LONG/SHORT EQUITY HEALTHCARE SECTOR FUNDS: THE CASE FOR SPECIALIZATION

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Summary

There are many compelling reasons for investing in the healthcare sector. Among them are healthcare's large and growing share of GDP, an aging population, and the emergence of significant healthcare spending in the developing world. Despite these attractive long-term trends, the complexities involved in analyzing changing regulatory frameworks and scientific developments have made the healthcare sector a challenging one for long-biased investors over the last number of years. In this paper, we will review some of the structural changes affecting the industry on a global basis and outline the unique characteristics of this sector that make long/short equity a compelling way to invest in healthcare.

There are four principal reasons to invest in a long/short healthcare sector fund:

1. **Specialization** Investing in the healthcare sector requires highly specialized knowledge to understand the science, technology, and regulatory framework behind the companies in the sector. Many talented investors have migrated to long/short funds.

2. **Low Correlation Among Companies** Long/short strategies benefit from investing in areas with very low correlations among companies. The healthcare sector has the lowest cross-company correlation of all sectors within the S&P 500.

3. **Demographic Growth Drivers and Changing Dynamics** Healthcare is a broad area that is levered to aging populations in the developed world and economic growth in the developing world. As societies increase their spending on healthcare, well-positioned companies should rise in tandem. Sector growth often heightens competition among industry participants, creating winners and losers in many areas—an ideal environment for long/short investing.

4. **Mean Reversion** The healthcare sector has been the lowest-performing sector in the S&P for both short and long time periods. There are compelling reasons for this, and chief among them is regulatory uncertainty. For value and/or mean-reversion investors, this underperformance is an opportunity to gain exposure cheaply.

We recommend that clients with hedge fund investment programs allocate a portion of their long/short equity exposure to healthcare managers that have experience investing in this space through multiple market cycles, and the requisite scientific and medical experience to source and select long and short opportunities.

HEALTHCARE IS LEVERED TO AGING POPULATIONS IN THE DEVELOPED WORLD AND ECONOMIC GROWTH IN THE DEVELOPING WORLD

Drivers of the Healthcare Long/Short Equity Opportunity

I. Specialization

Sector-specific investing requires unique skills, including deep insights into the specific drivers of sector performance and experience researching constituent companies. Healthcare sector investing requires additional skills related to science and regulation. This creates a barrier to entry for specialists in this area. As a result, there are a limited number of talented portfolio managers and analysts with the necessary expertise, and fewer hedge funds focused on investing in healthcare. This creates inefficiencies in the market and provides opportunities to generate alpha.

In many areas of healthcare, scientific data and technology drive much of the share price performance of the companies. This is distinct from other sectors, where economic fundamentals drive performance. One implication of this is that investors with the scientific expertise to evaluate research data are better positioned to analyze healthcare companies. In addition, managers with a better understanding of scientific data and technology can profit in a way that is distinct from many generalist long/short funds that are focused primarily on fundamentals. It is worth noting the high level of science and healthcare expertise that many of the hedge funds bring to investing in this area. Many successful long/short fund analysts and portfolio managers have advanced academic degrees as well as practical experience in the hard sciences and medical fields.

IN MANY AREAS OF HEALTHCARE, SCIENTIFIC DATA AND TECHNOLOGY DRIVE THE SHARE PRICE OF COMPANIES

One subsector of healthcare where this is most evident is biotech. Many generalist long/short funds do not invest in biotech because they lack the expertise to evaluate the companies. Healthcare-focused long/short funds often have teams of analysts with industry, medical, and scientific expertise, which enables them to better analyze biotech opportunities. Due to the analytical edge these analysts have, biotech is an example of a sector that may be less "efficient" than other parts of the economy that are more easily understood by the general population.

Scientific and industry expertise provides an edge for successful investing in healthcare. As Figure 1 illustrates, the sector is broad and the depth of scientific and industry expertise can be applied to the many different types of healthcare companies that make up the sector.

The following is a brief summary of the trends occurring in the four broad subsectors of healthcare. We highlight these to show that there are significant developments in all areas of the sector, which provides a plethora of long and short investment opportunities.

1. Biotech

Biotech companies have traditionally been labeled "growth companies" rather than "value companies." As the biotech industry has evolved and grown, this dynamic is changing. Some biotech companies are now initiating share repurchase programs and/or dividends. Price-to-earnings ratio multiples have contracted over the past several years. This new low price-to-earnings multiple environment in the sector may present a tactical opportunity. Many of these stocks are attractively priced and are approaching the traditionally more value-priced pharmaceutical company multiples.

Healthcare Sectors

- Biotechnology
- Diagnostics
- Drug Delivery
- Drug Manufacturers
- Drug Related Products
- Generic Pharm
- Health Care Plans
- Home Health Care
- Hospitals
- Long-Term Care Facilities
- Medical Appliances & Equipment
- Medical Instruments & Supplies
- Medical Laboratories & Research
- Specialized Health Services
- Healthcare IT
- Animal Health
- Healthcare Payers
- Dental Manufactures
- Medical Chemicals/Gas
- Pharmacy Benefit Managers
- Insurance
- Consumer Healthcare
- Hospice
- Healthcare Payers
- Specialized Health Services
- Emerging Markets
- Healthcare REITs

Figure 1 *Source: NEPC*

2. Pharmaceuticals

Over the last few years, investors have been focused on negative issues facing large-cap pharmaceutical companies such as the pending patent cliff, thin late-stage pipelines, low R&D productivity, and healthcare reform. More recently, investor focus and sentiment has started to shift to the sector's positive aspects including significant growth from emerging markets, new product launches, cash flows, and share buy-backs. Many of the successful drug innovations are coming from smaller-cap companies. The large-cap companies are partnering with these smaller companies to fill their pipelines. This new partnership trend benefits both the capital-hungry small biotech companies and the larger pharmaceutical companies that will utilize more internal resources on fewer drugs and effectively outsource the development of "non-core" drugs.

