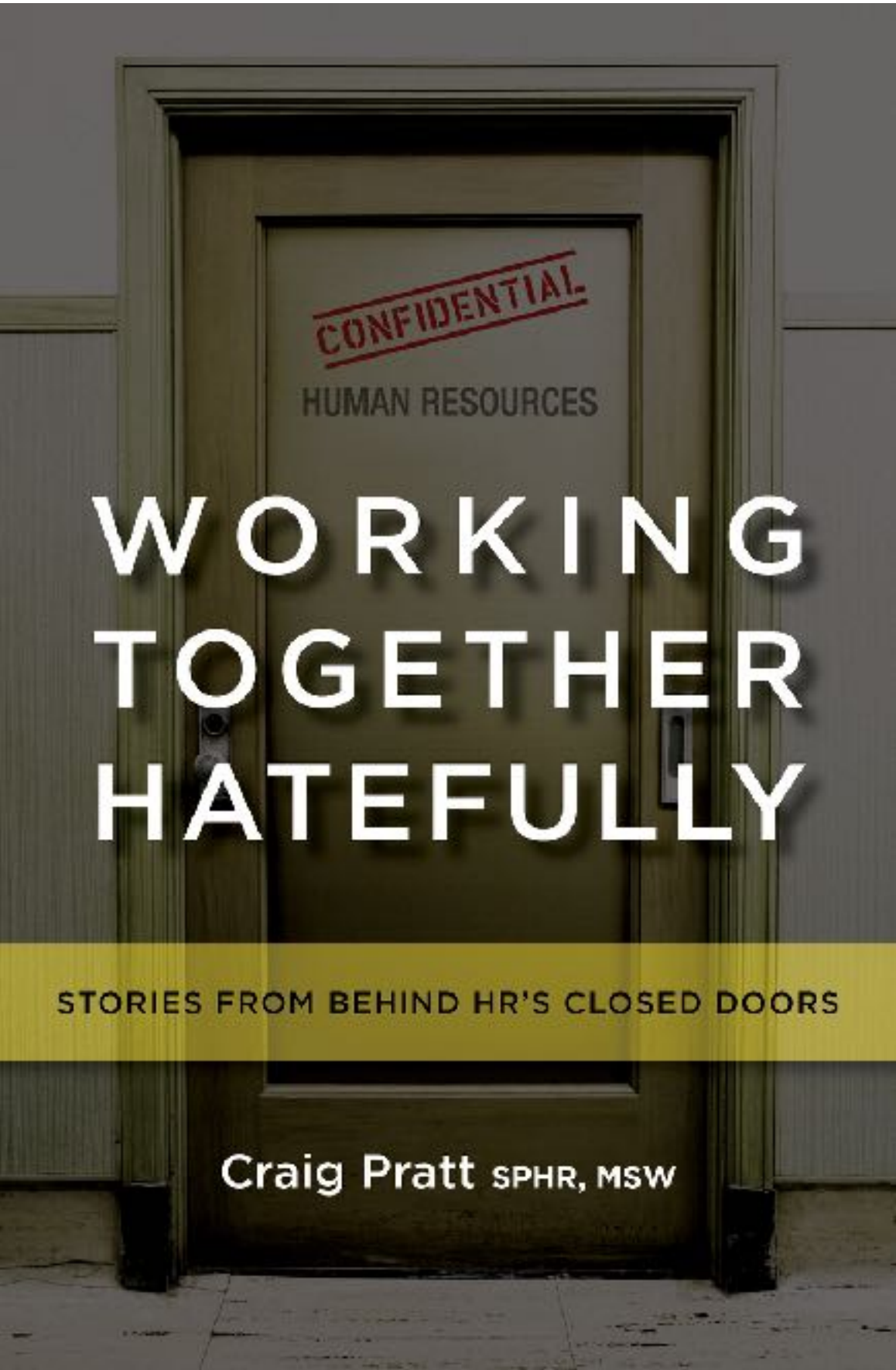
# Power Integrations—Annual Report



# Book Cover Design



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Logo Design



# Thank you for your consideration and for the opportunity to work together!

I appreciate your time and attention, and would be happy to provide additional samples of work done for other clients.

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