USING ACCOUNTING DATA BASED INDEXING TO CREATE A PORTFOLIO OF ASSETS

Cross-Reference to Related Application

[0001] The present application claims the benefit of U.S. Patent Application No. 60/751,212, Confirmation No. 7679, (Attorney Docket No. 43622-226758) filed December, 19, 2005 previously entitled "Using a Fundamental Index to Create a Portfolio of Assets," entitled "Using Accounting Data Based Indexing to Create a Portfolio of Assets" to Robert D. Arnott, of common assignee to the present invention, the contents of which are incorporated herein by reference in their entirety.

[0002] The present application also claims the benefit of and is also a continuation-in-part of U.S. Patent Application No. 11/196,509, filed August 4, 2005, which is a continuation-in-part of U.S. Patent Application No. 10/961,404, entitled "Non-Capitalization Weighted Fundamental Indexing System, Method and Computer Program Product," to Arnott, (Attorney Docket No. 43622-208053), filed October 12, 2004, (which claims the benefit of U.S. Provisional Patent Application No. 60/541,733, entitled "Securities Indexing," to Arnott, (Attorney Docket No. 43622-204086, formerly 51804/FLC/A750), filed February 4, 2004), and U.S. Patent Application No. 10/159,610, entitled "Fundamental Stock Market Index and Index Fund or Funds," filed June 3, 2002, all of which are of common assignee to the present invention, and all of the contents of which are incorporated herein by reference in their entireties.

Background of the Invention

Field of the Invention

[0003] The present invention relates generally to securities investing, and more particularly to construction and use of indexes and portfolios based on indexes.

Related Art

[0004] Conventionally, there are various broad categories of securities portfolio management. One conventional securities portfolio management category is active management wherein the

securities are selected for a portfolio individually based on economic, financial, credit, and/or business analysis; on technical trends; on cyclical patterns; etc. Another conventional category is passive management, also called indexing, wherein the securities in a portfolio duplicate those that make up an index. The securities in a passively managed portfolio are conventionally weighted by relative market capitalization weighting or equal weighting. Another middle ground conventional category of securities portfolio management is called enhanced indexing, in which a portfolio's characteristics, performance and holdings are substantially dominated by the characteristics, performance and holdings of the index, albeit with modest active management departures from the index.

[0005] The present invention relates generally to the passive and enhanced indexing categories of portfolio management. A securities market index, by intent, reflects an entire market or a segment of a market. A passive portfolio based on an index may also reflect the entire market or segment. Often every security in an index is held in the passive portfolio. Sometimes statistical modeling is used to create a portfolio that duplicates the profile, risk characteristics, performance characteristics, and securities weightings of an index, without actually owning every security included in the index. (Examples could be portfolios based on the Wilshire 5000 Equity Index or on the Lehman Aggregate Bond Index.) Sometimes statistical modeling is used to create the index itself such that it duplicates the profile, risk characteristics, performance characteristics, and securities weightings of an entire class of securities. (The Lehman Aggregate Bond Index is an example of this practice.)

[0006] Indexes are generally all-inclusive of the securities within their defined markets or market segments. In most cases indexes may include each security in the proportion that its market capitalization bears to the total market capitalization of all of the included securities. The only common exceptions to market capitalization weighting are equal weighting of the included securities (for example the Value Line index or the Standard & Poors 500 Equal Weighted Stock Index, which includes all of the stocks in the S&P 500 on a list basis; each stock given equal weighting as of a designated day each year) and share price weighting, in which share prices are simply added together and divided by some simple divisor (for example, the Dow Jones Industrial Average). Conventionally, passive portfolios are built

based on an index weighted using one of market capitalization weighting, equal weighting, and share price weighting.

[0007] Most commonly used stock market indices are constructed using a methodology that is based upon either the relative share prices of a sample of companies (such as the Dow Jones Industrial Average) or the relative market capitalization of a sample of companies (such as the S&P 500 Index or the FTSE 100 Index). The nature of the construction of both of these types of indices means that if the price or the market capitalization of one company rises relative to its peers it is accorded a larger weighting in the index. Alternatively, a company whose share price or market capitalization declines relative to the other companies in the index is accorded a smaller index weighting. This can create a situation where the index, index funds, or investors who desire their funds to closely track an index, are compelled to have a higher weighting in companies whose share prices or market capitalizations have already risen and a lower weighting in companies that have seen a decline in their share price or market capitalization.

[0008] Advantages of passive investing include: a low trading cost of maintaining a portfolio that has turnover only when an index is reconstituted, typically once a year; a low management cost of a portfolio that requires no analysis of individual securities; and no chance of the portfolio suffering a loss – relative to the market or market segment the index reflects – because of misjudgments in individual securities selection.

[0009] Advantages of using market capitalization weighting as the basis for a passive portfolio include that the index (and therefore a portfolio built on it) remains continually 'in balance' as market prices for the included securities change, and that the portfolio performance participates in (i.e., reflects) that of the securities market or market segment included in the index.

[00010] The disadvantages of market capitalization weighting passive indexes, which can be substantial, center on the fact that any under-valued securities are underweighted in the index and related portfolios, while any over-valued securities are over weighted. Also, the portfolio based on market capitalization weighting follows every market (or segment) bubble up and every market crash down. Finally, in general, portfolio securities selection is not based on a

criteria that reflects a better opportunity for appreciation than that of the market or market segment overall.

[00011] Most commonly used stock market indices are constructed using a methodology that is based upon either the relative share prices of a sample of companies (such as the Dow Jones Industrial Average) or the relative market capitalization of a sample of companies (such as the S&P 500 Index or the FTSE 100 Index). The nature of the construction of both of these types of indices means that if the price or the market capitalization of one company rises relative to its peers it is accorded a larger weighting in the index. Alternatively, a company whose share price or market capitalization declines relative to the other companies in the index is accorded a smaller index weighting. This can create a situation where the index, index funds, or investors who desire their funds to closely track an index, are compelled to have a higher weighting in companies whose share prices or market capitalizations have already risen and a lower weighting in companies that have seen a decline in their share price or market capitalization.

[00012] Price or market capitalization based indices can contribute to a 'herding' behavior on the behalf of investors by effectively compelling any of the funds that attempt to follow these indices to have a larger weighting in shares as their price goes up and a lower weighting in shares that have declined in price. This creates unnecessary volatility, which is not in the interests of most investors. It may also lead to investment returns that have had to absorb the phenomenon of having to repeatedly increase weightings in shares after they have risen and reduce weightings in them after they have fallen.

[00013] Capitalization-weighted indexes ("cap-weighted indexes") dominate the investment industry today, with approximately $2 trillion currently invested. Unfortunately, cap-weighted indexes suffer from an inherent flaw as they overweight all overvalued stocks and underweight all undervalued stocks. This causes cap-weighted indexes to under-perform relative to indexes that are immune to this shortcoming. In addition, cap-weighted indexes are vulnerable to speculative bubbles and emotional bear markets which may unnaturally drive up or down stock prices respectively.

[00014] It is a well established empirical conclusion of investment theory that cap-weighting is not mean-variance optimal. This conclusion holds because weighting schemes based on market price, including cap-weighting, overweight 100% of overvalued stocks and underweight 100% of undervalued stocks. Both mathematically and empirically, this over and under weighting problem inherent to cap-weighting leads to a return drag of 200 bps per year in the U.S. and more than 200 bps per year internationally.

[00015] One example of the phenomenon comes from the recent stock market bubble of 1997 - 2000, when, e.g., Internet network service provider Cisco comprised nearly 5% of the S&P 500. At its peak in 2000, Cisco traded at $70 per share. Since March 2000, Cisco has fallen to approximately 12% of its peak, dragging down S&P 500 performance of which it comprised 5%.

[00016] While it is difficult or impossible to know the true fair value of a company, what is known is that if an overvalued company's weight in an index is determined by market capitalization, then the company will be over-weighted in the index. Conversely, if a company's weight is determined by market capitalization and it is undervalued, it will be underweighted in a capitalization-weighted index.

[00017] Over the past 40 years, the largest stock by market capitalization in the S&P 500 has underperformed the average stock in the index over a 10-year time period by an average of 40%. The largest 10 stocks by market capitalization have underperformed the average stock over the subsequent 10-year time frame by an average of 26%. Yet, cap-weighted indexes continue to invest 20-30% of their value in the largest 10 stocks by market cap, despite the fact that they under-perform the average stock in the index, because the stocks are selected and weighted using market capitalization, which by its nature over-weights over valued stocks and under-weights undervalued stocks.