3. Healthcare Delivery

The managed care industry represents an attractive opportunity. The "long-term" thesis is that industry fundamentals are strong and fear regarding the implementation of new healthcare legislation has depressed valuations to attractive levels. These companies benefited during 2010 from reduced healthcare utilization and strong expense management. The trend toward focusing on expense management will be prevalent in the federal healthcare programs moving forward, creating distinct winners and losers in the space and opportunities for long/short investors.

4. Medical Device Companies

Medical device companies have begun experiencing stabilization in utilization trends after recent declines. This could mark a turning point. From an investor's perspective, the medical device subsector is interesting as it was the worst-performing healthcare subsector in 2010 despite a number of positive events in the space. Furthermore, innovation drives pricing power and stock prices in this subsector. There have been a number of innovative launches during the past year. Despite some positive signs, this is also an area with attractive short-sale opportunities due to some key industry headwinds: innovation has been incremental, preventing these companies from commanding price increases; pricing pressures and a lengthened approval process by the FDA have stalled some new product launches.

II. Low Correlation Among Companies

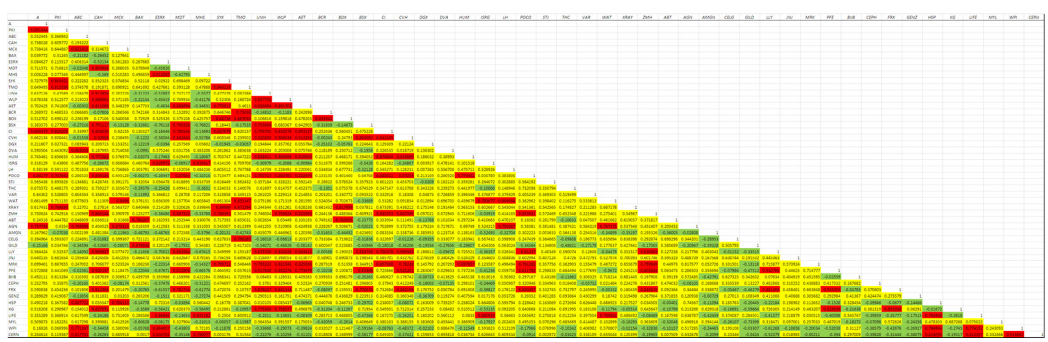
Correlation in the healthcare sector is lower than in any other sector in the S&P 500, representing a good environment for long/short investing. Figures 2–4 show "heat-maps" of individual stock correlation within the healthcare, financials, and energy sectors. Red highlighted cells show a correlation between two companies of over 0.75, yellow cells show a correlation between 0 and 0.7499 and green cells show a negative correlation. This heat-map color scheme is comparable to a traffic light, where low and negative correlation presents opportunities for a fund that utilizes both long and short strategies. The chart illustrates that healthcare stocks are significantly less correlated with one another than stocks in other sectors of the S&P 500. This argument is most apparent in the five-year monthly correlation matrices.

For the purposes of visualization, the following three exhibits are scaled such that individual company tickers are not legible.

HEALTHCARE SECTOR

- Figure 2 shows the correlation of the healthcare stocks in the S&P 500
- Compared to the financials and energy sectors, the healthcare stocks in the S&P 500 have low correlation to one another
- One implication of this observation is that the healthcare sector is a good area for long and short stock selection

Figure 2: Five Year Monthly Correlation of Healthcare Subsector of S&P 500

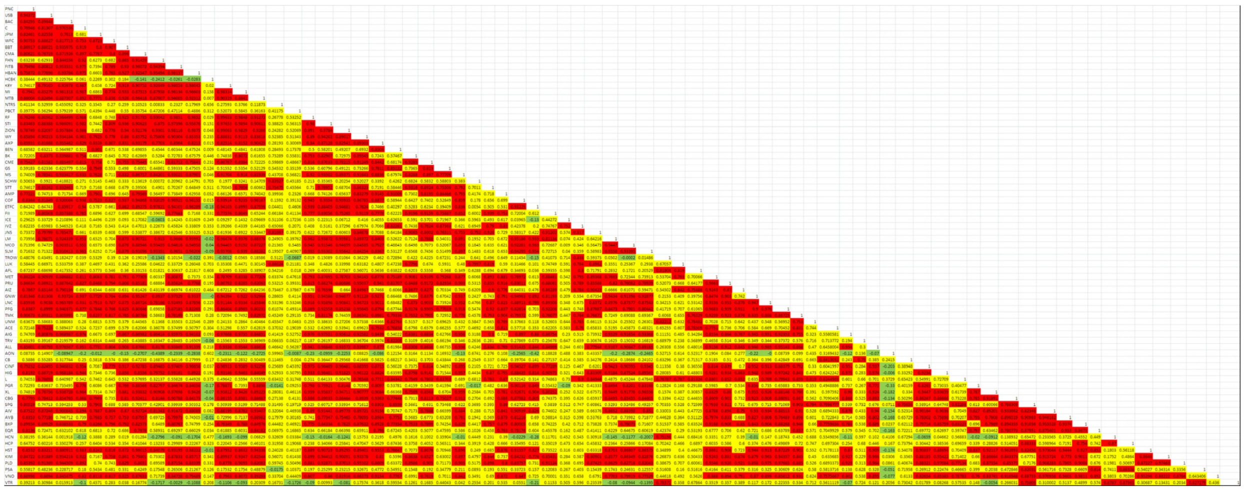


Source: Bloomberg (5 year returns ending Dec 2010)

