SOLACTIVE
German Index Engineering

NEXT GENERATION DEFENSIVES: LOW-BETA-BENEFICIARIES OF A CHANGING WORLD UNTIL 2050

White Paper

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EXECUTIVE SUMMARY

In this white paper, we construct a low-beta index composed of companies that are active in business fields with a promising future. Growing population, demographic changes, and decreasing global income inequality lead to a higher customer base for basic products and services.

We have identified the defensive non-durable consumer goods, utilities, and healthcare sectors as the ones with the lowest betas to the broad market over a timeframe that includes the global financial crisis. These sectors have benefitted from long-term shifts in consumption as well as in demand and are expected to continue to do so.

The Next Generation Defensives Index is composed of companies from the developed markets with rising sales figures as well as a global revenue split including exposure to the emerging markets. It outperformed the benchmark by more than three percentage points annually in a historical analysis.

The Next Generation Defensives Index

- benefits from long-term trends of a growing global population, demographic developments, as well as emerging markets' population becoming wealthier;
- is composed of stocks from the non-durable consumer goods, utilities, and healthcare sectors;
- has delivered a 9.72% annualized return over a period between May-08, 2006 and Jan-14, 2020;
- has a lower annualized volatility of 13.24% and a beta of 0.73 in comparison to the Solactive GBS Developed Markets Large & Mid Cap Index over the same period;
- has outperformed the benchmark during the five most recent stock market corrections.

1. INTRODUCTION

The length of one generation can be defined as the average age gap between parents and their children, which nowadays is around 30 years in developed economies. In this white paper, we want to look at major changes until 2050 – how society will evolve until then, and which companies will most likely benefit from these developments. We pay particular attention to the following:

1. world population growth,
2. demographic changes, and
3. decreasing global income inequality.

We construct a low-beta stock index with companies that benefit from these three long-term trends. Our focus is not on disruptive developments, but rather on defensive sectors. More cyclical stocks typically have a higher beta and are exposed to a higher degree of uncertainty. For instance, the anticipated success of tech disruptors depends on uncertain developments of technological progress.

The constituents of the Next Generation Defensives Index are providers of basic supplies with a relatively stable and growing demand. We focus on companies in three defensive sectors that build on long-term expanding economic fields. These sectors, which demonstrate the lowest betas to the broad equity market between May-2006 and Jan-2020, are the following:

1. non-durable consumer goods (beta of 0.67),
2. utilities (beta of 0.72), and
3. healthcare (beta of 0.73),

followed by consumer durables (beta of 0.81), consumer services (0.88), technology (0.97), industrials (1.08), energy (1.22), finance (1.26), and basic materials (1.35).

The three sectors with the lowest betas are clearly linked to the above-mentioned projected developments until 2050 and are among the top beneficiaries of an increase in the need for indispensable products and services. The demand for basic products is expected to increase as global population continues to grow, society grows older, and the personal income of the middle class in countries like China and India slowly converges towards that of Western levels. Population growth will ceteris paribus lead to a higher number of customers, and demographic trends will affect the demand for basic supplies. Similarly, as income levels in emerging economies converge to those of developed ones, the global demand for basic products is expected to rise.

Examples of these trends are changes in the consumer behavior of Chinese and Indian citizens that benefit the food and beverage giants Nestlé, PepsiCo, and Heineken among others, opportunities for Novartis, Pfizer, and other healthcare companies due to an increase in chronic illnesses consequential to aging populations, as well as the expected increase in global electricity consumption mainly coming from developing countries.

These developments have already started. An anticipated continuation of these trends during the next 30 years – roughly the length of a generation – will lead to a further expected growth in demand for products of companies in the non-durable consumer goods, utilities, and healthcare sectors.

As our historical simulation shows, an index composed of the beneficiaries of the aforementioned trends has performed well relative to the market in the long run. Additionally, these companies can provide downside protection during turbulent market environments.

Over the analyzed period from May-2006 to Jan-2020, the Next Generation Defensives Index would have realized annualized returns of 9.72%, whereas the Solactive GBS Developed Markets Large & Mid Cap Index returned 6.55%. per annum.

