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TalkingPoint

The shifting investment environment:

Picking growth stocks in a "saturated" world

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Is the global economy close to reaching a tipping point? The impacts of our key themes (demographics, climate change and the emerging market supercycle) are combining with the ramifications of the global financial crisis to create an environment where growth is reaching a point of "saturation". In this world, focusing on the sustainability of growth becomes more important than ever. This is important for investors as the global economy painfully adjusts to new realities and follows a rocky path to normalization.

The concept of growth saturation does not necessarily equate to zero economic growth, but rather implies that economic growth will be constrained at a lower level. Society, industries and investors must adapt to survive potential shifts from abundance to "scarcity economics" in some areas. In this environment, picking companies with sustainable growth is more crucial than ever, and understanding how sources of such growth might shift is key to building successful equity portfolios.

For the five years since the financial crisis, the developed world has been dependent on waves of liquidity (quantitative easing), becoming beholden to governments and central banks to cushion the destructive adjustment process underway. In this transitional environment, with greater state involvement and tighter regulation, there has been much discussion about the need to develop a sustainable model for economic growth, less dependent on leverage. With this in mind, for an austerity plan to be more effective, it should be accompanied by badly-needed structural reforms to improve competitiveness and mitigate the impact of population ageing as well as environmental challenges.

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Alongside this, the crisis presents an opportunity to increase awareness of a broader concept of sustainability. It gives the chance to reshape the global economy to sustain growth in a saturated world. This could entail adopting a less resource-intensive growth model. From a fundamental perspective, evaluating resource capacity and demand at the planetary level as we do at the individual company level seems logical and feasible. Given population growth forecasts of over 9bn people on the planet by 2050 and the aspiration of billions of new consumers worldwide to achieve an "American way of life" (which is very resource-intensive), the existing economic framework is likely, over time, to stretch the natural limits of planetary resources and increase the risk of "black swan" type events.

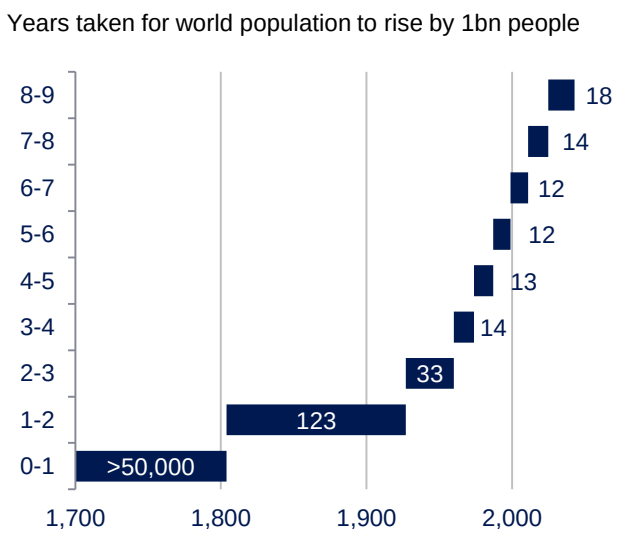
By 2050, current forecasts suggest that over 2bn people will be added to the global population (a 30% increase). Within the same time frame, 3bn people with the ability to spend US$10-100 per day will join the global consumer

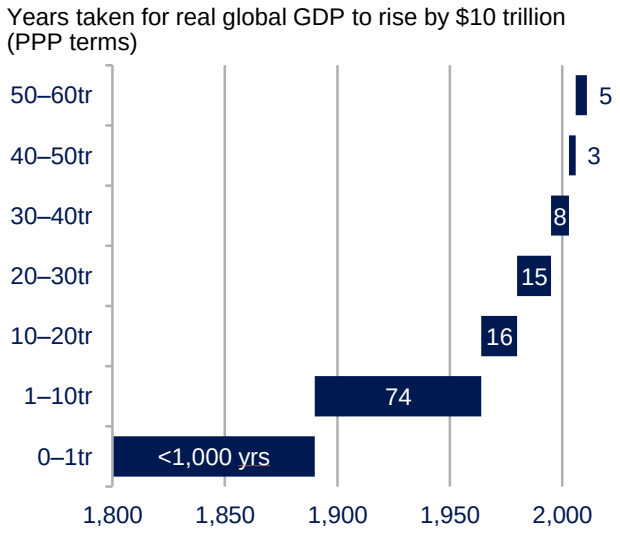
market and world GDP could grow roughly threefold.[1] While fears of a crowded world are not a new phenomenon, predictions of catastrophe have so far been unfounded.[2] This is in part because throughout the twentieth century, advances in technology resulted in massive gains in agricultural productivity: commodity prices fell by almost half in real terms despite a quadrupling of the world population and 20-fold increase in global GDP.[3]