[00018] Equal-weighted indexation is a popular alternative to cap-weighting but one that suffers from its own shortcomings. One significant problem with equal-weighted indexes is that they come out of the same cap-weighted universes as cap-weighted indexes. For example, the S&P Equal Weighted Index simply re-weights the 500 equities that comprise the S&P 500, retaining the bias already inherent to cap-weighted indexes.

[00019] High turnover and associated high costs are additional problems of equal-weighted indexes. Equal-weighted indexes include small illiquid stocks, which are required to be held in equal proportion to the larger, more liquid stocks in the index. These small illiquid stocks must be traded as often as the larger stocks but at a higher cost because they are less liquid.

[00020] What is needed then is an improved method of weighting financial objects in a portfolio based on an index that overcomes shortcomings of conventional solutions.

Summary of the Invention

[00021] In an exemplary embodiment of the present invention a system, method and computer program product for index construction and/or portfolio weighting is disclosed.

[00022] Exemplary embodiments of the present invention may use accounting data based indexing, i.e., accounting data based measures of firm size, rather than market capitalization, to construct a stock index. By avoiding the inherent valuation bias of cap-weighted indexes, accounting data based indexes (ADBI) may outperform cap-weighted indexes by as much as 200 bps in the US and by more than 250 bps internationally, based on extensive back testing (to 1962 in the US and to 1988 internationally).

[00023] An exemplary embodiment may use four specific metrics in ADBI construction: book equity value; income (free cash flow); sales; and gross dividends. An ADBI construction strategy may offer several advantages. For example, ADBI may outperform cap-weighted indexes. Additionally, ADBI may be adaptable to distinct strategies. ADBI may be used to construct either large or small company indexes, industry sector indexes, geographic indexes and others. ADBI may also effectively limit portfolio risk by providing the benefits of traditional cap-weighted indexes, including diversification, broad market participation, liquidity and low turnover, while generating incrementally higher returns with somewhat lower volatility than comparable cap-weighted indexes. ADBI may also provide protection against market bubbles and fads because a stock's weight in the index is immune to errors in stock valuation.

[00024] In an exemplary embodiment, the present invention may be a method of constructing a portfolio of financial objects, including the steps of: purchasing a portfolio of a plurality of mimicking financial objects to obtain and/or create a mimicking portfolio, where performance of the portfolio of mimicking financial objects substantially mirrors the performance of an accounting data based index based portfolio without substantially replicating the accounting data based index based portfolio.

[00025] The embodiment may further include: obtaining and/or using a risk model for the portfolio of mimicking financial objects, where the risk model mirrors a risk model of the accounting data based index.

[00026] The performance of the portfolio of mimicking financial objects may substantially mirror the performance of the accounting data based index based portfolio without substantially replicating financial objects and/or weightings in the accounting data based index based portfolio. The risk model may be substantially similar to the Fama-French factors, where the Fama-French factors may include at least one of size effect, value effect, and/or momentum effect.

[00027] A financial object may include: at least one unit of interest in at least one of: an asset; a liability; a tracking portfolio; a financial instrument and/or a security, where the financial instrument and/or the security denotes a debt, an equity interest, and/or a hybrid; a derivatives contract, including at least one of: a future, a forward, a put, a call, an option, a swap, and/or any other transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding whether such contract, for purposes of accounting, is considered an asset or liability; a fund; and/or an investment entity or account of any kind, including an interest in, or rights relating to: a hedge fund, an exchange traded fund (ETF), a fund of funds, a mutual fund, a closed end fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

[00028] In another exemplary embodiment, the present invention may be a method of constructing a portfolio of financial objects, including the steps of: purchasing a plurality of financial objects according to weightings substantially similar to the weightings of an accounting data based index, where performance of the plurality of financial objects

substantially mirrors the performance of the accounting data based index without using substantially the same financial objects in the accounting data based index.

[00029] The financial object may include: at least one unit of interest in at least one of: an asset; a liability; a tracking portfolio; a financial instrument and/or a security, where the financial instrument and/or the security denotes a debt, an equity interest, and/or a hybrid; a derivatives contract, including at least one of: a future, a forward, a put, a call, an option, a swap, and/or any other transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding whether such contract, for purposes of accounting, is considered an asset or liability; a fund; and/or an investment entity or account of any kind, including an interest in, or rights relating to: a hedge fund, an exchange traded fund (ETF), a fund of funds, a mutual fund, a closed end fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

[00030] In another exemplary embodiment, the present invention may be a method of constructing a portfolio of financial objects, including the steps of: determining overlapping financial objects appearing in both an accounting data based index (ADBI) and a conventional weighted index, where the conventionally weighted index may includes an index weighted based on at least one of capitalization, equal weighting, and/or share price weighting, and where the ADBI may includes weighting based on at least one accounting data based factor and not based on any of capitalization, equal weighting, and/or share price weighting index; comparing weightings of the overlapping financial objects in the ADBI with weightings of the overlapping financial objects in the conventionally weighted index; and purchasing at least one financial object based on the comparing.

[00031] The purchasing may include at least one of: purchasing a long position in at least one overlapping financial object when the comparing indicates the at least one overlapping financial object is over weighted in the non-capitalization weighted index relative to the conventional index; and/or purchasing a short position in at least one overlapping financial object when the comparing indicates the at least one overlapping financial object is underweighted in the non-capitalization weighted index relative to the conventional index.

[00032] The purchasing of the long and/or short positions may be implemented by using total return swaps. The long and/or short positions may be held for one year.

[00033] The embodiment may further include rebalancing the portfolio. The rebalancing may include: at least one of creating new long and/or short positions using cash flow from new capital contributions, and/or altering existing long and/or short positions using cash flow from new capital contributions.

[00034] The embodiment may further include using leverage to obtain the long and/or short positions.

[00035] The comparing may include calculating a difference between the weightings, and/or calculating a difference between arithmetically modified values of the weightings. The arithmetically modified values of the weightings may include square roots of the weightings.

[00036] The comparing may include calculating a difference based on tiers of weightings using stratified sampling.

[00037] The financial object may include: at least one unit of interest in at least one of: an asset; a liability; a tracking portfolio; a financial instrument and/or a security, where the financial instrument and/or the security denotes a debt, an equity interest, and/or a hybrid; a derivatives contract, including at least one of: a future, a forward, a put, a call, an option, a swap, and/or any other transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding whether such contract, for purposes of accounting, is considered an asset or liability; a fund; and/or an investment entity or account of any kind, including an interest in, or rights relating to: a hedge fund, an exchange traded fund (ETF), a fund of funds, a mutual fund, closed end fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

[00038] In another exemplary embodiment, the present invention may be a method of constructing a portfolio of financial objects, including the steps of: determining non-overlapping financial objects appearing in only one of either an accounting data based index (ADBI) or a conventional weighted index by comparing financial objects in an ADBI with financial objects in a conventionally weighted index, where the conventionally weighted index may includes conventionally weighting based on at least one of capitalization, equal

weighting, and/or share price weighting, and where the ADBI may includes accounting data based weighting on at least one accounting data based factor and not based on any of capitalization, equal weighting, and/or share price weighting index; weighting the non-overlapping financial objects appearing only in the ADBI by accounting data based weighting; weighting the non-overlapping financial objects appearing only in the conventionally weighted index by the conventional weighting; and purchasing financial objects based on the weightings.

[00039] The accounting data based weighting may include: (a) gathering data about a plurality of financial objects; (b) selecting a plurality of financial objects to create an index of financial objects; and (c) weighting each of the plurality of financial objects selected in the index based on an objective measure of scale based on accounting data of a company associated with each of the plurality of financial objects, where the weighting may include: (i) weighting at least one of the plurality of financial objects based on accounting data; and (ii) weighting other than weighting based on at least one of market capitalization, equal weighting, and/or share price weighting.

[00040] The embodiment may further include weighting each of the plurality of financial objects, where the each of the financial objects may include: at least one unit of interest in at least one of: an asset; a liability; a tracking portfolio; a financial instrument and/or a security, where the financial instrument and/or the security denotes a debt, an equity interest, and/or a hybrid; a derivatives contract, including at least one of: a future, a forward, a put, a call, an option, a swap, and/or any other transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding whether such contract, for purposes of accounting, is considered an asset or liability; a fund; and/or an investment entity or account of any kind, including an interest in, or rights relating to: a hedge fund, an exchange traded fund (ETF), a fund of funds, a mutual fund, closed end fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

[00041] The embodiment may further include weighting each of the plurality of financial objects, where the each of the financial objects may include a stock.

[00042] The objective measures of scale may include weighting based on any dividends, book value, cash flow, and/or revenue. The embodiment may further include equally weighting each objective measure of scale.

[00043] The embodiment may further include weighting based on the objective measure of scale, where the objective measure of scale may include a measure of company size associated with each of the plurality of financial objects.

