

Integrity in Investing Informed Investing Insights: The Profitability Premium



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PROFESSIONAL
FINANCIAL

Integrative Wealth Management

"The stock market is filled with individuals who know the price of everything but the value of nothing."

– John Maynard Keynes, *The General Theory of Money, Interest & Employment* (1936)

This is part of a series exploring how informed planning decisions are made

Key takeaways:

- Research supports that markets effectively aggregate information and expectation into prices
- Information in market prices can be sorted to identify systematic differences in expected returns
- Important research confirms that current profitability has information about expected returns
- In tandem with company size and relative price, profitability can enhance portfolio outcomes

Over the past sixty years, cumulative breakthroughs from research in the field of financial economics have enormously benefited both society and investors.

Early ground-breaking research in the 1950s gave the insight that diversification, rather than concentration in a few stocks, can benefit an investor's wealth. Further research in the 1960s showed that market prices contain up-to-the-minute, relevant information about an investment's expected return and risk. That is, market prices in liquid capital markets provide our best estimate of a security's value at any point in time.

Consequently, active managers' attempts to outguess market prices for selecting over- and undervalued securities, believing stocks are mispriced, cannot reliably improve returns. In fact, due to intense competition and higher explicit costs, results more often than not are likely to disappoint investors. Yet despite decades of evidence to the contrary, stock analysts persist in futilely betting on "mispriced" securities using the same data sources as most of their peers. But the disappearance of "star managers" from the media and the rise of indexing to 34% of managed fund assets in 2015¹ imply investors are gradually realizing that traditional investing has failed to deliver the positive experience they need to achieve their goals.

Research in financial economics is evolving, and continuing advances have provided attractive alternatives that compete well against traditional investing and newer conventional methods like indexing. Academics and specialists like Dimensional Fund Advisors² have gained a deep understanding of security markets from decades of empirical evidence. Investors may significantly improve their financial planning outcomes as a result.

Many, if not most of the enduring advances in investment management over the last 60 years have come from academic research. In this paper we focus on an important breakthrough in understanding the relationship between a firm's profitability and its stock returns that has emerged from intensive research efforts by several academics over several years. The insight Dimensional drew from leveraging its internal efforts with external evidence was how to effectively connect profitability with market prices in order to improve expected returns to meaningfully enhance wealth outcomes of client portfolio strategies.

¹ John C. Bogle, "Viewpoint: The Index Mutual Fund: 40 Years of Growth and Change," *Financial Analysts Journal* (January/February 2016)

² Dimensional Fund Advisors LP is an investment advisor registered with the SEC. Information may be found at www.us.dimensional.com.



DIFFERENCES IN EXPECTED RETURNS

A “dimension” of returns, as we define it, is a research factor that not only statistically explains differences in expected returns, but is consistent with financial theory, is persistent, is pervasive, and is usable in improving investment portfolios in practice—thereby providing investors’ confidence that such return relations observed in the past are likely to repeat again in the future. Asset pricing models are developed to explain differences in average returns across both stocks and portfolios. Theoretical and empirical research has shown that not all stocks have the same expected return. Investors seem to demand higher returns to hold some stocks but lower returns to hold others. It is sensible that equity markets should have dimensions of returns that may be particularly attractive to some investors but not to others. So how is it possible to distinguish stocks with systematic differences in expected returns?

The value of a stock and consequently the market price participants—whether traditional stock pickers or quantitative hedge fund traders—are willing to assign to it, depends on a number of variables. The most basic variable for valuing a firm’s traded shares, just as for privately owned firms, is book value taken from a firm’s financial statement: what a company owns minus what it owes. Another is profits from earnings of company income statement. “Expected profits” are based on the discount rate investors apply, and the discount rate they use is the “expected return” investors demand for holding that stock.³ Market participants in liquid capital markets trade 100 million shares daily. Market prices quickly find an equilibrium point where the expected return of any stock is commensurate with what investors collectively are demanding for it based on what is known or knowable about that security.