Over the same period, its average annualized volatility was lower at 13.24%, compared to the benchmark's 15.90%. The max drawdown was also smaller at 40.78% (index) vs. 56.99% (benchmark). Moreover, the index delivered outperformance during the latest stock market corrections (defined as a drop of 10% or more from a recent peak), or in the latest bear market (a drop of 20% or more).

In light of heightened uncertainty, the Next Generation Defensives Index provides a possibility for investors to tilt their portfolio towards a more defensive stance, whilst profiting in accordance with highly relevant long-term trends.

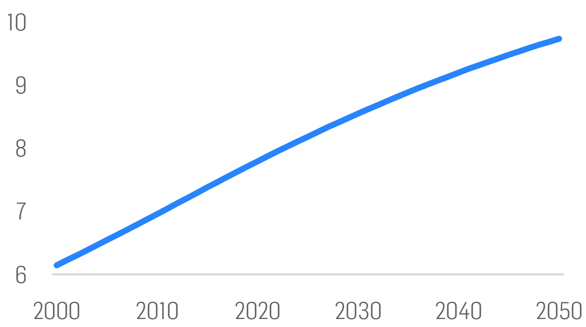
2. BACKGROUND

2.1 Growing Population Leads to a Growing Customer Base

A growing global population translates into an increase in the number of clients for basic products and services, which typically don't suffer from high fluctuations in demand. Under the broad assumption of constant market penetration – i.e., that a product or service is consumed by a certain share of the population – revenues will ceteris paribus rise in accordance with population growth.

The UN projects an around 2 billion people increase in global population within the next 30 years to 9.7 billion in 2050.

Exhibit 1: (Expected) global population until 2050, in bn.



Source: United Nations.

Generally, many global companies will benefit from this trend. The UN expects population growth to be concentrated in less developed economies. The eight countries with the highest expected growth rates are all emerging markets, whereas the populations of Europe and Northern America are only expected to grow by 2% until 2050.[1]

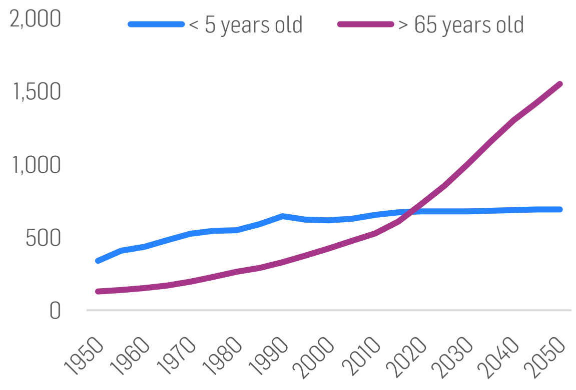
Under this setting, companies need to have a specific regional sales exposure to successfully grow due to the megatrend of population growth. While developed economies seem to have reached a level of saturation for certain products, which impedes sales growth, opportunities continue to arise in emerging markets.

Thus, an investment strategy that focuses on established companies with a diversified regional revenue split and a significant share of revenues in developing economies appears to be promising. Those companies face stable demand conditions in more saturated markets and have the chance to grow in emerging ones. At the same time, companies with international revenue exposure have the potential to increase their revenue in fast-growing markets.

2.2 Aging Population and Healthcare Spending

Globally, the group of people aged 65 or above outnumbered the group of children under five for the first time in history in 2018 – earlier than expected. As of today, 9% of the global population is at least 65 years old. In the next 30 years, this number will grow to 16%, according to the UN. In Europe and Northern America, 25% of the population is expected to have at least 65 years of age by 2050.[1]

Exhibit 2: (Expected) global population until 2050, under five years and above 65 years of age, in mn.



Source: Solactive and UN.

These demographic changes will have far-reaching effects on healthcare spending. As they lead to growing challenges for healthcare systems, it appears certain that healthcare expenditures will rise. Several of the 17 Sustainable Development Goals (SDGs) laid out by the UN in 2015 target health-related issues. Its third goal ("Good Health and Well-Being") and particularly sub-goal 3.8 aim to "achieve universal health coverage".[2] Whereas such targets per se are support-worthy, global healthcare companies are amongst their beneficiaries.