[00044] The measure of company size may include at least one of: inventory, revenue, sales, income, book income, taxable income, earnings growth rate, earnings before interest and tax (EBIT), earnings before interest, taxes, depreciation and amortization (EBITDA), retainer earnings, number of employees, capital expenditures, salaries, book value, assets, fixed assets, current assets, quality of assets, operating assets, intangible assets, dividends, gross dividends, dividend yields, cash flow, liabilities, losses, long term liabilities, short term liabilities, liquidity, long term debt, short term debt, bonds, corporate bonds, net worth, shareholder equity, goodwill, research and development expenditures, costs, cost of goods sold (COGS), and/or research and development costs.

[00045] The financial object may include: at least one unit of interest in at least one of: an asset; a liability; a tracking portfolio; a financial instrument and/or a security, where the financial instrument and/or the security denotes a debt, an equity interest, and/or a hybrid; a derivatives contract, including at least one of: a future, a forward, a put, a call, an option, a swap, and/or any other transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding whether such contract, for purposes of accounting, is considered an asset or liability; a fund; and/or an investment entity or account of any kind, including an interest in, or rights relating to: a hedge fund, an exchange traded fund (ETF), a fund of funds, a mutual fund, a closed end fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

[00046] In another exemplary embodiment, the present invention may be a method, executed on a data processing system, including the steps of: creating an accounting data based index (ADBI) based on accounting data including: selecting a universe of financial objects, and selecting a subset of the universe based on the accounting data to obtain the ADBI; creating a

portfolio of financial objects using the ADBI, including weighting the financial objects in the portfolio according to a measure of value of a company associated with each financial object in the portfolio.

[00047] The universe may include at least one of: a sector; a market; a market sector; an industry sector; a geographic sector; an international sector; a sub-industry sector; a government issue; and/or a tax exempt financial object.

[00048] The accounting based data used in weighting as a measure of value of the company associated with the financial object, may include at least one of: any dividends; revenue; cash flow; and/or book value.

[00049] The accounting based data may be weighted relatively dependent on the geography of the company associated with the financial object.

[00050] The financial object may include: at least one unit of interest in at least one of: an asset; a liability; a tracking portfolio; a financial instrument and/or a security, where the financial instrument and/or the security denotes a debt, an equity interest, and/or a hybrid; a derivatives contract, including at least one of: a future, a forward, a put, a call, an option, a swap, and/or any other transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding whether such contract, for purposes of accounting, is considered an asset or liability; a fund; and/or an investment entity or account of any kind, including an interest in, or rights relating to: a hedge fund, an exchange traded fund (ETF), a fund of funds, a mutual fund, a closed end fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

[00051] In another exemplary embodiment, the present invention may be a computer-implemented method for construction and management of an index and at least one index fund containing a portfolio of financial objects based on the index, where weighting of the index is based on accounting based data rather than on stock prices or market capitalization or equal weighting, the computer-implemented method including the steps of: creating an index, and at least one index fund containing a portfolio of financial objects, where the constituent weightings of the companies issuing the financial objects in the index fund are based upon accounting based data regarding the companies associated with the financial objects, where

the accounting based data may includes any dividends, cash flow, revenues, and/or book value.

[00052] The embodiment may further include: creating the index, and the at least one index fund containing a portfolio of financial objects where the constituent weightings are based upon any ratio of accounting based data, or any manipulation of accounting based data, that is contained within a standard company annual report and accounts.

[00053] The embodiment may further include: creating the index, and the at least one index fund containing a portfolio of financial objects where the constituent weightings are based upon any ratio of accounting based data per share, or any manipulation of accounting based data, that is contained within a standard company annual report and accounts.

[00054] The embodiment may further include: managing an accounting based data index, and at least one index fund containing a portfolio of financial objects based on the index including: altering the relative weightings of the financial objects within the at least one index fund as the accounting based data concerning the companies associated with the financial objects changes.

[00055] The altering may include at least one of: altering based on at least one of: changes in relative weightings of financial objects in the index; and/or changes in the financial objects that are members of the index outside the sample changes; and/or altering at the time of at least one of when, and/or after at least one company associated with a financial object of the index reports its accounting information.

[00056] The financial object may include: at least one unit of interest in at least one of: an asset; a liability; a tracking portfolio; a financial instrument and/or a security, where the financial instrument and/or the security denotes a debt, an equity interest, and/or a hybrid; a derivatives contract, including at least one of: a future, a forward, a put, a call, an option, a swap, and/or any other transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding whether such contract, for purposes of accounting, is considered an asset or liability; a fund; and/or an investment entity of any kind, including an interest in, or rights relating to: a hedge fund, an

exchange traded fund (ETF), a fund of funds, a mutual fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

[00057] The measure of company size may include at least one of: a financial ratio of a company; a ratio of accounting based data; a ratio of accounting based data per share; a ratio of a first accounting based data to a second accounting based data; a liquidity ratio; a working capital ratio; a current ratio; a quick ratio; a cash ratio; an asset turnover ratio; a receivables turnover ratio; an average collection period ratio; an average collection period ratio; an inventory turnover ratio; an inventory period ratio; a leverage ratio; a debt ratio; a debt-to-equity ratio; an interest coverage ratio; a profitability ratio; a return on common equity (ROCE) ratio; profit margin ratio; an earnings per share (EPS) ratio; a gross profit margin ratio; a return on assets ratio; a return on equity ratio; a dividend policy ratio; a dividend yield ratio; a payout ratio; a capital market analysis ratio; a price to earnings (PE) ratio; and/or a market to book ratio.

[00058] Further features and advantages of the invention, as well as the structure and operation of various embodiments of the invention, are described in detail below with reference to the accompanying drawings.

Brief Description of the Drawings

[00059] The foregoing and other features and advantages of the invention will be apparent from the following, more particular description of exemplary embodiments of the invention, as illustrated in the accompanying drawings. In the drawings, like reference numbers generally indicate identical, functionally similar, and/or structurally similar elements. The drawing in which an element first appears is indicated by the leftmost digits in the corresponding reference number. A preferred exemplary embodiment is discussed below in the detailed description of the following drawings:

[00060] FIG. 1 is a deployment diagram of an index generation and use process in accordance with an exemplary embodiment of the present invention;

[00061] FIG. 2 is a process flow diagram of an index generation process in accordance with an exemplary embodiment of the present invention;

[00062] FIG. 3 is a process flow diagram of an index use process in accordance with an exemplary embodiment of the present invention;

[00063] FIG. 4 is a process flow diagram of a method of creating a portfolio of financial objects; and

[00064] FIG. 5 is a process flow diagram of a method of constructing an ADBI and a portfolio of financial objects using the ADBI.

Detailed Description of Embodiments of the Present Invention

[00065] Various exemplary embodiments of the invention are discussed in detail below including a preferred embodiment. While specific implementations are discussed, it should be understood that this is done for illustration purposes only. A person skilled in the relevant art can recognize that other components, configurations, accounting data, and ratios may be used without parting from the spirit and scope of the invention.

[00066] An exemplary embodiment of the invention may be implemented on a computing device(s), processor(s), computer(s) and/or communications device(s).

[00067] The computer, in an exemplary embodiment, may comprise one or more central processing units (CPUs) or processors, which may be coupled to a bus. The processor may, e.g., access main memory via the bus. The computer may be coupled to an input/output (I/O) subsystem such as, e.g., but not limited to, a network interface card (NIC), or a modem for access to a network. The computer may also be coupled to a secondary memory directly via bus, or via a main memory, for example. Secondary memory may include, e.g., but not limited to, a disk storage unit or other storage medium. Exemplary disk storage units may include, but are not limited to, a magnetic storage device such as, e.g., a hard disk, an optical storage device such as, e.g., a write once read many (WORM) drive, or a compact disc (CD), or a magneto optical device. Another type of secondary memory may include a removable disk storage device, which may be used in conjunction with a removable storage medium,

such as, e.g. a CD-ROM, a floppy diskette or flash drive, etc. In general, the disk storage unit may store an application program for operating the computer system referred to commonly as an operating system. The disk storage unit may also store documents of a database (not shown). The computer may interact with the I/O subsystems and disk storage unit via bus. The bus may also be coupled to a display for output, and input devices such as, but not limited to, a keyboard and a mouse or other pointing/selection device.

[00068] In this document, the terms "computer program medium" and "computer readable medium" may be used to generally refer to media such as, e.g., but not limited to, a removable storage drive, a hard disk installed in hard disk drive, and signals, etc. These computer program products may provide software to the computer system. The invention may be directed to such computer program products.