OBSERVING THE UNOBSERVABLE: CURRENT AND FUTURE PROFITABILITY

Market prices and expected future profits contain information about expected returns. Economic theory would predict that profitability, together with size and relative

price, is related to expected returns. While size and relative price have long been observable—changes in price data as stocks are traded moment-by-moment are easily accessible—we cannot similarly observe how market expectations change for future profits or future profitability. (Profitability is profits divided by book value on financial statements.) So how can we use an unobservable variable to estimate expected returns for setting a price?

$$\text{Price} = \frac{\text{Expected Cash Flows}}{\text{Discount Rate}}$$

In the simplified dividend discount model, the value of a stock or bond is simply the sum of all future cash flows discounted back to present value. Generally, the greater the risk an investment has, the higher the discount rate and so the present value expressed as price is lower. The discount rate (or cost of capital) is a stock’s expected return. Algebraically reworking the equation solving for expected return is:

$$\text{Expected Returns} = \frac{\text{Expected Cash Flows}}{\text{Price}}$$

Expressing the relationship this way highlights two dimensions of expected returns for equities—relative price and profitability. Higher expected returns are the result of having either higher expected cash flows or a lower price. For example, the price of an interest-bearing bond is determined by its stream of coupon payments and final principal repayment, discounted back at prevailing market interest rates. A high-yield bond with a higher credit risk on a possible non-repayment must either have a higher coupon or sell at a lower price than a lower-yielding bond. In the same way, profitability is tied to the numerator and the relative price dimension to the denominator. Simply stated, if two stocks sell at the same price, then the one with higher expected cash flows must have a higher expected return.

Exhibit 1 shows Dimensional has a long history of developing investment strategies that implement key breakthroughs in financial research. One such example was research documenting the stronger performance of stocks trading at low relative prices, which launched their “value” strategies in 1992. Relative price met all the criteria

³ The expected return of a risky asset, like a stock, is not a realized return but the most likely return given the probability distribution for possible rates of return. It is the risk-free rate plus a risk premium. Expected return varies through time as market information changes.



Exhibit 1: KEY BREAKTHROUGHS IN FINDING AND APPLYING DIMENSIONS OF EQUITY RETURNS

Company Size	Relative Price	Total Market Solutions	Profitability
Dimensional offers investors diversified, cost-efficient access to small companies.	Fama/French research identifies market, size, and value factors as the principal drivers of equity returns.	Advancement in portfolio design provides value-added, efficient total market solutions that focus on dimensions of higher expected returns.	Research identifies a robust proxy for a new investable dimension of higher expected return—profitability.
1981	1992	2004	2012
Small Cap Strategies	Value Strategies	Applied Core Equity Strategies	Growth strategies and enhancements to existing strategies

necessary to incorporate it as a “dimension” of return into a new set of strategies they designed to capture and efficiently deliver those investment premiums for investor portfolios.

As we have observed economic theory has long predicted that profitability, together with size and relative price, is related to expected return. Over the past dozen years, researchers have worked to develop theoretical and empirical frameworks to analyze the relationship between profitability and expected return. Fama and French have authored more than 160 papers, many of which relate to asset pricing, and rank within the top 10 most-cited fellows of the American Finance Association.⁴ In 2013, Eugene Fama received a Nobel Prize in Economics Science for his work.

Professors Eugene Fama and Kenneth French explored which financial data observable today contains usable information about expected future profitability in 2006.⁵ They found that a firm’s current profitability contains information about that firm’s profitability many years hence. This implied that current profitability therefore contains information about investor’s expectations of future profitability. However at the time, after efforts at leveraging its internal research capabilities, Dimensional could not identify usable measures for estimating, and so implementing, a profitability dimension in portfolios.

MEASURING PROFITABILITY

However, Fama and French were not alone in the area of asset pricing research. The profitability research breakthrough was made by an asset pricing expert, Professor Robert Novy-Marx at the Simon Business School of the University of Rochester. (Professor French received his doctorate from the Simon School.) Building on Fama and French, Novy-Marx had explored the relationship of different measures of current profitability to stock returns, and offered further empirical support of profitability as a returns premium.

While profits equaling revenues minus expenses is a basic accounting measure, Novy-Marx’s important insight is that **not all** current revenues and expenses have information about future profits. For example, firms sometimes call a revenue or expense “extraordinary” when they do not expect it to recur in the future. A new CEO taking over frequently will make one-time charge-offs of prior leadership’s mistakes.