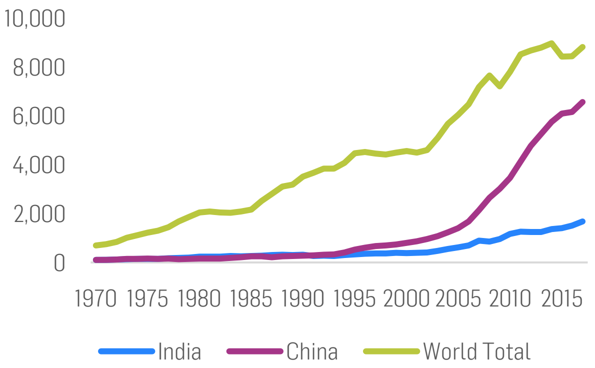
In the developed world, spending in this field has risen in previous years. For instance, in the United States, national health expenditures as a percent of gross domestic product (GDP) rose from 5.0% in 1960 to 17.9% in 2017. In the five years leading to 2017, expenditures rose on average by 4.5% per annum.[3] Although the spending's growth rate of developed economies has decelerated in recent years, overall spending is still on the rise.

In emerging economies, health expenditures relative to GDP are lower. Data from the World Bank shows that China and India spent 5.0% and 3.7% of their gross domestic product on healthcare in 2016, respectively. These numbers drag down the world's share of healthcare spending to 10.0% of the world's GDP.[4] An anticipated convergence led by countries like China and India may lead to an expected increase in global expenditures on healthcare products and services, whose providers will most likely benefit.

2.3 The Demand Effect of a Decrease in Global Interpersonal Income Inequality

Personal income inequality declined globally in recent decades. Research indicates that inequality reduced between 1988 and 2015 and that this reduction was mainly due to a convergence of lower towards higher income levels. Particularly, the rising income levels of countries like China and India contributed to this development.[5]

Exhibit 3: Adjusted net national income per capita (current US-Dollar)



Source: Solactive and World Bank Group.[6]

The ability to increase personal spending on basic products like non-cyclical consumer goods, as well as healthcare products and services, will lead to higher sales for their providers.

A convergence in global personal income due to higher incomes in the lower-income classes will lead to a rise in the overall demand for the non-durable consumer goods, utilities, and healthcare sectors.

Moreover, global energy consumption is rising. The U.S. Energy Information Administration forecasts that world energy usage will increase by almost 50% until 2050, mainly driven by Asian countries. Noticeably, electricity generation is expected to increase by 79% between 2018 and 2050.[7]

3. NEXT GENERATION DEFENSIVES INDEX

3.1 Selection Criteria and Index Construction

The Next Generation Defensives Index universe is based on the Solactive GBS Developed Markets Large & Mid Cap Index. The benchmark's universe contains more than 1,600 listed stocks. In the Next Generation Defensives Index, we focus on the non-durable consumer goods, utilities, and healthcare sectors for the reasons outlined above.

All the companies in this index are global players that have a revenue split between the Americas, Europe/Africa, and Asia-Pacific. Only companies that generate at least 10% of their revenues from each of these regions are included. Others, i.e., those that lack at least 10% revenue exposure in any of these three regions, are excluded.

Further, as we want to focus on established companies with a track record of positive growth, their latest reported annual revenues at selection must be higher than three years earlier.

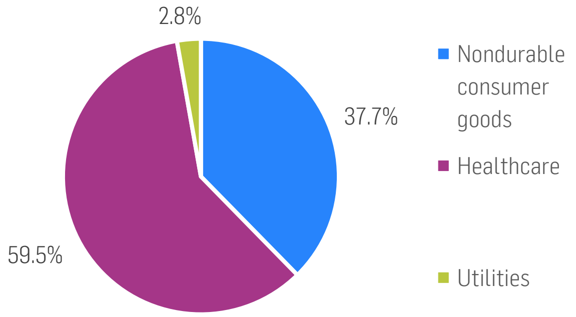
Thus, the selection and weighting criteria are the following:

- Focus solely on companies in the three defensive sectors non-durable consumer goods, utilities, and healthcare. These sectors demonstrate the lowest betas (around 0.7) relative to the broad equity market in the timeframe of May-2006 until Jan-2020.
- Global revenue split, i.e., at least 10% of their revenues from each of the three following regions: the Americas, Europe/Africa, and Asia-Pacific.
- Revenue growth, i.e., sales on the last reported fiscal year, must be higher than three years earlier.
- Selection and rebalancing are performed quarterly as the constituents have different annual reporting periods.
- The weighting scheme is based on the free-float market capitalization of the index constituents.
- The index currency is USD.