FINANCIALS SECTOR S&P

- Figure 3 shows the correlation of the financials stocks in the S&P 500
- Compared to the healthcare sector, the financials stocks in the S&P 500 have higher correlation to one another

Figure 3: Five Year Monthly Correlation of Financials Subsector of S&P 500

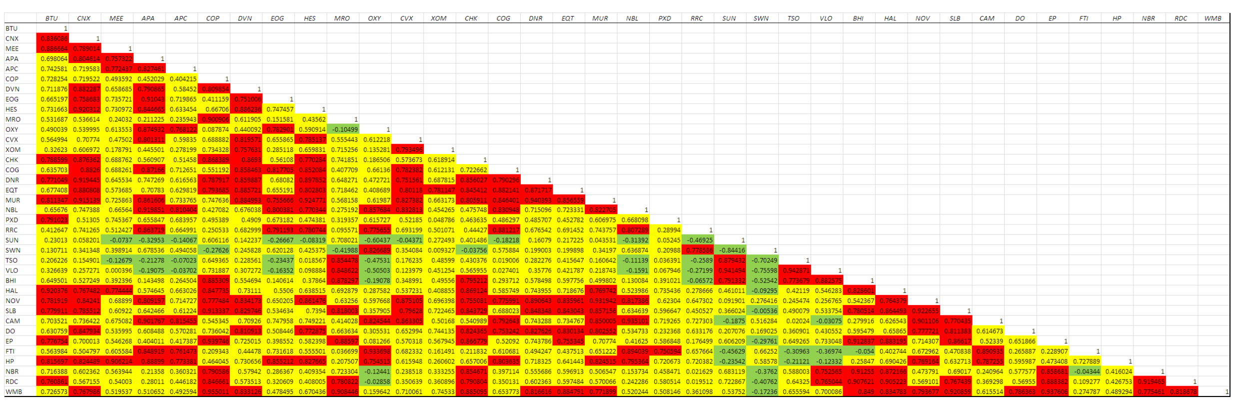


Source: Bloomberg (5 year returns ending Dec 2010)

ENERGY SECTOR S&P

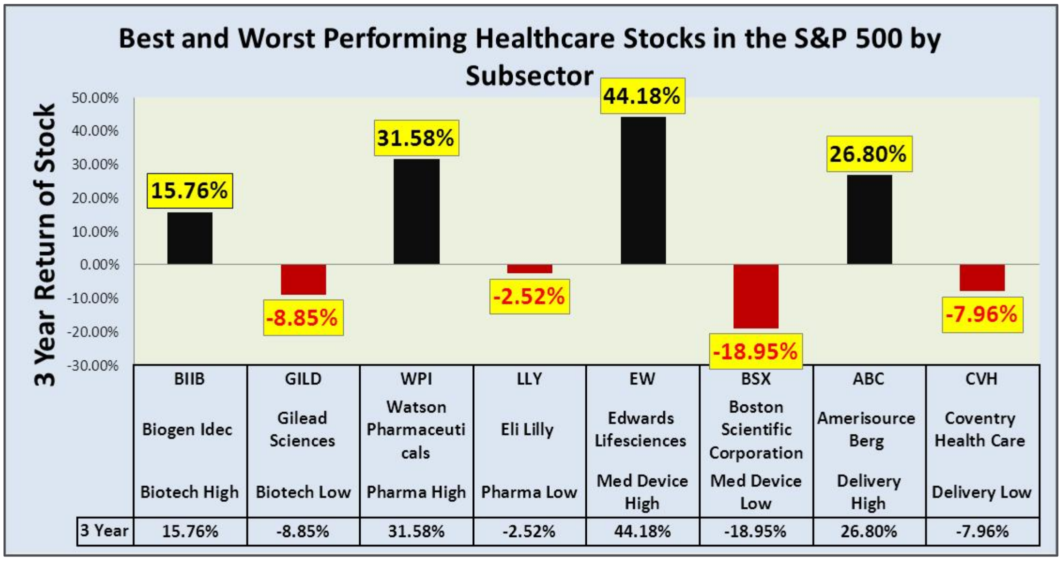
- Figure 4 shows the correlation of the energy sector stocks in the S&P 500
- Compared to the healthcare sector, the energy stocks in the S&P 500 have higher correlation to one another

Figure 4: Five Year Monthly Correlation of Energy Subsector of S&P 500



Source: Bloomberg (5 year returns ending Dec 2010)