Where those one-time revenues or expenses are not expected to recur, Novy-Marx found that investors should not expect such accounting disclosures to contain usable information about future profitability. In his 2013 paper,⁶ Novy-Marx used a measure of current profitability that excluded some non-recurring costs so expected returns could be better estimated. In doing so, he empirically documented a statistically strong relation between

4 G. William Schwert and Renè Stulz, “Gene Fama’s Impact: A Quantitative Analysis,” (working paper, Simon Business School, 2014, No. FR 14-17).

5 Eugene Fama and Kenneth French, “Profitability, Investment, and Average Returns,” *Journal of Financial Economics*, vol. 82 (2006), 491–518.

6 Robert Novy-Marx, “The Other Side of Value: The Gross Profitability Premium,” *Journal of Financial Economics*, vol. 108 (2013), 1–28.



current profitability and future stock returns. That is, firms with higher profitability tend to have higher returns than those with low profitability as theory had predicted.

Around the same time, the Dimensional research team, extending previous Fama-French research found that in developed and emerging markets globally, as well as the U.S., current profitability has information about future profitability. Dimensional maintains a proprietary database in-house of global stock prices, dividends, balance sheets, and income statements, spanning tens of thousands of stocks in more than 40 trading markets. Not only did the team find that non-U.S. firms with higher profitability have higher returns than those with low profitability, they also found that the non-U.S. observations held true when using alternative measures of current profitability.

Aware of Novy-Marx's pending paper for profitability estimations, Dimensional's research further indicated it is important to have a thoughtful measure of profitability that provides a complete picture of a firm's expenses while excluding unusual revenues and expenses unlikely to persist. Robustness checks with out-of-sample data are important to show that profitability premiums observed in preliminary studies were not simply due to chance.

CUTTING EDGE NEW RESEARCH

Progress continues in academic research examining profitability, along with attention to other investment "price factors". While many papers since 2013 formally documented the same profitability premiums Dimensional

had previously found from its own research, what was necessary to bring closure to the academic arguments was entirely new out-of-sample evidence not previously studied. Compelling out-of-sample evidence of U.S. stocks is found in an important forthcoming paper⁷ by Professor Sunil Wahal, another expert in empirical asset pricing and in market microstructure (how stocks trade).

An academic problem persisted because Fama, French, and Novy-Marx's research on profitability used U.S. data only after 1962. Machine-readable accounting data as evidence for U.S. stocks originated only with the introduction of room-sized IBM mainframe computers in 1963. Without having data in digital form, that meant hand-collecting, cleaning, transcribing, and validating income statements—a major challenge for any researcher in time and money. So grant money in hand, Wahal employed research assistants to hand-collect accounting data from moldering Moody's Manuals. By applying accounting expertise and meticulous data checking, Wahal compiled reliable profitability data from 1940 to 1963.

With a new data set to calculate return differences between stocks with high vs. low profitability, Wahal's out-of-sample U.S. profitability premium tests found similar differences that were reliably and economically significant. With compelling evidence of the profitability premium in the pre-1963 period, this out-of-sample test further strengthens the confidence we can draw from all the evidence of earlier research.

Higher Research Standards Applied By Dimensional

What criteria should be applied to empirical research? In academia, results that support a hypothesis make it into academic papers, while conflicting conclusions are often ignored. Intense competition for tenure or honors in a publish-or-perish environment can tempt researchers to overstate results. Across a financial industry which lacks peer review standards, many new "factor" findings promoted by many financial industry firms are based on relatively short time series most likely contaminated by chance relationships or analyst confirmation bias. Data sources available on Morningstar or Bloomberg are often inadequate for making highly confident economic inferences.

The pervasive conflicts of interest that impact even peer-reviewed academic level research means that Dimensional Fund Advisors must work rigorously to validate research findings before applied in practice with real money for real clients. Dimensional must be highly confident that research findings can be reliably applied to

⁷ Sunil Wahal, "The Profitability and Investment Premium: Pre-1963 Evidence," (December 29, 2016). Available at SSRN: ssrn.com/abstract=2891491.



benefit client portfolios after taking into account multiple market premiums, market frictions, and costs common to trading. Dimensional holds empirical research to a much higher standard not only than any other firm in the financial services industry, but higher than any of the well-known industry financial information firms.