[00069] References to "one embodiment," "an embodiment," "example embodiment," "various embodiments," etc., may indicate that the embodiment(s) of the invention so described may include a particular feature, structure, or characteristic, but not every embodiment necessarily includes the particular feature, structure, or characteristic. Further, repeated use of the phrase "in one embodiment," or "in an exemplary embodiment," do not necessarily refer to the same embodiment, although they may.

[00070] In the following description and claims, the terms "coupled" and "connected," along with their derivatives, may be used. It should be understood that these terms are not intended as synonyms for each other. Rather, in particular embodiments, "connected" may be used to indicate that two or more elements are in direct physical or electrical contact with each other. "Coupled" may mean that two or more elements are in direct physical or electrical contact. However, "coupled" may also mean that two or more elements are not in direct contact with each other, but yet still co-operate or interact with each other.

[00071] An algorithm is here, and generally, considered to be a self-consistent sequence of acts or operations leading to a desired result. These include physical manipulations of physical quantities. Usually, though not necessarily, these quantities take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared, and otherwise manipulated. It has proven convenient at times, principally for reasons of common

usage, to refer to these signals as bits, values, elements, symbols, characters, terms, numbers or the like. It should be understood, however, that all of these and similar terms are to be associated with the appropriate physical quantities and are merely convenient labels applied to these quantities.

[00072] Unless specifically stated otherwise, as apparent from the following discussions, it is appreciated that throughout the specification discussions utilizing terms such as "processing," "computing," "calculating," "determining," or the like, refer to the action and/or processes of a computer or computing system, or similar electronic computing device, that manipulate and/or transform data represented as physical, such as electronic, quantities within the computing system's registers and/or memories into other data similarly represented as physical quantities within the computing system's memories, registers or other such information storage, transmission or display devices.

[00073] In a similar manner, the term "processor" may refer to any device or portion of a device that processes electronic data from registers and/or memory to transform that electronic data into other electronic data that may be stored in registers and/or memory. A "computing platform" may comprise one or more processors.

[00074] Embodiments of the present invention may include apparatuses for performing the operations herein. An apparatus may be specially constructed for the desired purposes, or it may comprise a general purpose device selectively activated or reconfigured by a program stored in the device.

Constructing Accounting Data Based Indexes

[00075] A financial object, as discussed herein, may include at least one unit of interest in an asset; a liability; a tracking portfolio; and/or a financial instrument and/or a security, where the financial instrument and/or security denotes a debt, an equity interest, and/or a hybrid. A financial object, as discussed herein, may also include at least one unit of interest in a derivatives contract, including but not limited to at least one of: a future, a forward, a put, a call, an option, a swap, or other financial instrument whose price is derived from the price of the underlying financial asset, and/or any other transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding

whether such contract, for purposes of accounting, is considered an asset or liability. A financial object, as discussed herein, may also include at least one unit of interest in a fund; and/or in an investment entity or account of any kind, including an interest in, or rights relating to: a hedge fund, an exchange traded fund (ETF), a fund of funds, a mutual fund, a closed end fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

[00076] FIG. 1 depicts an exemplary deployment diagram 100 of an index generation and use process in accordance with an exemplary embodiment of the present invention. According to the exemplary embodiment, an analyst may use a computer system 102 to generate an index 110. The analyst may do so by using analysis software 114 to examine data 106 about entities offering different kinds of financial objects that may be traded by investors. An example of an entity that may be offering financial objects may be a publicly held company whose shares trade on an exchange. However, the present invention also applies to any entity that may have any type of financial object that may be traded where information about the entity and/or its financial objects is available (or capable of being made available) for analysis.

[00077] In an exemplary embodiment, once index 110 has been generated by an analyst using the entity data 106, index 110 may be used to build investment portfolios. An investor, advisor, manager or broker may then manage the purchased financial objects as a mutual fund, an electronic traded fund, a hedge fund or other portfolio or account of assets for one or for a plurality of individual and/or institutional investors. The investor, advisor, manager or broker may use a trading computer 104 with trading software 116 to manage one or more trading accounts 108. Alternatively, the purchased financial objects may be managed for one or more investors. In the latter case, financial objects may be purchased based on the index for inclusion in an individual or an institutional investor's portfolio. One or more trades may be effected or closed in cooperation with and via communication with an exchange host 112.

[00078] FIG. 2 depicts an exemplary process flow diagram 200 of an index generation process in accordance with an exemplary embodiment of the present invention. In an exemplary embodiment, starting at block 202, to generate index 110, an analyst using analysis software 114 may access entity data 106 about various entities that have financial objects that

are traded. For example, publicly traded companies must disclose information about certain financial aspects of their operations. This information may be aggregated for a plurality of entities. Market sectors and corresponding indices may then be identified and generated using the aggregate data.

[00079] In slightly more detail, an index 110 may be generated by normalizing entity data for a particular non-market capitalization metric in block 204. The normalized entity data may be used to generate a weighting function, in block 206, describing the contribution of each entity to a business sector as defined by the metric, in an exemplary embodiment. Index 110 may be generated using the weighting function in block 208. The process ends at block 210. Once index 110 is generated, according to an exemplary embodiment, index 110 may be used to track the business sector defined by the metric or to create a portfolio of financial objects offered by the entities whose information was used to generate the index.

[00080] For example, in an exemplary embodiment of the invention a method of constructing a non-capitalization weighted portfolio of financial objects may include, e.g., gathering data about various financial objects; selecting a group of financial objects to create the index of financial objects; and weighting each of the group of financial objects selected in the index based on an objective measure of scale of each member of the group of financial objects, where the weighting may include weighting all or a subset of the group of financial objects, and weighting based on other than market capitalization, equal weighting, or share price weighting.

[00081] In one exemplary embodiment, the weighting of each member of the group of financial objects, may include weighting financial objects of any of various types. Examples of various types of financial objects may include, e.g., but not limited to, a stock type; a commodity type; a futures contract type; a bond type; a mutual fund type; a hedge fund type; a fund of funds type; an exchange traded fund (ETF) type; a derivative type asset, and any other portfolio or account of financial objects. The weighting may also include, e.g., but not limited to, a negative weighting on any of the various types of financial objects.

[00082] According to exemplary embodiments of the present invention, the index 110 may be weighted based on an objective measure of scale, where the objective measure of scale may

include a measure relating to an underlying asset itself. The financial object may include a municipality, a municipality issuing bonds, or a commodity. An objective measure of scale associated with the financial object may include any combination or ratios of: revenue, profitability, sales, total sales, foreign sales, domestic sales, net sales, gross sales, profit margin, operating margin, retained earnings, earnings per share, book value, book value adjusted for inflation, book value adjusted for replacement cost, book value adjusted for liquidation value, dividends, assets, tangible assets, intangible assets, fixed assets, property, plant, equipment, goodwill, replacement value of assets, liquidation value of assets, liabilities, long term liabilities, short term liabilities, net worth, research and development expense, accounts receivable, earnings before interest, taxes, dividends, and amortization (EBITDA), accounts payable, cost of goods sold (CGS), debt ratio, budget, capital budget, cash budget, direct labor budget, factory overhead budget, operating budget, sales budget, inventory method, type of stock offered, liquidity, book income, tax income, capitalization of earnings, capitalization of goodwill, capitalization of interest, capitalization of revenue, capital spending, cash, compensation, employee turnover, overhead costs, credit rating, growth rate, dividends, dividends per share, dividend yields, tax rate, liquidation value of company, capitalization of cash, capitalization of earnings, capitalization of revenue, cash flow, and/or future value of expected cash flow.

[00083] Ratios too may be used. In an exemplary embodiment, the weighting of financial objects in the index based on objective measures of scale may include a ratio of any combination of the objective measures of scale of the financial object other than ratios based on weighting the financial objects based on market capitalization, equal weighting, or share price weighting. For example, the ratio of any combination of the objective measures of scale may include, e.g., but not limited to, current ratio, debt ratio, overhead expense as a percent of sales, or debt service burden ratio.

[00084] In an exemplary embodiment, the portfolio of financial objects may include, e.g., but not limited to, one or more of, a fund; a mutual fund; a fund of funds; an asset account; an exchange traded fund (ETF); a separate account, a pooled trust; a limited partnership or other legal entity, fund or account.

[00085] In an exemplary embodiment, a measure of company size may include one of, or a combination of one or more of, gross revenue, sales, income, earnings before interest and tax (EBIT), earnings before interest, taxes, depreciation and amortization (EBITDA), number of employees, book value, assets, liabilities, net worth, cash flow or dividends.

[00086] In one exemplary embodiment, the measure of company size may include a demographic measure of the financial object. The demographic measure of the financial object may include, e.g., one of, or any combination of one or more of a non-financial metric, a non-market related metric, a number of employees, floor space, office space, or other demographics of the financial object.