Figure 5: Best and Worst Performing Healthcare Stocks in the S&P 500

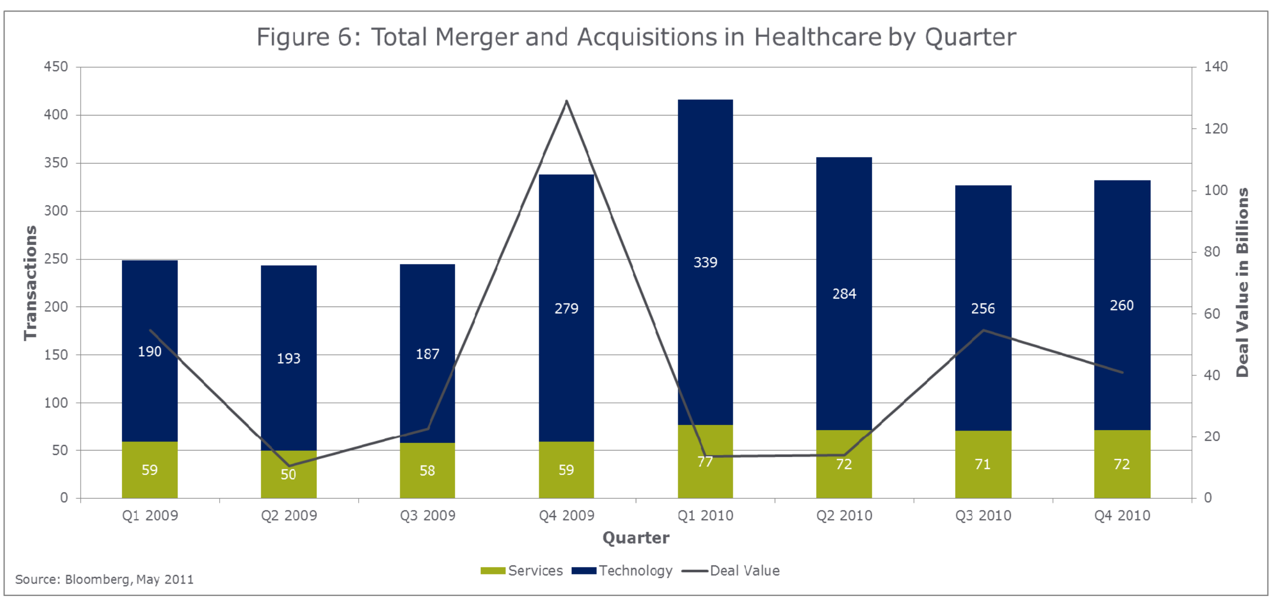


Source: Bloomberg

Low correlations lead to significant performance dispersions across companies, leading to plentiful short opportunities. Examples of these include biotech companies that have inferior technologies and pharmaceutical companies with drug delivery and or drug pipeline issues. As Figure 5 shows, there is wide performance dispersion within the subsectors of healthcare.

In addition, robust mergers and acquisitions activity creates opportunities for "pair trading" through an event-oriented approach. Figure 6 demonstrates the increase in healthcare mergers and acquisitions in 2010. With the large amount of cash on the balance sheets of healthcare companies, we expect that mergers and acquisitions will be an increasingly relevant theme in 2011 and beyond. Much of this activity will be driven by pharmaceutical partnerships with smaller biotech companies. Another theme will be large-cap pharmaceuticals spinning off non-core healthcare businesses. In the healthcare delivery sector, consolidation within the hospital management space continues to be brisk.

Whether the long/short fund is investing in fundamental shorts or event-oriented pair trades, there are a number of catalysts in this space that make long/short investing attractive. Table 1 in the appendix provides a few examples of the identifiable catalysts and the examples of how healthcare sector funds were able to read the event and the technology/drug to invest in the space.



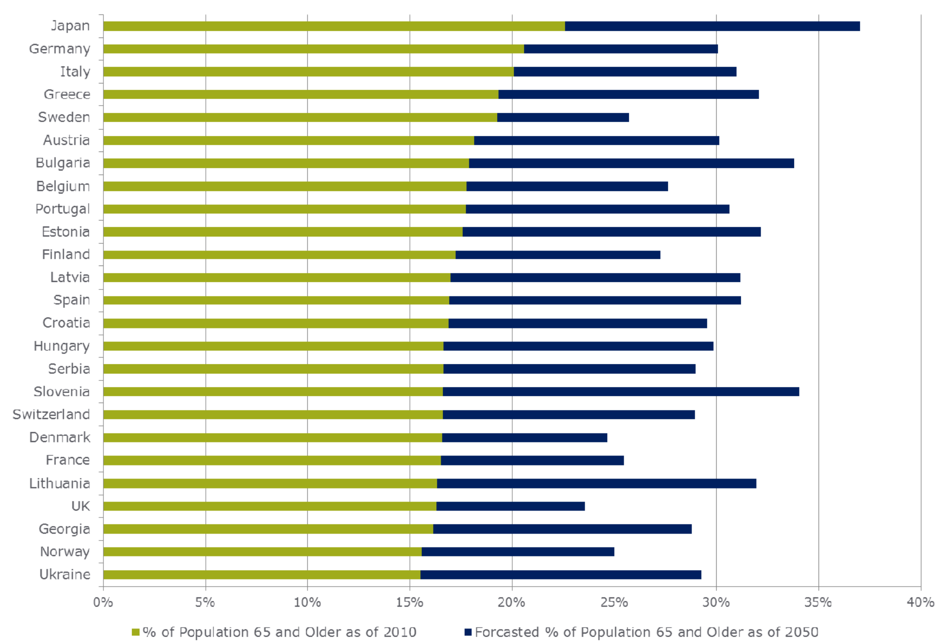
III. Demographic Growth Drivers and Changing Demographics

Aging of the population—Demographic Shifts

Figure 7 shows the aging of the world's population.

Figure 7: World's 25 Oldest Countries as of 2010

Present and forcasted population age 65 or older



Source: US Census, May 2011

Developed nations have the oldest populations today. This is noteworthy because economically advance countries characteristically have the most developed healthcare infrastructure and the most disposable income to spend on healthcare. In the short run, healthcare spending growth will be driven by the aging population in these developed markets. Over the longer term, healthcare spending will increasingly come from the growth of developing countries and the increased healthcare utilization rates of those populations.