To be considered a dimension of returns eligible for inclusion within Dimensional strategies, a premium must be:

1. Sensible
2. Persistent across multiple time periods
3. Pervasive across global markets
4. Robust to alternative specifications
5. Cost-effective to capture in well-diversified portfolios

This rationale requires a premium to be sensible, persistent, pervasive, and robust before it can be considered a “dimension” of expected return: “Sensible” means connecting financial theory to market data in a logical manner. Assuring empirical research is well grounded in financial economic theory is a critical safeguard against spurious correlations. Dimensional further expects premiums to be verifiable using extensive market data, and is especially vigilant against the danger of data-mining when looking at patterns of returns. Replicating results across many different sample periods, regions, and variable specifications reduces possible confirmation bias.

The final hurdle before recognizing a statistical factor as a “dimension” of expected return is the tradeoff among other premiums. Premiums interact with one another, and the marginal benefits for adding new sources of higher expected returns diminish. A premium might appear large when studied in isolation, but due to interaction effects, the impact may be much smaller impact when examined in combination with other established premiums. (For example, you cannot simply add size and relative price (value) premiums together to calculate the premium for a small value portfolio.) When designing portfolios these interactions must be accounted for. A parsimonious set of dimensions can explain the vast majority of differences in expected returns. A premium must improve expected returns after accounting for premium interactions and the very practical costs related to obtaining that premium in a portfolio, such as potential trading costs.

DIMENSIONAL PLANNING FOR EXPECTED RETURNS



1. Relative price as measured by the price-to-book ratio; value stocks are those with lower price-to-book ratios.

2. Profitability is a measure of current profitability, based on information from individual companies' income statements.

SIZE OF PROFITABILITY PREMIUMS

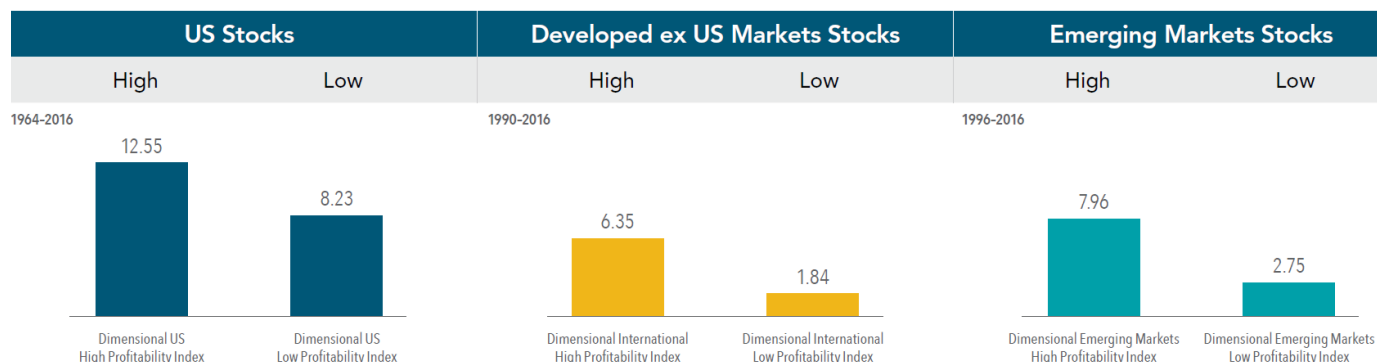
How large has been the profitability premium historically? **Exhibit 2** summarizes an empirical example for the profitability premium in the US and globally. In the US, between 1964 and 2016, the Dimensional U.S. High Profitability Index had annualized compound returns of 12.6%, or a 4.3% realized profitability premium compared to the US Low Profitability Index. The non-U.S. developed market realized profitability premium between high and low profitability indexes was 4.5% between 1990 and 2016. In emerging markets, the realized profitability premium between high and low profitability indexes was 5.2% between 1996 and 2016. These are important systematic return differences.