[00087] In an exemplary embodiment, weighting may be based on the objective measure of scale, where the measure may include a geographic metric. The geographic metric in an exemplary embodiment may include a geographic metric other than gross domestic product (GDP) weighting.

[00088] FIG. 3 depicts an exemplary process flow diagram 300 of an index use process in accordance with an exemplary embodiment of the present invention. The process starts at block 302. An index 310 may be received from an index generation process and may be used to determine the identity and quantity of securities to purchase for a portfolio in block 304, according to an exemplary embodiment. The securities may be purchased, in block 306, from an exchange 314 or other market and may be held on account for an investor or group of investors in trading accounts 308. The index 310 may be updated on, e.g., but not limited to, a periodic basis and may be used as a basis to rebalance the portfolio, according to an exemplary embodiment. According to another exemplary embodiment, the portfolio can be rebalanced when, e.g., a pre-determined threshold is reached. In this way, a portfolio may be created and maintained based on a non-market capitalization index.

[00089] Rebalancing can be based on financial objects reaching a threshold condition or value. For example, but not limited to, rebalancing may occur upon reaching a threshold such as, e.g., 'when the portfolio of financial objects increases in market value by 20%,' or 'when the financial objects on a sub-category within the portfolio exceed 32% of the size of the

portfolio,' or 'when a U.S. President is elected from a different party than the incumbent,' etc. Rebalancing may take place periodically, e.g., quarterly, or annually.

[00090] The present invention, in an exemplary embodiment, may be used for investment management, or investment portfolio benchmarking.

[00091] Another exemplary embodiment of the present invention may include an Accounting Data Based Index (ADBI) such as, e.g., but not limited to, a FUNDAMENTAL INDEX™ and Index Fund or Funds.

[00092] This exemplary embodiment may utilize a new series of accounting data based stock market indices in which the index weightings may be determined by company accounting data such as, e.g., but not limited to, the relative size of a company's profits, or its pre-exceptional profits, or sales, or return on investment or any accounting data based accounting item, or ratio, may help to address some of the issues raised above. An index that is weighted based on company accounting data, rather than the share price, or market capitalization or equal weighting, may have a stabilizing element within it that can help to remove excess volatility generated by indices constructed on the basis of price or market capitalization alone. Over the medium to longer term, such accounting data based indices have the potential to outperform price or market capitalization-based indices, and may do so with less volatility.

[00093] The exemplary inventive method may create a new class of stock market indices and index funds that may be implemented on, e.g., but not limited to, a computing device or a processor, or as a computer software or hardware, or as an algorithm. This new class of stock market indices may base its weightings on the accounting data of the companies that make up that index. One possible version of an accounting data based stock market index may be an index that is based on the relative size of a sample of the companies' pre-exceptional profits. If the chosen sample of companies was determined to be one hundred and the accounting data based criteria that the index manager decided to use was to be 'largest pre-exceptional profits,' then the index may contain, e.g., the one hundred largest companies as defined by the size of their pre-exceptional profits. As an example, if the total pre-exceptional profits of the largest one hundred companies, as measured by their pre-exceptional profits, was 100 dollars, pound, or other currency, in a defined time period (such as a quarter or year) and in the same

time period the pre-exceptional profits of theoretical company 'A' were $2, then theoretical company A would be allocated a 2% weighting in the accounting data based index, in an exemplary embodiment. If theoretical company B had pre-exceptional profits of $1.5 in over the same time period then it would have a weighting of 1.5% in the accounting data based index according to an exemplary embodiment.

[00094] The index weightings may be managed based on how the fundamentals of the companies within, or outside, the chosen index sample may change. As an example, the index manager could choose to rebalance the weightings from time to time such as, e.g., but not limited to, periodically, aperiodically, quarterly, as company pre-exceptional profits change, and/or on an annual basis, etc., and enter their choice into, e.g., a computing device. If, for instance, by the time of the next rebalancing period the total pre-exceptional profits of the largest one hundred companies, as measured by their pre-exceptional profits, had grown to $120, and theoretical company A now had pre-exceptional profits of $1.2, the computing device may calculate the weighting of company in the accounting data based index such as, e.g., the accounting data based index down to 1% from 2% in the previous period. Creating such accounting data based indices may give an investor the opportunity to follow, or invest, passively in an index which may be anchored to the economic realities of the companies within it. This new accounting data based index construction technique by a computing device may produce an index and related index fund products with increased stability and with increased economically rational behavior as compared with known methods of investing.

Accounting Data Based Indexation

[00095] In one exemplary embodiment, a computing device may create an accounting data based stock market index (ADBI) such as, e.g., an accounting data based stock market index by using any of the accounting data based data points regarding a company or a group of companies that can be found in a company's annual report and accounts. In one exemplary embodiment, the computing device may create an index of companies based on the relative size of the companies' sales, assets, profits, cash flow or the shareholders equity. In addition, the computing device can also create the ADBI by using a ratio of any of the data concerning a company or group of companies that may be contained in a company report and accounts.

In one exemplary embodiment, this could include the relative size of the return on financial objects of a selection of companies, their return on investment, or their return on capital compared to their cost of capital.

[00096] Once the index manager has decided and entered which accounting data based criteria to use and how many constituents the manager may decide that he or she wants to include in the index, the computing device may create the index in the following way. If, for example, the index manager decides to construct an accounting data based stock market index of one hundred constituent members and decides to use pre-exceptional profit as the chosen accounting data based criteria, the computing device may create the index as follows. First, the computing device may perform a search to find which are the largest one hundred listed companies as defined by the size of their pre-exceptional profits. Once the computing device has identified this information, the computing device may be ready to construct the index. Companies may be accorded index weightings based on the relative size of their pre-exceptional profits. If the combined pre-exceptional profits of the one hundred companies is $100 and theoretical company A has pre-exceptional profits of $2, then it may have an index weighting of 2%. Once the one hundred companies may have been accorded their weightings, the computing device may begin to calculate future index performance as the share prices of the different companies in the index changes from day to day. This may be achieved by assuming a starting value for the index, or index portfolio, and then calculating how each of the index constituents may perform going forward.

[00097] The computing device may then rebalance the index weightings as the accounting data based data points change over time as desired by the investor. For instance, if at the end of the next company reporting season the combined pre-exceptional profits of the one hundred largest companies had grown from $100 to $120 and the pre-exceptional profits of theoretical company A had declined from $2 to $1.2, the computing device may determine its weighting in the index would decline from 2% in the prior period to 1% in the current period. Also, some of the original companies in the first one hundred may be eliminated from the index if their pre-exceptional profits fall below a certain level while new companies that were not in the original sample may be included. The computing device, under the direction of an

investor, may choose to rebalance the weightings in the index, e.g., but not limited to, as individual companies report their pre-exceptional profits on a quarterly basis, and/or waiting until the majority of companies have reported their pre-exceptional profits and then adjusting them all at once. Also, the computing device, under the direction of an investor, could choose to determine the weightings based on, e.g., but not limited to, either the total nominal amount of pre-exceptional profit each quarter or on a cumulative rolling basis.

[00098] Constructing a stock market index according to an exemplary embodiment using accounting data based company accounts data or a ratio, or manipulation of that data may provide a series of genuine alternatives for investors who want to invest in a passive style while focusing on fundamentals that they believe are important. For instance, according to an exemplary embodiment an investor may always want to own an index of U.S. or foreign equities that are, e.g., the largest five hundred companies as measured by sales, or by profits, or by growth in sales, or by return on investment, or any accounting data based company accounts data or ratio of that data.

Long-Short Equity Strategies

[00099] An exemplary embodiment of the present invention may take long and short positions based on an extent to which accounting data based indexation suggests that equities are under or over valued.

[000100] FIG. 4 illustrates an exemplary process flow diagram 400 of a method of creating a portfolio of financial objects according to an embodiment of the present invention. In block 402 the process starts. In block 404, a determination is made of overlapping financial objects that appear in both an accounting data based index (ADBI) 410 and a conventional weighted index 412. In block 406, the weightings of the overlapping financial objects in the ADBI are compared with the weightings of the overlapping financial objects in the conventionally weighted index. Then, in block 408, one or more of the overlapping financial object may be purchased based on the result of the comparison.

[000101] In the alternative, exemplary embodiments of the present invention may determine non-overlapping financial objects appearing in only one of either an accounting

data based index (ADBI) or a conventional weighted index by comparing financial objects in an ADBI with financial objects in a conventionally weighted index. Non-overlapping financial objects appearing only in the ADBI may be weighted by accounting data based weighting. Non-overlapping financial objects appearing only in the conventionally weighted index may be weighted by the conventional weighting. Financial objects may then be purchased based on the resulting weightings.