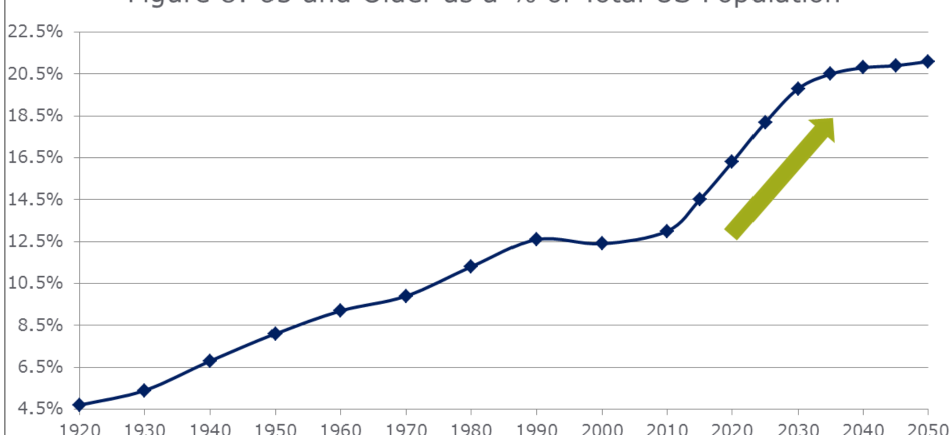
Looking specifically at the US market, the baby boom generation is entering a period of higher medical expenses, which translates into more dollars being spent on healthcare.

The aging baby boomer generation is causing a major demographic shift in the US population. As of 2010, 13.3% of the US population was 65 years of age or older. US Census projections estimate that this segment of the population will grow to 16.3% by 2020 and 20.8% by 2040. This accelerated growth in the demographic echelon that spends the most on healthcare will generate increased revenue for many healthcare companies.

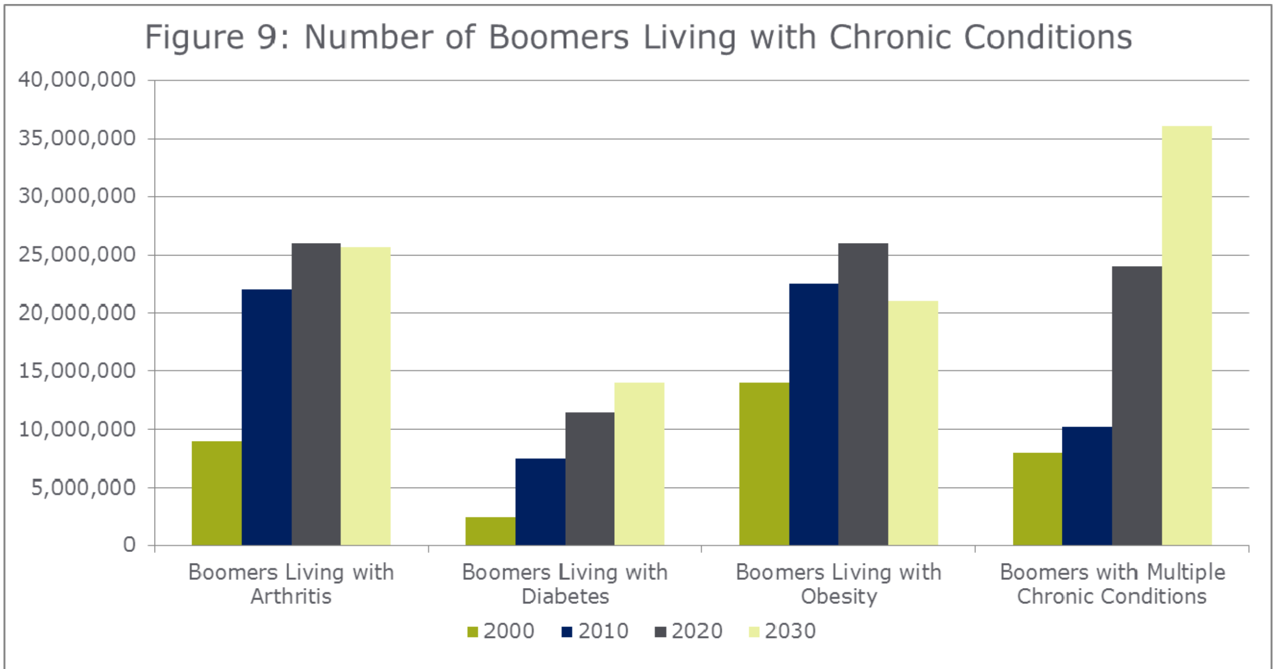
Additionally, these baby boomers will be around longer than previous generations as life expectancy has increased significantly over the years. At the turn of the 20th century, just before baby boomers' parents were born, US life expectancy was 47 years. In 2002, it was 77 years—an additional 30 years of life. Although this extension of life expectancy is a very positive result of modern medicine, the older an individual becomes the higher the likelihood that he or she is to develop chronic conditions.

Baby boomers will spend significantly to address their chronic conditions. Some of the more basic healthcare concerns that will receive significant dollars are chronic conditions like diabetes, arthritis, and obesity. Figure 9 forecasts a continued increase in spending on these conditions as this cohort of the population ages. As this cohort lives longer, they will most likely be faced with multiple chronic conditions, further amplifying the level of spending.