Dimensional introduced versions of U.S. and non-U.S. profitability portfolios in 2013; a two-year implementation for profitability premiums in core portfolio strategies started in 2014. Due to that recency, an extended history of live returns is not available. But Dimensional has simulated profitability, adjusted market and large value strategy indexes for studies that are meticulously maintained by their research team. So those index simulations may be used to compare with Russell stock market index simulations. The Russell indices are used by numerous firms for replicating many of their in-house index and exchanged traded funds.

Exhibit 3 compares Russell U.S. large cap growth, market and value indexes with comparable Dimensional indexes.



Exhibit 2: THE PROFITABILITY PREMIUM AROUND THE WORLD



Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Indices are not available for direct investment. Their performance does not reflect the expenses associated with the management of an actual portfolio. Past performance is not a guarantee of future results. Index returns are not representative of actual portfolios and do not reflect costs and fees associated with an actual investment. Actual returns may be lower. See "Index Descriptions" in the appendix for descriptions of Dimensional and Fama/French index data.

Dimensional has a moderately and a strongly tilted market simulations. While Russell capitalization-weighted asset class indexes may share a similar nomenclature (such as "value") with a corresponding Dimensional index, portfolio constructions differ due to dimensional exposures.

actively managed funds out-performed an equivalent index.⁹ Given the extremely poor chances of selecting funds likely to be successful for the duration of their retirement years, many investors have decided that their best alternative is simply selecting a set of index funds.

Profitability and relative price tilts account for return differences. For the periods, the Dimensional U.S. High Profitability Index has a 13.0% annualized compounded returns with a \$1 wealth growth to \$103.30, or 2.1% higher return and a 99% greater wealth growth compared to the Russell 1000 Growth Index. For the same period, the Dimensional Large Value Index has a return of 14.0% with a wealth growth to \$146.90, or 1.8% higher return and 85% greater wealth growth compared to the Russell 1000 Value Index.

Why provide a comparison with a popular index provider? As we noted at the beginning, investors are increasingly disillusioned with the poor performance and high expense of actively managed stock and hedge funds. A Dimensional study shows that in a 15-year period from 2001 to 2015, only 17% of the original group of U.S. actively managed mutual funds both survived and out-performed equivalent indexes for that period.⁸ A Fama-French study showed that over a 30-year period, only 2.4% of

The Russell 1000 Market Index in Exhibit 3 is similar to the popular S&P 500 index used by many mutual funds and ETFs. Index mutual and ETFs funds sponsored by Vanguard and many others have attracted over \$4 trillion of investor money,¹⁰ incentivized perhaps by strong U.S. stock performance since the financial crisis years of 2008-2009 and by Department of Labor disclosure comparison regulations for 401(k) plans which served to educate 401(k) plan participants about the cost differences (as well as discovering the performance differentials) between index funds and actively managed funds. So much money is flowing into index funds nowadays that a veritable price war with expense ratios has emerged among Blackrock and Fidelity.¹¹ (Costs due to buy-sell spreads from trading or market impact cost make indirect expenses much higher, but are not disclosed to investors.)

The performance advantage of Dimensional indexes compared to conventional market indexing strategies is due to constructing portfolios that pursue highly-targeted

⁸ *The US Mutual Fund Landscape 2016*, Dimensional Fund Advisors. US-domiciled mutual fund data from the Center for Research in Security Prices, University of Chicago. Annual expense ratios for equity funds for 15-year surviving funds ranged between 0.07% and 4.44% (!).

⁹ Eugene Fama and Kenneth French, "Luck versus Skill in the Cross-Section of Mutual Fund Returns," *Journal of Finance* (2009). See <https://famafrench.dimensional.com/essays/luck-versus-skill-in-mutual-fund-performance.aspx>

¹⁰ Edward Yardeni et al, *US Flow of Funds: Equities*, Yardeni Research, April 26, 2017. See <http://www.yardeni.com/pub/fofusequity.pdf>

¹¹ Jason Zweig, "The Expensive Element of Trading Cheap ETFs," *Wall Street Journal*, April 15, 2017.