Is this time different? A system's limitation

As we move into the next phase of staggering population growth, how should we assess the possibility that this time is different? With structural change in the world economy driven by demographic trends and "supercycle" (the shift of global economic activity towards emerging markets) the pace of change over the past 40 years has been significantly faster than ever seen before. For example, it took hundreds of thousands of years for the human population to reach 1bn, in the early 1800s; each subsequent billion has taken progressively less time, with the most recent jump from 6 to 7bn being made in just 12 years.[4] Similarly, the pace of GDP growth has accelerated (see figure 2 below), both globally and at the individual country level. A doubling of real GDP per capita from $1000 to $2000 (in PPP terms) that took over a century in most of Western Europe has taken just 12 years in China.[5]

Figure 1 (L): Pace of world population growth is accelerating…
Figure 2 (R): …as is global GDP growth



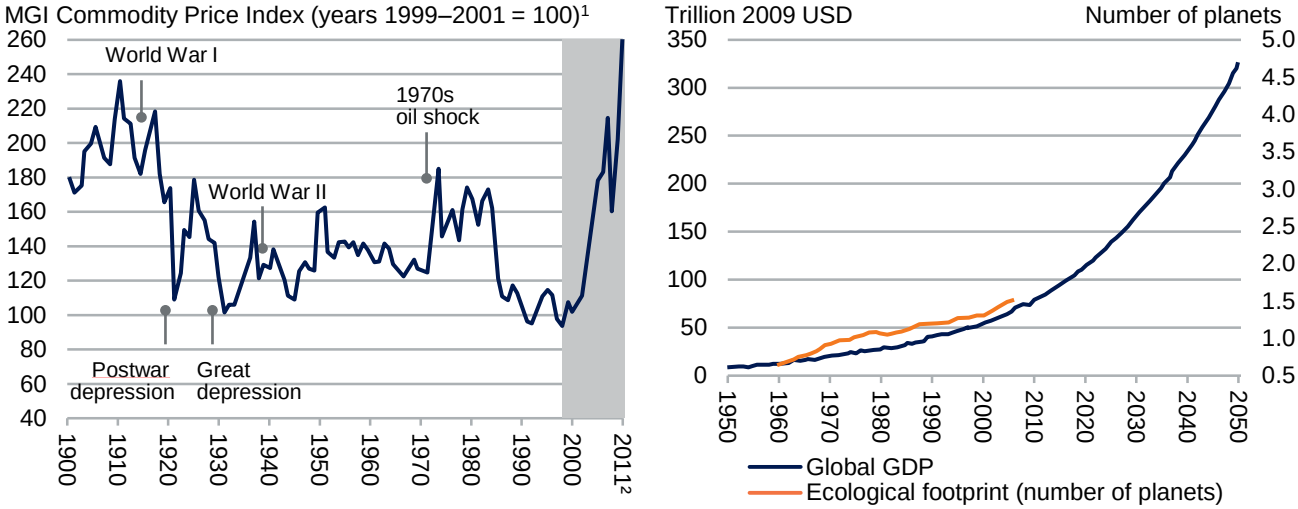


Source figure 1: UN World Population Prospects, 2010 Revision; UN (1999), *The world at six billion, Schroders*
Source figure 2:OECD, Goldman Sachs

As a result, resource usage has increased dramatically and commodity prices have risen, remaining strong in recent years despite the depressed global demand environment. To achieve forecast GDP growth, the OECD expects that 35% more food, 37% more energy and 70% more resources will be needed, yet in environmental terms the world is already saturated.[6] Analysis by the Global Footprint Network suggests that we are already using planetary resources at 1.5 times the rate at which they can regenerate, despite 1.3bn people still living in poverty.[7] If everyone in the world reached a US level of consumption, we would need 3 times the ecological capacity, amounting to 4.5 planets.

[1] UN World Population Prospects, 2010 Revision; HSBC (2011), *The World in 2050;* PWC (2006), *The World in 2050*; McKinsey (2012), *Winning the $30 trillion decathlon.*
[2] http://en.wikipedia.org/wiki/Malthusian_catastrophe
[3] McKinsey (2011), *Resource revolution*.
[4] UN World Population Prospects, 2010 Revision; UN (1999), *The world at six billion*.
[5] Goldman Sachs (2012), *GS Sustain: Growing Pains*.
[6] Cited by Simon Upton, Environmental Director at the OECD, at the Oxford University World Forum on Enterprise and the Environment 2011.
[7] WWF/Global Footprint Network (2012), *Living Planet Report 2012*; The Royal Society (2012), *People and Planet*.