3.2 Details on the Index Composition

As of its latest rebalancing in November 2019, the Next Generation Defensives Index consists of 162 stocks. 64 stocks (37.7% of its weight) are from the non-durable consumer goods sector, 11 (2.8% of its weight) from the utilities sector, and 87 (59.5% of its weight) from the healthcare sector. The average historical weights are close to the ones of the latest rebalancing.

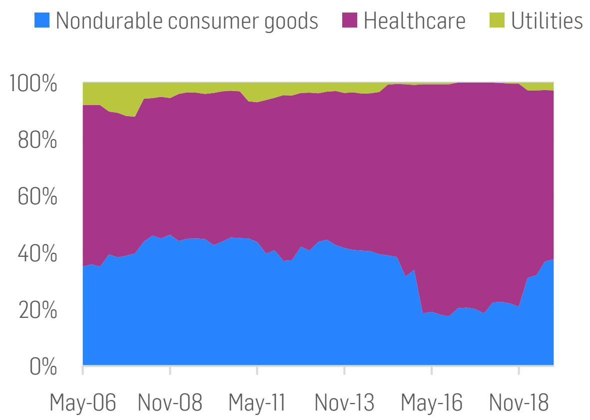
Exhibit 4: Sector weights, as of Nov-2019 rebalancing



Source: Solactive.

Over time, the sector weights fluctuate. As an example, the maximum weight of the utilities sector was around 12%, whereas the average historical weight of this sector is 3.7%.

Exhibit 5: Historical sector weights

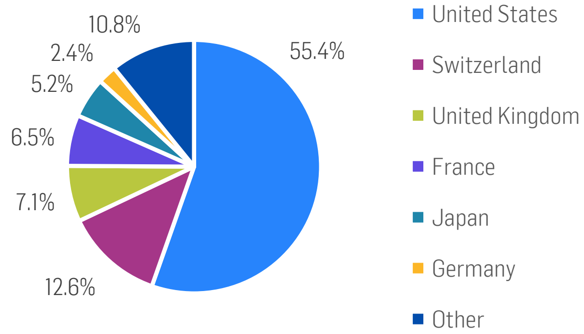


Source: Solactive.

The five stocks most heavily weighted in the Next Generation Defensives Index's latest composition are Johnson & Johnson, Nestlé, Procter & Gamble, Merck & Co., and UnitedHealth Group.

Its highest weighted country (with respect to primary listing) is the US with 55.4%, followed by Switzerland with 12.6%, and the United Kingdom with 7.2%. As of the latest composition, the average revenue exposure to emerging markets is around 20%.

Exhibit 6: Country weights (based on primary listings), as of November-2019 composition



Source: Solactive.

In comparison to its benchmark, the index has an overweight in the healthcare sector, a slight underweight in the non-durable consumer goods sector, and an underweight in the utilities sector. In the benchmark's latest composition, the sector weights are 8.3% for the non-durable consumer goods, 3.6% for the utilities, and 12.1% for the healthcare sectors. A hypothetical benchmark index consisting purely of these three sectors would thus have weights of approximately 34.7% in the non-durable consumer goods, 15.0% in the utilities, and 50.3% in the healthcare sectors.

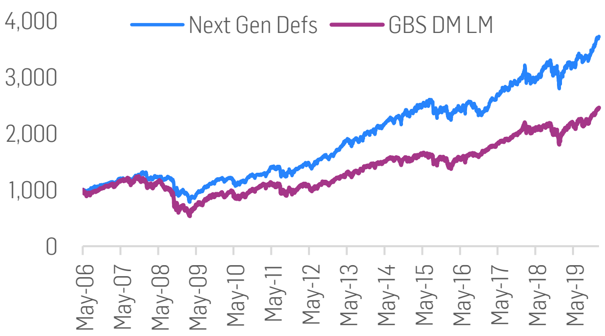
4. HISTORICAL ANALYSIS

4.1 Performance and Volatility

The Solactive GBS Developed Markets Large & Mid Cap Index returned 6.55% on an annualized basis between May-08, 2006 and Jan-14, 2020.