Exhibit 3: COMPARING CONVENTIONAL RUSSELL INDEXES TO DIMENSIONAL INDEXES WITH PROFITABILITY

Returns for Period 1/1979 - 12/2016

Annualized Returns	Russell US Large Cap Indexes			Dimensional US Larger Cap Indexes			
	1000 Growth	1000 Market	1000 Value	High Profitability	Adjusted (Core)		Large Value
					Market 1	Market 2	
1 Year	7.1%	12.1%	17.3%	13.1%	15.5%	18.3%	24.3%
10 Years	8.3%	7.1%	5.7%	9.2%	7.9%	7.7%	5.5%
20 Years	6.9%	7.9%	8.3%	9.2%	9.2%	9.7%	9.5%
30 Years	9.7%	10.2%	10.4%	11.6%	11.2%	11.5%	12.2%
38 Years	10.9%	11.8%	12.2%	13.0%	12.9%	13.4%	14.0%
\$1 Growth of Wealth	51.7	68.1	79.2	103.3	101.4	118.6	146.9
<i>Standard Deviation</i>	17.0%	15.1%	14.6%	15.2%	15.4%	15.8%	16.6%
Lowest 1-Year Return	-45.6% (10/00-9/01)	-43.6% (3/08-2/09)	-47.4% (3/08-2/09)	-37.3% (3/08-2/09)	-42.8% (3/08-2/09)	-44.8% (3/08-2/09)	-53.9% (3/08-2/09)
Highest 1-Year Return	68.0% (7/82-6/83)	63.3% (7/82-6/83)	61.1% (8/82-7/83)	72.6% (7/82-6/83)	72.6% (7/82-6/83)	75.6% (7/82-6/83)	76.4% (3/09-2/10)

Sources: Dimensional Index data compiled by Dimensional Fund Advisors, LP and Russell data from Russell Investment Group. Russell indices begin in 1979. See "Index Descriptions" in the appendix for complete descriptions of Dimensional and Fama/French index data. Realized returns may be lower.

In USD. Indices are not available for direct investment; therefore, their past performance does not reflect usual expenses associated with the management of an actual portfolio. Returns gross of dividends. Past performance is no assurance of future results, and there is always a risk that an investor may lose money.

price factors with higher expected returns, such as profitability. Through a dynamic investment process that integrates research, portfolio design, portfolio management, and patient trading, tradeoffs are balanced against competing return premiums to improve total performance. Both versions of Dimensional U.S. core strategies show a dramatic improvement over the index. This "Adjusted Market 2" that is similar to a core portfolio held by most clients, has an 1.6% annualized with a 74% wealth growth versus the Russell 1000 Market index (without indirect trading costs and taxes by either), as well as the possibility of enhancing outcomes from disciplined rebalancing an asset allocation when severe market downturns occur—highly unlikely behavior for a simple indexer without a plan.

CONCLUSION

Decades of theoretical and empirical research have shown that markets do an incredible job aggregating information and incorporating expectations into securities prices. Professional Financial's investment philosophy and the informed investment strategies that we employ are based on the power of market prices guided by financial science. We believe it makes no sense to outguess markets

and entrust clients' wealth—as well as the hopes and dreams of their families—with managers who claim they can do what decades of empirical evidence show they cannot.

Dimensional uses information contained in prices to identify systematic differences in expected returns across the universe of tradable securities. Those variables tell us what an investor has to pay (market prices) and what they expect to receive (book equity and future profits). All else being equal, the lower the price relative to book value and the higher the expected profitability, the higher the expected return of a structured portfolio. Rather than focus on simply tracking an index (much less deciding from which of several hundred to select), by understanding of what price factors matter for driving returns, we gain insight on how to construct portfolios around precisely defined dimensions. Such portfolios offer higher expected returns with more reliable outcomes. Structuring dimensional strategies focused on the goals, values, risk preferences and income needs of an informed client committed to a sensible financial planning approach, increases our confidence of a successful outcome.



Clarity from an informed economic philosophy that a client can stick with, cannot be overstated. Like a moral compass, financial science guides wise decisions on how to invest, and the many alternatives we should avoid. Profitability as a dimension of return is an important addition to any portfolio structure. Using profitability in tandem with return premiums like market capitalization (size) or price-to-book ratios (value) that have benefitted clients for many years, Dimensional continues to enhance its proprietary process for extracting differences in expected returns embedded in market prices. Confidence from an informed process allows clients not only to benefit from improved outcomes essential for their goals, but to have more peace of mind for enjoying what matters most.