[000102] In an exemplary embodiment, an index of the largest 1,000 U.S. equities, weighted by accounting data, may overlap an index of the largest 1,000 U.S. capitalization-weighted companies by approximately 80%. The 20% of non-overlapping companies may drive the 2.0% increase in return of an accounting data based index such as, e.g., but not limited to, RESEARCH AFFILIATES FUNDAMENTAL INDEX™ (RAFI™) available from Research Affiliates, LLC of Pasadena, CA, versus a cap-weighted index. A long-short strategy according to an exemplary embodiment is designed to leverage this 20% of companies that do not overlap, and may capture the expected alpha from the accounting data based indexation. An exemplary long-short U.S. equity strategy may be approximately beta and dollar neutral and can replace or complement market neutral or long-short strategies, or as part of a portfolio's alternative strategies bucket.

[000103] Accounting data based indexation may use economic measures of company size in constructing indexes. Using accounting data based economic measures of firm size may create an index that is indifferent to price. Accounting data based indexes may avoid flaws inherent in capitalization (price)-weighted indexes. Capitalization-weighted indexes naturally overweight overvalued stocks and underweight undervalued stocks. Accounting data based indexes may more accurately estimate a true fair value of a company, allowing the weight of a company's stock in the index to rise or fall only to the extent that the underlying economic value of the issuing company may rise or fall.

ADBI portfolio construction

[000104] FIG. 5 illustrates an exemplary flow process diagram 500 of a method of constructing an ADBI and a portfolio of financial objects using the ADBI, starting at block 502. In block 504, the ADBI 510 is created. Creating the ADBI may include, in block 506,

selecting a universe of financial objects, and, in block 508, selecting a subset of the universe based on the accounting data to obtain the ADBI 510. Then, in block 512, a portfolio of financial objects is created using the ADBI 510, including weighting the financial objects in the portfolio according to a measure of value of a company associated with each financial object in the portfolio.

[000105] To construct an exemplary accounting data based index (ADBI), such as, e.g., but not limited to, the RESEARCH AFFILIATES FUNDAMENTAL INDEX™ (RAFI™), some number of financial objects, e.g., 1000 US equities, may be selected and/or weighted based on the following four accounting data based measures of firm size: book equity value, free cash flow, sales, and gross dividends.

[000106] An exemplary embodiment of an accounting data based index such as, e.g., but not limited to, the RAFI™ index may first weight all US equities by each of the four accounting data based measures of firm size detailed above. According to an exemplary embodiment, an optimal relative weighting between the four factors may differ by geography of the stock market from which the equities are selected such as, e.g., an equal weighting may be optimal in one country or industry sector, while a different relative weighting between the factors may make sense in another country or industry sector. The index may then compute an overall weight for each holding by equally-weighting each of the four accounting data based measure of firm size according to an exemplary embodiment. For example, assume that a company has the following weights: 2.8% of total US book values, 2% of total US cash flow, 3% of total US sales, and 2.2% of total US dividends.

[000107] Equally-weighting these four accounting data based measures of firm size (i.e., book value, cashflow, sales and dividends) may produce a weight of 2.5%. According to an exemplary embodiment, for companies that have never paid dividends, one may exclude dividends from the calculation of the company's accounting data based weight. Finally, in an exemplary embodiment, the 1000 equities with the highest accounting data based weights may be selected and may be assigned a weight in the RAFI™ portfolio equal to its accounting data based weight.

[000108] According to another exemplary embodiment, an accounting data based index such as, e.g., but not limited to, RAFI™ maybe constructed using aggregate (not per-share) measures of firm size. For example, RAFI™ may use total firm cash flow instead of cash flow per share and total book value instead of book value per share in its construction.

[000109] In an exemplary embodiment, the accounting data may include the following four factors, book value, sales/revenue, cash flow and dividends. In another exemplary embodiment, only one or more of these factors may be used. In another exemplary embodiment, additional factors may be used, such as, e.g., any other accounting data. In one exemplary embodiment, the weightings of each of these factors may be equal relative to one another, i.e., 25% of each of book value, sales/revenue, cash flow and dividends. In one exemplary embodiment, if there are no dividends, then the other three factors may be weighted in equal parts, i.e., 33% each to book value, sales/revenue, and cash flow. In another exemplary embodiment, dividends may be weighted in a greater part such as, e.g., but not limited to, weighting dividends at 50% and book value, sales/revenue, and cash flow at 1/6th each, etc. In one exemplary embodiment, weightings may be the same, depending on the country or sovereign of origin or the industry sector of the stock or other financial object. In another exemplary embodiment, weightings may vary depending on the country or sovereign of origin or the industry sector of the stock or other financial object. In another exemplary embodiment, weightings may vary based on other factors, such as, e.g., but not limited to, types of assets, industry sectors, geographic sectors, sizes of companies, profitability of companies, amount of revenue generated by the company, etc.

[000110] An accounting data based index may be available in several varieties to meet the unique needs of different classes of retail and institutional investors, including, e.g., but not limited to, as enhanced portfolios, Exchange Traded Funds (ETFs), open-end mutual funds, tax managed portfolios, a collection of financial objects managed collectively but tracked separately, and closed-end mutual funds. Various US and international investment managers may offer, e.g., but not limited to, a suite of products.

[000111] A limited partnership or other fund or account investing in assets based on an Accounting Data Based Index, such as, e.g., Research Affiliates Fundamental Index, L.P.

(RAFI LP) may increase the alpha generated by accounting data based indexation in the US through improvements or enhancements, including, e.g., but not limited to, monthly cash rebalancing and quality of earnings and corporate governance screens. The additional enhancements available through the LP may be expected to add an additional 40-70 bps of annual outperformance above the 200 basis points (bps) of annual out performance that may be achieved through the use of accounting data based indexing in portfolio construction.

[000112] A limited partnership or other fund or account investing in assets based on an ADBI international LP such as, RAFI International LP (RAFI™-I may apply accounting data based indexation to the international equity space in an exemplary embodiment to create an enhanced portfolio of, e.g., but not limited to 1000 international (ex-US) equities. RAFI-I may be expected to outperform capitalization weighted indexes by approximately 250 bps per year. Like the other RA Fundamental Index LP's, RAFI-I is an enhanced portfolio that may use monthly cash rebalancing and quality of earnings and corporate governance screens to improve upon the performance of the RAFI International index.

[000113] Open-end mutual funds may manage financial objects employing a fixed income strategy and portable alpha using the Accounting Data Based Index (ADBI) according to an exemplary embodiment.

[000114] An Exchange Traded Fund (ETF) of the ADBI such as, e.g., but limited to, POWERSHARES FTSE RAFI US 1000 Portfolio ETF (ticker symbol: PRF) may meet needs of retail and institutional investors interested in a low-cost means of accessing the power of accounting data based indexing in another exemplary embodiment.

[000115] Another exemplary embodiment includes a closed-end fund implementing accounting data based indexing such as, e.g., Canadian Fundamental Income 100, a closed-end mutual fund of the largest 100 accounting data based equities in Canada which attracted investments from retail and institutional investors in 2005, one of the most difficult closed end markets in recent history, demonstrating the strength of the accounting data based indexation strategy.

Accounting Data Based Indexation Long-Short (ADBI-LS)

[000116] Accounting data based indexation long-short (ADBI-LS) such as, e.g., but not limited to, RAFI-LS, is a long-short U.S. equity strategy that leverages ADBI such as RAFI™ innovation. The RAFI U.S. 1000 portfolio is designed to outperform the Russell 1000 (and the S&P 500) by about 200bps per annum. By going long in stocks that have greater weight in the RAFI U.S. 1000 portfolio relative to the Russell 1000 and short in the stocks that are underweight in the RAFI U.S. 1000 relative to the Russell 1000, the RAFI-LS strategy captures the RAFI alpha process and enhances that alpha source.

[000117] ADBI-LS such as, e.g., RAFI-LS according to an exemplary embodiment, is designed to be roughly dollar and beta neutral, but not sector neutral. The sector bet can be significant if the ADBI strategy determines that a sector is substantially overvalued.

[000118] In general the overlap between ADBI RAFI U.S. 1000 and capitalization based index Russell 1000 may be about 75%. This may give 25% weights for the long portfolio and 25% weights for the short portfolio. The portfolio may be applied to 300% long and 300% short, which may magnify the RAFI alpha and the portfolio volatility. Leverage may be applied tactically, and can range from about 200% long/short to about 400% long/short according to exemplary embodiments.

[000119] ADBI-LS such as, e.g., RAFI-LS according to an exemplary embodiment may be designed to achieve an annual volatility of 15-25%. Volatility of the exemplary RAFI-LS, since inception, has been about 15%.