Figure 8: 65 and Older as a % of Total US Population



Source: US Census, April 2011

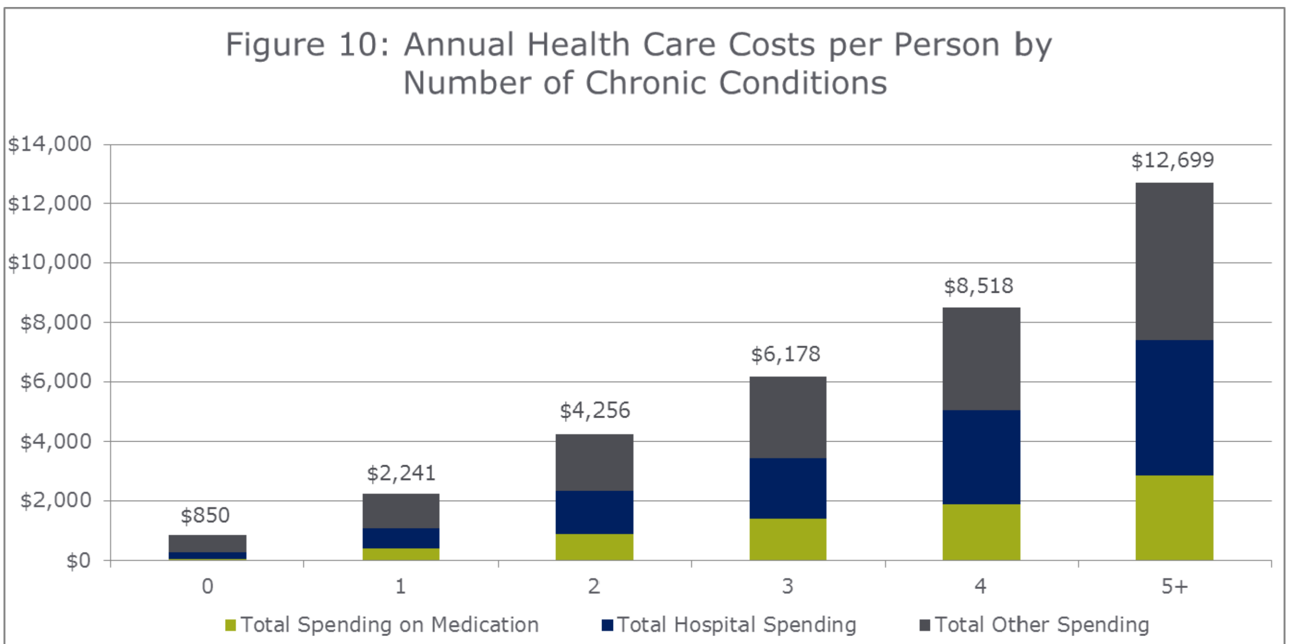


Source: American Hospital Association, *When I'm 64: How Boomers Will Change Health Care*, May 2007

Figure 10 adjusts the total expenditure on these chronic conditions to a per-person annual cost based on the number of chronic conditions. It is worth noting that the services on which these dollars are being spent—pharmacology, healthcare delivery, etc.—are all unique and investable sub-sectors of the healthcare space.

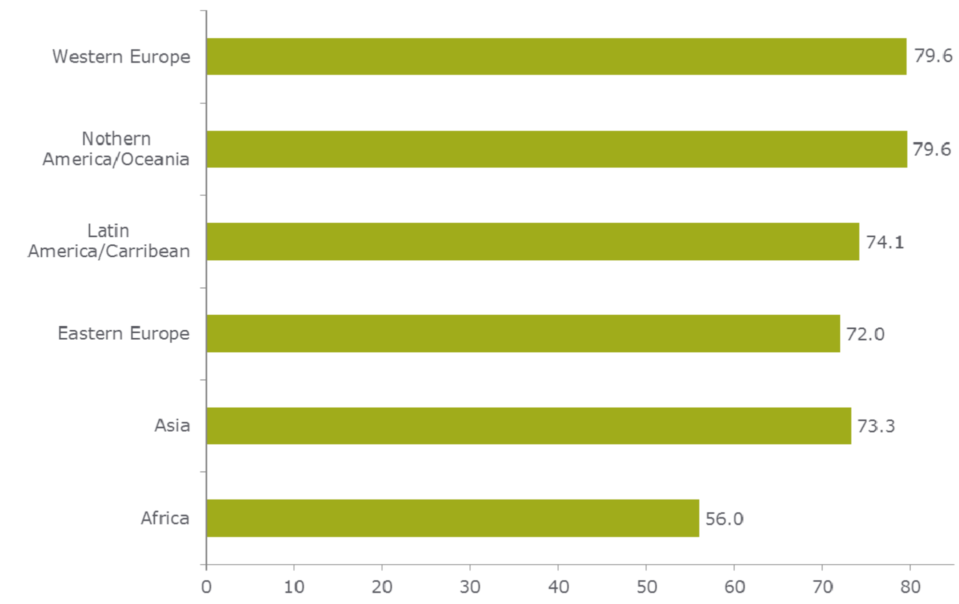
The purpose of healthcare spending is to increase life expectancy. This is a positive feedback mechanism. As life expectancy extends, so does the length of time people receive healthcare. Figure 11 illustrates that the increase in life expectancy is not confined to the US alone. In countries such as Austria, Greece, and Spain, life expectancy has more than doubled during the 20th century.

An important point embedded in this chart is that increases in life expectancy are higher for developed nations. What is not captured here is that life expectancy increases were more rapid in the first half of the 20th century in these developed



Source: John Hopkins and Partnership for Solutions, *Chronic Conditions: Making the Case of Ongoing Care*, September 2004

Figure 11: Life Expectancy at Birth for Major Global Regions: 2008



Source: US Census, Feburary 2008

nations as expansion of public health services and facilities, as well as disease eradication programs, greatly reduced death rates—particularly among infants and children. These improvements in health came with the evolution to mature developed economies. Today, as emerging markets become developed, their life expectancy rises rapidly along with their wealth, both of which are positively correlated with increased healthcare spending.