GLOSSARY

Book Value of Equity: The value of stockholder's equity as reported on a company's balance sheet.

Discount Rate: Also known as the "required rate of return" this is the expected return investors demand for holding a stock.

Out-of-sample: A time period not included or directly examined in the data series used in a statistical analysis.

Market Microstructure: The examination of how markets function in a fine level of detail, this can include areas of inquiry such as: how traders interact, how security orders are placed and cleared and how information is relayed and priced.

Empirical Asset Pricing: A field of study that uses theory and data to understand how assets are priced.

Profitability Premium: The return difference between stocks of companies with high profitability over those with low profitability.

Realized Profitability Premium: The realized, or actual, return difference in a given time period between stocks of companies with high profitability over those with low profitability.

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INDEX DESCRIPTIONS

Dimensional US Low Profitability Index was created by Dimensional in January 2014 and represents an index consisting of US companies. It is compiled by Dimensional. Dimensional sorts stocks into three profitability groups from high to low. Each group represents one-third of the market capitalization. Similarly, stocks are sorted into three relative price groups. The intersections of the three profitability groups and the three relative price groups yield nine subgroups formed on profitability and relative price. The index represents the average return of the three low-profitability subgroups. It is rebalanced twice per year. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Source: CRSP and Compustat.

Dimensional US High Profitability Index was created by Dimensional in January 2014 and represents an index consisting of US companies. It is compiled by Dimensional. Dimensional sorts stocks into three profitability groups from high to low. Each group represents one-third of the market capitalization. Similarly, stocks are sorted into three relative price groups. The intersections of the three profitability groups and the three relative price groups yield nine subgroups formed on profitability and relative price. The index represents the average return of the three high-profitability subgroups. It is rebalanced twice per year. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Source: CRSP and Compustat.

Dimensional International Low Profitability Index was created by Dimensional in January 2013 and represents an index consisting of non-US developed companies. It is compiled by Dimensional. Dimensional sorts stocks into three profitability groups from high to low. Each group represents one-third of the market capitalization of each eligible country. Similarly, stocks are sorted into three relative price groups. The intersections of the three profitability groups and the three relative price groups yield nine subgroups formed on profitability and relative price. The index represents the average return of the three low-profitability subgroups. The index is rebalanced twice per year. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Source: Bloomberg.

Dimensional International High Profitability Index was created by Dimensional in January 2013 and represents an index consisting of non-US developed companies. It is compiled by Dimensional. Dimensional sorts stocks into three profitability groups from high to low. Each group represents one-third of the market capitalization of each eligible country. Similarly, stocks are sorted into three relative price groups. The intersections of the three profitability groups and the three relative price groups yield nine subgroups formed on profitability and relative price. The index represents the average return of the three high-profitability subgroups. The index is rebalanced twice per year. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Source: Bloomberg.

Dimensional Emerging Markets Low Profitability Index was created by Dimensional in April 2013 and represents an index consisting of emerging markets companies and is compiled by Dimensional. Dimensional sorts stocks into three profitability groups from high to low. Each group represents one-third of the market capitalization of each eligible country. Similarly, stocks are sorted into three relative price groups. The intersections of the three profitability groups and the three relative price groups yield nine subgroups formed on profitability and relative price. The index represents the average return of the three low-profitability subgroups. The index is rebalanced twice per year. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Source: Bloomberg.

Dimensional Emerging Markets High Profitability Index was created by Dimensional in April 2013 and represents an index consisting of emerging markets companies and is compiled by Dimensional. Dimensional sorts stocks into three profitability groups from high to low. Each group represents one-third of the market capitalization of each eligible country. Similarly, stocks are sorted into three relative price groups. The intersections of the three profitability groups and the three relative price groups yield nine subgroups formed on profitability and relative price. The index represents the average return of the three high-profitability subgroups. The index is rebalanced twice per year. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Source: Bloomberg.