Figure 3 (L): Commodity price increases since 2000 have wiped out a century of decline
Figure 4 (R): Economic growth is expanding our ecological footprint



Source (fig 3):McKinsey
Source (fig 4): Global Footprint Network, OECD, Goldman Sachs Research Estimates

All the signs suggest that the natural environment is being pushed to its limit. To give just a few examples:

- This year's survey of Arctic sea ice showed a record decline, to just half the ice that was present when measurement began in 1979[8]
- In the absence of policy change, the global economic cost of climate change caused by deforestation could reach $1trn p.a. by 2100[9]
- The impact of human consumption and activity has contributed to a species extinction rate of 1000 times over the natural background rate; 10-30% of animal species are now threatened with extinction[10]
- The WWF's Living Planet Index, which provides a measure of biodiversity, has fallen 30% since 1970. For tropical zones, the decline is closer to 60%[11]
- In China, 45bn tons of soil are lost annually through erosion and 1400 square miles of land turns to desert every year. Environmental damage is thought to cost China as much as 4% of GDP[12]
- 60% of global fish stocks are overexploited and 90% of large fish have disappeared through overfishing[13]
- The oxygen content of our oceans is falling 1 % p.a. and there will soon be more acid in our oceans than at any time in the past 14 million years, posing a major threat to coral reefs and marine ecosystems.[14]

[8] Guardian (2012), *Get used to 'extreme' weather, it's the new normal.*
[9] Eliasch Review (2008), *Climate Change: Financing global forests.*
[10] Cited by Dr Simon Stuart of the IUCN Species Survival Commission at the Oxford University World Forum on Enterprise and the Environment 2011.
[11] WWF/Global Footprint Network (2012), *Living Planet Report 2012*
[12] Guardian (2010), *China counts £130bn cost of economic growth*
[13] International Program on the State of the Ocean.
[14] Ibid.

Figure 5: Global fish stocks by level of depletion

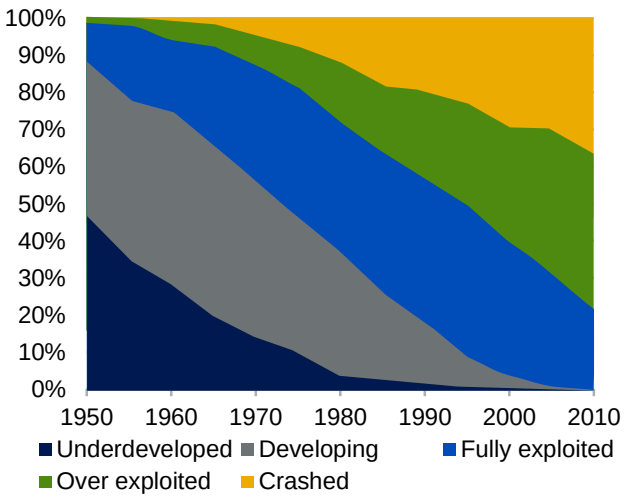
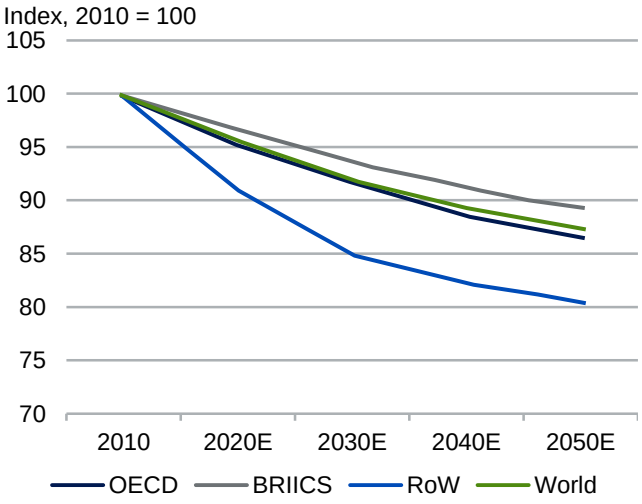


Figure 6: Global primary forest area change*



* OECD baseline forecast, 2012. Note that the OECD expects *total* forest area to recover from 2020 due to regeneration and reforestation projects, but primary forest is regarded as more relevant for biodiversity.