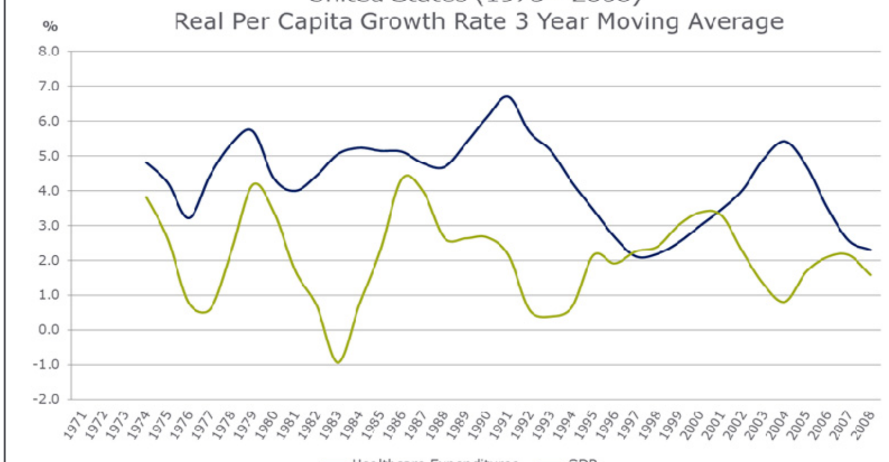
Healthcare is a leveraged investment to emerging market growth

Healthcare spending is tightly correlated with economic growth and wealth. Using GDP as a functional proxy for wealth, the data shows that healthcare spending grows at roughly 150% of underlying GDP growth. In this way, investments in healthcare companies that are based in the emerging markets act like a levered play on the emerging market consumer.

Figures 12 and 13 demonstrate that healthcare expenditure is levered to GDP growth in both the largest developed market (the US) and a representative emerging market (Turkey).

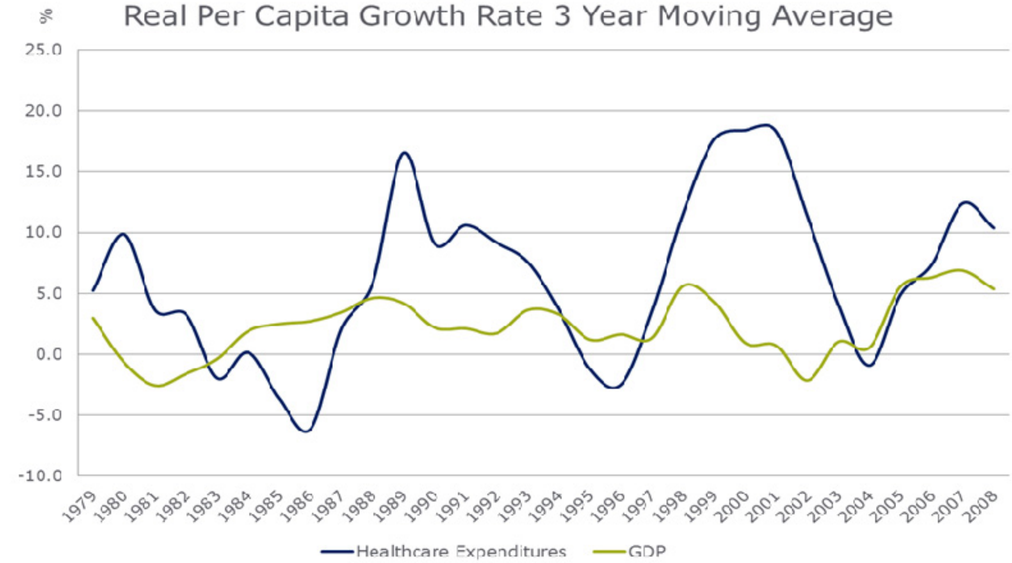
This insight also has practical implications for why the healthcare sector should continue to grow. As mentioned earlier, as healthcare gains traction in emerging economies, disease eradication and public healthcare facilities become available where they were not. If one assumes real wage growth and wealth creation in the emerging markets, then one can expect increasing expenditures on newly available healthcare services. Given the

Figure 12: GDP and Total Healthcare Expenditure, United States (1973 - 2008)
Real Per Capita Growth Rate 3 Year Moving Average



Source: OECD Health Data Set October 2010

Figure 13: GDP and Total Healthcare Expenditure, Turkey (1979 - 2008)
Real Per Capita Growth Rate 3 Year Moving Average



Source: OECD Health Data Set October 2010

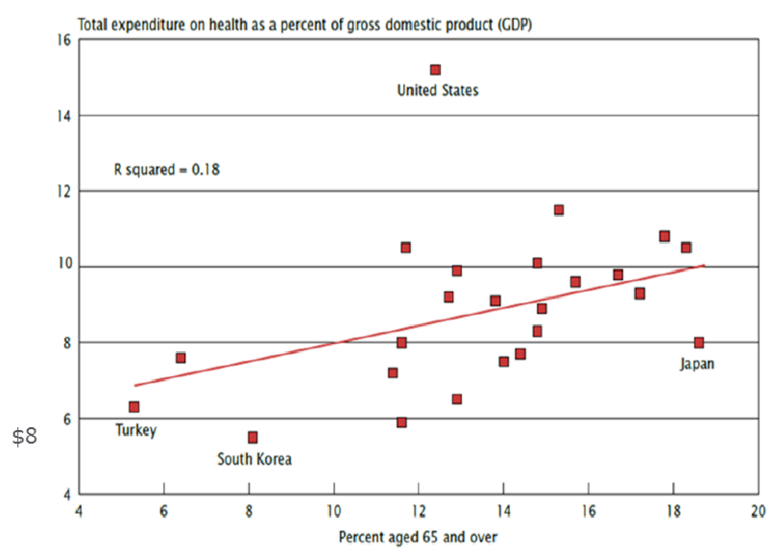
size of the emerging markets, this is a huge force for growth in the global healthcare industry.

Figure 14 shows healthcare expenditure and the percent of the population over age 65. Note that the US, which currently has only a modest portion of the population age 65 or over, has the highest expenditure on healthcare. This reflects, in part, the wealth of the US and the proportional spending on healthcare. As poorer nations develop economically, they will likely shift higher on this chart as they spend a greater amount of total dollars on healthcare.