[000120] According to an exemplary embodiment, ADBI-LS, such as, e.g., RAFI-LS may use leverage in both its short and long positions. On average, $100 invested in RAFI-LS may result in a $300 notional long position and a $300 notional short position.

Implementation of an ADBI-LS's Long and Short Positions

[000121] According to an exemplary embodiment, one does not necessarily directly need to hold long or short positions in the underlying stocks, nor does it need to access a direct line of credit for the portfolio leverage. Instead, according to an exemplary embodiment, derivatives, such as a total return swaps may be used to implement the long and short positions. It may be possible to achieve minimal counterparty default risk exposure by entering into swaps with large Wall Street firms in an exemplary embodiment. Investors in an

ADBI-LS may not be physically shorting any U.S. equities; rather, investors may merely hold OTC derivative contracts. This may provide both tax benefits and efficiency in investment logistics.

[000122] ADBI-LP such as, e.g., RAFI-LP™, may be a full-market ADBI. ADBI-LS such as, e.g., RAFI-LS™, may be a fund that uses the differences between company weights in ADBI such as, e.g., RAFI™ and in a capitalization-weighted index to establish long and short positions according to an exemplary embodiment.

[000123] ADBI-LS may be designed to be dollar neutral and equity beta neutral in an exemplary embodiment. Therefore, one may expect ADBI-LS returns to be largely uncorrelated with the equity market return in an exemplary embodiment. However, ADBI may not be market neutral in the traditional sense as it is not industry sector neutral in an exemplary embodiment.

[000124] ADBI-LS does not pair positions, and thus is different from traditional equity long-short strategies whereby e.g., but not limited to, a short General Motors (GM) position is paired with a long Ford position. Instead, ADBI-LS may acquire both long and short positions based on the relative difference between the ADB Index such as, e.g., FUNDAMENTAL INDEX™ weights and those of a cap-weighted index, such as, e.g., but not limited to the Russell 1000.

[000125] An exemplary embodiment of ADBI-LS may rebalance periodically and/or aperiodically. For example, on average, the ADBI-LS, such as, e.g., RAFI-LS portfolio may hold its long-short bets for about one year. The cash flow from new capital contributed to the strategy may be used to rebalance the portfolio to create new or alter existing long-short bets according to an exemplary embodiment.

[000126] In an exemplary embodiment, the present invention may be a method of constructing a portfolio of financial objects, comprising: purchasing a portfolio of a plurality of mimicking financial objects to obtain and/or create a mimicking portfolio, wherein performance of the portfolio of mimicking financial objects substantially mirrors the performance of the accounting data based index based portfolio without substantially replicating the accounting data based index based portfolio. The method may further obtain

and/or use a risk model for the portfolio where the risk model mirrors a risk model of the accounting data based index. The risk model may be substantially similar to the Fama-French factors, wherein the Fama-French factors may comprise at least one of size effect (e.g., where small cap beats large cap), value effect (e.g., where high B/P beats low B/P), and/or momentum effect (e.g. where strong momentum beats weak momentum in very long run, e.g. 10 or more years). The performance of the portfolio of mimicking financial objects may substantially mirror the performance of the accounting data based index based portfolio without substantially replicating financial objects and/or weightings in the accounting data based index based portfolio.

[000127] In another exemplary embodiment, the present invention may include purchasing a plurality of financial objects according to weightings substantially similar to the weightings of an accounting data based index (ADBI), where performance of the financial objects substantially mirrors the performance of the ADBI without using substantially the same financial objects in the ADBI.

[000128] While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example only, and not limitation. Thus, the breadth and scope of the present invention should not be limited by any of the above-described exemplary embodiments, but should instead be defined only in accordance with the following claims and their equivalents.

What is claimed is:

1. A method of constructing a portfolio of financial objects, comprising:

purchasing a portfolio of a plurality of mimicking financial objects to obtain and/or create a mimicking portfolio, wherein performance of said portfolio of mimicking financial objects substantially mirrors the performance of an accounting data based index based portfolio without substantially replicating said accounting data based index based portfolio.

2. The method of claim 1, further comprising: obtaining and/or using a risk model for said portfolio of mimicking financial objects, wherein said risk model mirrors a risk model of said accounting data based index.

3. The method of claim 1, wherein said performance of said portfolio of mimicking financial objects substantially mirrors the performance of said accounting data based index based portfolio without substantially replicating financial objects and/or weightings in said accounting data based index based portfolio.

4. The method of claim 1, wherein said financial object comprises:

at least one unit of interest in at least one of:

an asset;

a liability;

a tracking portfolio;

a financial instrument and/or a security, wherein said financial instrument and/or said security denotes a debt, an equity interest, and/or a hybrid;

a derivatives contract, including at least one of:

a future, a forward, a put, a call, an option, a swap, and/or any other transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding whether such contract, for purposes of accounting, is considered an asset or liability;

a fund; and/or

an investment entity or account of any kind, including an interest in, or rights relating to:

a hedge fund, an exchange traded fund (ETF), a fund of funds, a mutual fund, a closed end fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

5. A method of constructing a portfolio of financial objects, comprising:

purchasing a plurality of financial objects according to weightings substantially similar to the weightings of an accounting data based index, wherein performance of said plurality of financial objects substantially mirrors the performance of said accounting data based index without using substantially the same financial objects in said accounting data based index.

6. The method of claim 5, wherein said financial object comprises:

at least one unit of interest in at least one of:

an asset;

a liability;

a tracking portfolio;

a financial instrument and/or a security, wherein said financial instrument and/or said security denotes a debt, an equity interest, and/or a hybrid;

a derivatives contract, including at least one of:

a future, a forward, a put, a call, an option, a swap, and/or any other transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding whether such contract, for purposes of accounting, is considered an asset or liability;

a fund; and/or

an investment entity or account of any kind, including an interest in, or rights relating to:

a hedge fund, an exchange traded fund (ETF), a fund of funds, a mutual fund, a closed end fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

7. A method of constructing a portfolio of financial objects, comprising:

determining overlapping financial objects appearing in both an accounting data based index (ADBI) and a conventional weighted index,

wherein said conventionally weighted index comprises an index weighted based on at least one of capitalization, equal weighting, and/or share price weighting, and

wherein said ADBI comprises weighting based on at least one accounting data based factor and not based on any of capitalization, equal weighting, and/or share price weighting index;

comparing weightings of said overlapping financial objects in said ADBI with weightings of said overlapping financial objects in said conventionally weighted index; and

purchasing at least one financial object based on said comparing.

8. The method of claim 7, wherein said purchasing comprises at least one of:

purchasing a long position in at least one overlapping financial object when said comparing indicates said at least one overlapping financial object is over weighted in said non-capitalization weighted index relative to said conventional index; and/or

purchasing a short position in at least one overlapping financial object when said comparing indicates said at least one overlapping financial object is underweighted in said non-capitalization weighted index relative to said conventional index.

9. The method of claim 8, wherein said purchasing of said long and/or short positions is implemented by using total return swaps.

10. The method of claim 8, wherein said long and/or short positions are held for one year.

11. The method of claim 8, further comprising rebalancing the portfolio.

12. The method of claim 11, wherein rebalancing comprises: at least one of creating new long and/or short positions using cash flow from new capital contributions, and/or altering existing long and/or short positions using cash flow from new capital contributions.

13. The method of claim 7, further comprising using leverage to obtain said long and/or short positions.

14. The method of claim 7, wherein said comparing comprises:
calculating a difference between said weightings.

15. The method of claim 7, wherein said comparing comprises:
calculating a difference between arithmetically modified values of said weightings.

16. The method of claim 15, wherein said arithmetically modified values of said weightings comprises square roots of said weightings.

17. The method of claim 7, wherein said comparing comprises:
calculating a difference based on tiers of weightings using stratified sampling.

18. The method of claim 7, wherein said financial object comprises:
at least one unit of interest in at least one of:
an asset;
a liability;
a tracking portfolio;
a financial instrument and/or a security, wherein said financial instrument and/or said security denotes a debt, an equity interest, and/or a hybrid;
a derivatives contract, including at least one of:
a future, a forward, a put, a call, an option, a swap, and/or any other

transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding whether such contract, for purposes of accounting, is considered an asset or liability;

a fund; and/or

an investment entity or account of any kind, including an interest in, or rights relating to:

a hedge fund, an exchange traded fund (ETF), a fund of funds, a mutual fund, closed end fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

19. A method of constructing a portfolio of financial objects, comprising:

determining non-overlapping financial objects appearing in only one of either an accounting data based index (ADBI) or a conventional weighted index by comparing financial objects in an ADBI with financial objects in a conventionally weighted index,

wherein said conventionally weighted index comprises conventionally weighting based on at least one of capitalization, equal weighting, and/or share price weighting, and

wherein said ADBI comprises accounting data based weighting on at least one accounting data based factor and not based on any of capitalization, equal weighting, and/or share price weighting index;

weighting said non-overlapping financial objects appearing only in said ADBI by accounting data based weighting;

weighting said non-overlapping financial objects appearing only in said conventionally weighted index by said conventional weighting; and

purchasing financial objects based on said weightings.