The Next Generation Defensives Index is based on a free-float market capitalization weighting scheme. It performs very well in the historical simulation with an annualized return of 9.72%. The selection of defensive stocks leads to a reduced annualized volatility relative to the benchmark (13.24% vs. 15.90% in the historical analysis). During the analyzed timeframe, the beta of the Next Generation Defensives Index relative to the benchmark is quite low at 0.73. Its maximum drawdown, which occurred during the financial crisis, is also relatively low at 40.78% compared to the benchmark's 56.99%.

Exhibit 7: Historical performance simulation



Source: Solactive. Data from May-2006 until Jan-2020.

Exhibit 8: Performance and volatility overview

Total Return	Next Gen Def	GBS DM
Mean (annualized)	9.72%	6.55%
Standard Deviation	13.24%	15.90%
Downside Deviation	9.45%	11.51%
Max Drawdown	-40.8%	-57.0%
Sharpe Ratio	0.73	0.41
Sortino Ratio	1.03	0.57
Beta (May-2006 - Jan-2020)	0.73	1.00

Source: Solactive. Data from May-2006 until Jan-2020.

4.2 Performance Analysis and Contribution

During the time of our historical analysis, the non-durable consumer goods sector had an annualized total return of 9.63% and an average weight of 36.0% in the index. The healthcare sector with an average weight of 60.3% returned 10.06% on an annualized basis, whereas the utilities sector with a 3.7% average weight lagged with -2.2%. These numbers are based on the stocks included in the index and a weighting scheme according to their free-float market capitalization. Thus, they do not represent the overall sector performance during the timeframe but provide a clear indication of how each of the sectors contributed to the overall performance of the index.

The weakness of the utilities sector within the index can partly be explained by the selection criteria. It appears that the strategy didn't work well for this sector in the historical analysis. The overall utilities sector performed better with an annualized return of 5.1% during the considered timeframe.

The 3.2 percentage points outperformance of the Next Generation Defensives Index in comparison to the benchmark can be attributed to the selection criteria as well as to the sector selection. If we only apply the selection criteria – revenue growth and globally diversified revenues – to the benchmark and include all sectors, we end up with an annualized performance of 7.64%. To understand the selection effect of the three sectors in the Next Generation Defensives Index, we analyze a hypothetical index composed of the non-durable consumer goods, utilities, and healthcare sectors. Without applying other selection criteria, such an index, based on a free-float market capitalization weighting scheme, would have returned 9.29% annualized – which is around 2.7 percentage points better than the benchmark.

Whereas both the index criteria and the sector selection are contributing positively to the performance, the outperformance of the Next Generation Defensives Index stems to a larger extent from the sector selection.

4.3 Analyzing Drawdowns, Corrections and Bear Markets

Conventionally, a stock market correction is a drop in the market – i.e., of a certain benchmark – of at least 10%, and a bear market is a plunge of 20% or more from a recent peak. During the period from May-2006 to Jan-2020, the Solactive GBS Developed Markets Large & Mid Cap Index had a larger than 10% drawdown on five occasions and a larger than 20% drawdown once, in total return terms. In all five periods, the Next Generation Defensives Index performed relatively better than the benchmark.

Exhibit 9: Historical drawdowns

Total Return	Days	Next Gen Def	GBS DM
9 May 2006 - 13 Jun 2006	25	-4.5%	-11.3%
13 Jul 2007 - 16 Aug 2007	24	-5.5%	-10.7%
31 Oct 2007 - 9 Mar 2009	353	-38.5%	-57.0%
21 May 2015 - 11 Feb 2016	190	-12.3%	-17.4%
26 Jan 2018 - 25 Dec 2018	237	-13.1%	-18.2%

Source: Solactive. Data from May-2006 until Jan-2020.

5. CONCLUSION

In this paper, we construct a defensive index with constituents that benefit from long-term trends. We only focus on the three sectors with the lowest betas to the broad equity market, which are non-durable consumer goods (beta of 0.67), utilities (beta of 0.72), and healthcare (beta of 0.73), and select stocks with growing revenues on a global scale.