IV. Mean Reversion

In addition to the longer-term drivers cited above, healthcare represents an interesting tactical opportunity in the current environment.

Figure 14: Health Expenditure and Percent Aged 65 or Over in 24 OECD Nations: 2003



Source: Organization for Economic Co-Operation and Development (OECD), 2006d; and US Census Bureau, International Data Base, September 2007

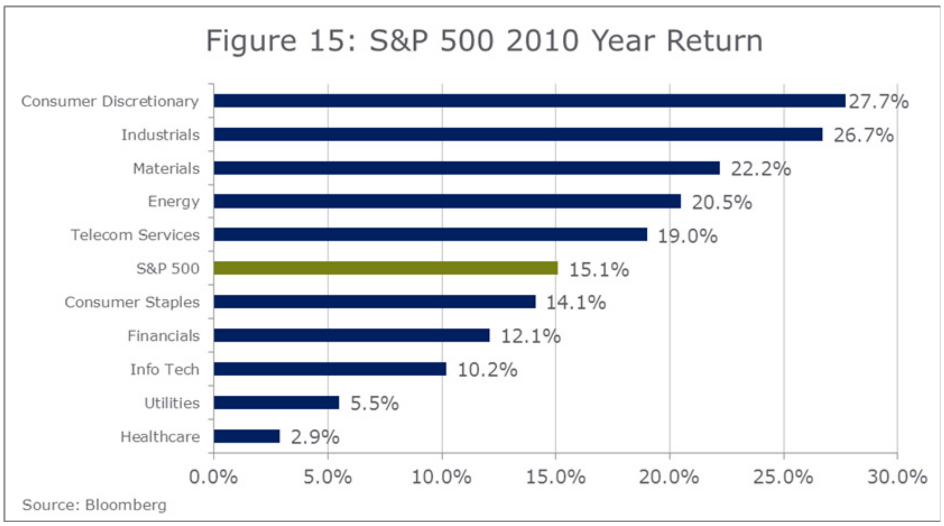
- The healthcare sector appears attractive from a valuation perspective, with key multiples at or near historic lows.

- Despite the relative attractiveness of the area, as Figure 15 shows, the healthcare sector was the lowest-performing sector of the S&P 500 in 2010. The S&P Health Care Index (HCX) rose just 0.7% compared with 12.7% for the S&P 500. This underperformance was driven in part by three factors:

    1) Deteriorating industry fundamentals

    2) Concerns regarding healthcare reform

    3) The relative attractiveness of other sectors



Part of the explanation for this underperformance comes from investor sentiment. Given the regulatory uncertainty and the patent expirations for many large-cap pharmaceuticals companies, many investors have avoided the sector. These issues are being resolved—investors have more insight into regulatory changes and large-cap pharmaceuticals issues have been discounted—yet investors have not returned to the sector. From a mean-reversion and/or valuation perspective, making a tactical shift toward healthcare may be a sensible portfolio decision.

V. **Conclusion**

At NEPC we believe that the healthcare sector represents an attractive opportunity for long/short equity investing. Healthcare is undergoing a number of fundamental structural changes that make it an interesting area for investment. The aging of the population, the rising wealth of emerging markets, and the continued expansion of innovative medical technologies all contribute to the attractiveness of the sector in the coming years. Low correlations among companies in the sector, along with the unique skills that investors need to evaluate companies, make it attractive from a long/short investing perspective. Finally, the sector appears undervalued in the current environment after its lagging performance in 2010.

Gaining exposure to healthcare companies through a long/short fund also addresses the practical consideration that the growth of the sector will be bumpy in the short run. Long/short funds are able to hedge their exposure and dampen the inherent volatility of investing in this sector.

For clients who are interested in investing in this sector, NEPC has surveyed the universe of long/short healthcare funds to identify the funds that we believe are best positioned for generating strong returns going forward. We look forward to working with clients to discuss how best to incorporate this component into their hedge fund programs.

Appendix

Table 1 provides some additional detail and examples of the types of catalysts that are unique to healthcare.

Catalyst Type	Explanation	Example
Clinical	Binary events that involve data results of important clinical studies—press release, publication, or presentation	Phase III Ipilimumab data (Bristol-Myers)
Regulatory	Binary events that involve the FDA on drugs' marketing/commercial decisions	FDA approval for Provenge (Dendreon)
Legal	Patent cycle management—a judge can issue rulings to prohibit or allow generic competition	Angiomax patent extension (The Medicines Company MDCO)
Thematic: Scientific Meetings	Thematic scientific meetings where major medical data are showcased	American Society of Clinical Oncologist Annual Meeting
Thematic: Company Earnings	Quarterly earnings and updates on company outlook	Various earning releases

Source: NEPC

References

Figures 1-5

Bloomberg. March 31, 2011

Figure 6

Bloomberg. May 15, 2011

Figure 7

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US Census Bureau, International Data Base, accessed May 2011

Figure 8

US Census Bureau, Population Division (December 16, 2009)

Figure 9

(2007) "When I'm 64: How Boomers Will Change Health Care" American Hospital Association

Figure 10

(2004) "Chronic Conditions: Making the Case for Ongoing Care" John Hopkins University

Figure 11

Kinsella, Kevin and He, Wang (2008) "An Aging World: 2008" US Department of Health and Human Services

Figures 12-13

(2010) Organization for Economic Co-Operation and Development Health Data Set

Figure 14

(2006) Organization for Economic Co-Operation and Development

(2007) US Census Bureau, International Data Base

Figure 15

Bloomberg. March 15, 2011

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