20. The method according to claim 19, wherein said accounting data based weighting comprises:

(a) gathering data about a plurality of financial objects;

(b) selecting a plurality of financial objects to create an index of financial objects; and

(c) weighting each of said plurality of financial objects selected in the index based on an objective measure of scale based on accounting data of a company associated with each of said plurality of financial objects,

wherein said weighting comprises:

(i) weighting at least one of said plurality of financial objects based on accounting data; and

(ii) weighting other than weighting based on at least one of market capitalization, equal weighting, and/or share price weighting.

21. The method according to claim 20, wherein said (c) comprises weighting each of said plurality of financial objects, wherein said each of said financial objects comprises:

at least one unit of interest in at least one of:

an asset;

a liability;

a tracking portfolio;

a financial instrument and/or a security, wherein said financial instrument and/or said security denotes a debt, an equity interest, and/or a hybrid;

a derivatives contract, including at least one of:

a future, a forward, a put, a call, an option, a swap, and/or any other transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding whether such contract, for purposes of accounting, is considered an asset or liability;

a fund; and/or

an investment entity or account of any kind, including an interest in, or rights relating to:

a hedge fund, an exchange traded fund (ETF), a fund of funds, a mutual fund, closed end fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

22. The method according to claim 20, wherein said (c) comprises weighting each of said plurality of financial objects, wherein said each of said financial objects comprises a stock.

23. The method according to claim 20, wherein said objective measures of scale comprise weighting based on any dividends, book value, cash flow, and/or revenue.

24. The method of claim 23, further comprising equally weighting each objective measure of scale.

25. The method of claim 20, wherein (c) comprises weighting based on said objective measure of scale, wherein said objective measure of scale comprises a measure of company size associated with each of said plurality of financial objects.

26. The method of claim 25, wherein said measure of company size comprises at least one of:

inventory,
revenue,
sales,
income,
book income,
taxable income,
earnings growth rate,
earnings before interest and tax (EBIT),
earnings before interest, taxes, depreciation and amortization (EBITDA),

retainer earnings,
number of employees,
capital expenditures,
salaries,
book value,
assets,
fixed assets,
current assets,
quality of assets,
operating assets,
intangible assets,
dividends,
gross dividends,
dividend yields,
cash flow,
liabilities,
losses,
long term liabilities,
short term liabilities,
liquidity,
long term debt,
short term debt,
bonds,
corporate bonds,
net worth,
shareholder equity,
goodwill,
research and development expenditures,
costs,

cost of goods sold (COGS), and/or

research and development costs.

27. The method of claim 19, wherein said financial object comprises:

at least one unit of interest in at least one of:

an asset;

a liability;

a tracking portfolio;

a financial instrument and/or a security, wherein said financial instrument and/or said security denotes a debt, an equity interest, and/or a hybrid;

a derivatives contract, including at least one of:

a future, a forward, a put, a call, an option, a swap, and/or any other transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding whether such contract, for purposes of accounting, is considered an asset or liability;

a fund; and/or

an investment entity or account of any kind, including an interest in, or rights relating to:

a hedge fund, an exchange traded fund (ETF), a fund of funds, a mutual fund, a closed end fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

28. A method, executed on a data processing system, comprising:

creating an accounting data based index (ADBI) based on accounting data including:

selecting a universe of financial objects, and

selecting a subset of said universe based on said accounting data to obtain the ADBI;

creating a portfolio of financial objects using said ADBI, including weighting the financial objects in said portfolio according to a measure of value of a company associated with each financial object in said portfolio.

29. The method according to claim 28, wherein said universe comprises at least one of:
a sector;
a market;
a market sector;
an industry sector;
a geographic sector;
an international sector;
a sub-industry sector;
a government issue; and/or
a tax exempt financial object.

30. The method according to claim 28, wherein said accounting based data used in weighting as a measure of value of the company associated with the financial object, comprises at least one of:
any dividends;
revenue;
cash flow; and/or
book value.

31. The method according to claim 30, wherein said accounting based data are weighted relatively dependent on the geography of the company associated with the financial object.

32. The method of claim 28, wherein said financial object comprises:
at least one unit of interest in at least one of:

an asset;

a liability;

a tracking portfolio;

a financial instrument and/or a security, wherein said financial instrument and/or said security denotes a debt, an equity interest, and/or a hybrid;

a derivatives contract, including at least one of:

a future, a forward, a put, a call, an option, a swap, and/or any other transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding whether such contract, for purposes of accounting, is considered an asset or liability;

a fund; and/or

an investment entity or account of any kind, including an interest in, or rights relating to:

a hedge fund, an exchange traded fund (ETF), a fund of funds, a mutual fund, a closed end fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

33. A computer-implemented method for construction and management of an index and at least one index fund containing a portfolio of financial objects based on the index, wherein weighting of the index is based on accounting based data rather than on stock prices or market capitalization or equal weighting, the computer-implemented method comprising:

creating an index, and at least one index fund containing a portfolio of financial objects, wherein the constituent weightings of the companies issuing the financial objects in the index fund are based upon accounting based data regarding the companies associated with the financial objects, wherein the accounting based data comprises any dividends, cash flow, revenues, and/or book

value.

34. The computer-implemented method of claim 33, wherein the computer implemented method comprises:

creating said index, and said at least one index fund containing a portfolio of financial objects where the constituent weightings are based upon any ratio of accounting based data, or any manipulation of accounting based data, that is contained within a standard company annual report and accounts.

35. The computer-implemented method of claim 33, wherein the computer implemented method comprises:

creating said index, and said at least one index fund containing a portfolio of financial objects wherein the constituent weightings are based upon any ratio of accounting based data per share, or any manipulation of accounting based data, that is contained within a standard company annual report and accounts.

36. The computer implemented method of claim 33, wherein the computer implemented method comprises:

managing an accounting based data index, and at least one index fund containing a portfolio of financial objects based on the index including:

altering the relative weightings of the financial objects within the at least one index fund as the accounting based data concerning the companies associated with the financial objects

changes.

37. The computer implemented method of claim36, wherein the altering comprises at least one of:

altering based on at least one of: changes in relative weightings of financial objects in the index; and/or changes in the financial objects that are members of the index outside the sample changes; and/or

altering at the time of at least one of when, and/or after at least one company associated with a financial object of the index reports its accounting information.

38. The computer-implemented method of claim 33, wherein said financial object comprises:

at least one unit of interest in at least one of:

an asset;

a liability;

a tracking portfolio;

a financial instrument and/or a security, wherein said financial instrument and/or said security denotes a debt, an equity interest, and/or a hybrid;

a derivatives contract, including at least one of:

a future, a forward, a put, a call, an option, a swap, and/or any other transaction relating to a fluctuation of an underlying asset, notwithstanding the prevailing value of the contract, and notwithstanding whether such contract, for purposes of accounting, is considered an asset or liability;

a fund; and/or

an investment entity of any kind, including an interest in, or rights relating to:

a hedge fund, an exchange traded fund (ETF), a fund of funds, a mutual fund, an investment vehicle, and/or any other pooled and/or separately managed investments.

39. The method of claim 25, wherein said measure of company size comprises at least one of:

a financial ratio of a company;
a ratio of accounting based data;
a ratio of accounting based data per share;
a ratio of a first accounting based data to a second accounting based data;
a liquidity ratio;
a working capital ratio;
a current ratio;
a quick ratio;
a cash ratio;
an asset turnover ratio;
a receivables turnover ratio;
an average collection period ratio;
an average collection period ratio;
an inventory turnover ratio;
an inventory period ratio;
a leverage ratio;
a debt ratio;
a debt-to-equity ratio;
an interest coverage ratio;
a profitability ratio;
a return on common equity (ROCE) ratio;
profit margin ratio;
an earnings per share (EPS) ratio;

a gross profit margin ratio;

a return on assets ratio;

a return on equity ratio;

a dividend policy ratio;

a dividend yield ratio;

a payout ratio;

a capital market analysis ratio;

a price to earnings (PE) ratio; and/or

a market to book ratio.

40. The method of claim 2, wherein said risk model is substantially similar to the Fama-French factors, wherein said Fama-French factors comprise at least one of size effect, value effect, and/or momentum effect.