In the current situation of heightened uncertainty and nervousness in the market, a strategy that benefits from lasting trends such as population growth, demographic shifts, and a decreasing global personal income inequality offers an alternative to address stock market volatility.

Particularly long-term developments should be taken into account in a future-oriented investment strategy. By focusing on a defensive stance at the same time, we attempt to merge two trends in this index concept.

The historical analysis shows that the Next Generation Defensives strategy can add value to investors. The index would have generated a 9.72% annualized return over the analyzed period between May 08, 2006 and January 14, 2020, whereas the Solactive GBS Developed Markets Large & Mid Cap Index achieved 6.55%.

The low beta of the Next Generation Defensives Index (at 0.73) relative to the benchmark is appealing in times of rising uncertainty. In all five stock market corrections we have examined, the index performed better than the benchmark.

The attractiveness of the Next Generation Defensives Index lies in the combination of its low volatility, outperformance in correction and bear market environments, and its simultaneous solid long-term performance.

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https://www.eia.gov/todayinenergy/detail.php?id=41433#

APPENDIX

Potential Variations

Several extensions and versions of the index are worth considering. For instance, a fixed number of companies could eliminate fluctuations in the number of constituents. In the current index, 73 companies have a weight of below 0.2%. Hence, a minimum weight filter could be considered.

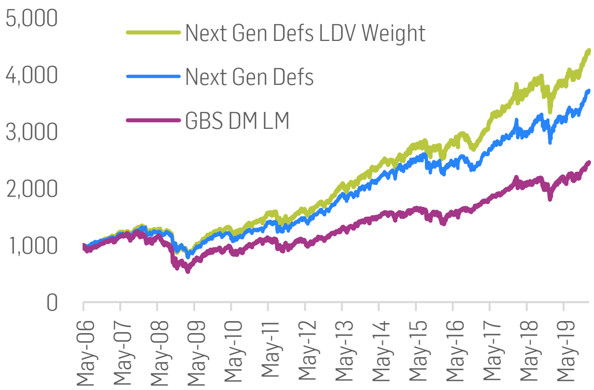
Low Volatility

Another extension aims at benefitting even more from the low volatility factor and focuses on a weighting scheme based on downside volatility.

To support the idea of constructing a defensive index, we apply a different weighting scheme that is based on the inverse downside volatility. While standard deviation, as used in classic low volatility strategies, punishes both positive and negative deviations from mean returns alike, downside volatility only considers negative returns when calculating an asset's risk. [See "Low Downside Volatility, Introducing a new investment factor", https://www.solactive.com/low-downside-volatility/, Solactive AG, July 2018.]

We weight the stocks that fulfill the index' selection criteria according to inverse downside volatility, i.e. giving a higher weight to stocks with a lower downside volatility. The higher representation of low-vol-stocks raises the strategy's annualized return in the simulation to 11.07%, whereas its volatility drops further to 12.54%.

Exhibit 10: Historical performance simulation



Source: Solactive. Data from May-2006 until Jan-2020.

Exhibit 11: Performance and volatility overview

Total Return	Next Gen Def	LDV Weight	GBS DM
Mean (annualized)	9.72%	11.07%	6.55%
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Max Drawdown	-40.8%	-41.9%	-57.0%
Sharpe Ratio	0.73	0.88	0.41
Sortino Ratio	1.03	1.23	0.57
Beta (May-2006 - Jan-2020)	0.73	0.73	1.00

Source: Solactive. Data from May-2006 until Jan-2020.

Exhibit 12: Historical drawdowns

Total Return	Days	Next Gen Def	LDV Weight	GBS DM
9 May 2006 - 13 Jun 2006	25	-4.5%	-6.0%	-11.3%
13 Jul 2007 - 16 Aug 2007	24	-5.5%	-6.6%	-10.7%
31 Oct 2007 - 9 Mar 2009	353	-38.5%	-40.5%	-57.0%
21 May 2015 - 11 Feb 2016	190	-12.3%	-8.8%	-17.4%
26 Jan 2018 - 25 Dec 2018	237	-13.1%	-13.0%	-18.2%

Source: Solactive. Data from May-2006 until Jan-2020.

DISCLAIMER

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