Source (fig 5):OECD, Goldman Sachs, Global Fishery Database
Source (fig 6):OECD, Goldman Sachs

While the depletion of the planet's resources is not news, the key point is that high and accelerating levels of resource use create an environment that is potentially more precarious than people assume. With human beings inclined to dismiss long-term costs, even if they are borne in their lifetime, issues that are perceived by most as long term in nature tend to be dismissed. This is further aggravated by short electoral cycles in many countries, versus the long payback period of most environmental projects (see figure 7 below). Trucost estimates that the monetary value of environmental damage caused by the top 3000 listed companies totals $2.25trn: that's 3.5% of global GDP and 1/3 of their profits.[15] This is partly due to the fact that in many countries not only are polluting activities not taxed, but they are actually subsidized, which seriously distorts price signals. Globally, we spend $300-500bn on fossil fuel subsidies. Removing these would be expected to result in 10% less emissions.[16]

Figure 7: Estimates of costs and benefits of restoration projects in different biomes

	Biome/Ecosystem	Typical cost of restoration (high scenario)	Estimated annual benefits from restoration (avg. scenario)	Net present value of benefits over 40 years	Internal rate of return	Benefit/cost ratio
		USD/ha	USD/ha	USD/ha	%	Ratio
1	Coral reefs	542,500	129,200	1,166,000	7%	2,8
2	Coastal	232,700	73,900	935,400	11%	4.4
3	Mangroves	2,880	4,290	86,900	40%	26.4
4	Inland wetlands	33,000	14,200	171,300	12%	5.4
5	Lakes/rivers	4,000	3,800	69,700	27%	15.5
6	Tropical forests	3,450	7,000	148,700	50%	37.3
7	Other forests	2,390	1,620	26,300	20%	10.3
8	Woodland/shrubland	990	1,571	32,180	42%	28.4
9	Grasslands	260	1,010	22,600	79%	75.1

Source: Oxford University World Forum on Enterprise and the Environment 2011

[15] Trucost estimate for UN-PRI. Cited by Pavan Sukhdev of Yale University at the Oxford University World Forum on Enterprise and the Environment 2011.
[16] Ibid.

Saturation and the critical state

The combination of demographic development with economic and environmental strains creates the potential for a tipping point. Mark Buchanan's image of complex systems functioning as a pile of sand is enlightening: as more grains are added, it is impossible to predict even with sophisticated modeling which grain will start a landslide, and whether it will do minor damage or raze the entire pile to the ground.[17] The world is full of these kind of unstable equilibria and physicists have known for decades that most physical systems are non-linear, giving rise to phenomena such as the "butterfly effect" whereby a very small change can result in have large repercussions further down the chain of events. Given the acceleration of some of the environmental changes discussed above, it is probable that the world is approaching a phase where, over the next decade, it is at increasing risk of reaching a tipping point, known scientifically as a 'critical state' (the point at which a marginal change can trigger a transformation in the nature of an object or system). Such a critical state may present opportunities for major changes, either naturally occurring or led by governments and regulators, which will alter the cost-benefit calculus for companies, individuals and societies, and have unavoidable consequences for global stock picking.

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While it is impossible to accurately predict or anticipate a tipping point, the stresses discussed above increase the probability of reaching one within an individual's time horizon. Buchanan notes the importance of the critical state for explaining events as diverse as natural disasters, traffic jams and market crashes. It is particularly interesting that instability is associated with increasing interconnectedness, which raises the risk of a cataclysmic domino effect. For example, the proliferation of algorithmic trading has created the potential for disorderly and dramatic events, exemplified by the 2010 Flash Crash. Similarly, the increasing interconnectedness of global economies via trade and capital flows means that a shock is quickly transmitted around the world.

Consolidation within industries and the rationalization of supply chains have also resulted in systems that may be more prone to instability. When a tsunami struck the coast of Japan last year, the damage was initially thought to be contained to just a few factories, but the ripples were felt around the world. It transpired that the affected factories provided a disproportionate share of global supply for key electronic components, resulting in the disruption of manufacturing across diverse industries and geographies.

One can draw a parallel between the rationalization of global supply chains and that of agricultural feed crops, where the adoption of high-yield strains and monocultural farming has greatly reduced biological diversity. For instance, of 200,000 wild plants, only 200 have been domesticated for consumption and just 12 species account for 80% of world food tonnage. Half of US wheat is now produced by just nine varieties, and the number of cultivated wheat varieties in China has fallen by more than 90% since the 1940s.[18] This increases the risk of disease or other shocks to global food supply, and reduces adaptability to changing environmental conditions.

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Stock-picking in a saturated world

The combination of the environmental pressures discussed above and the global economic rebalancing precipitated by the crisis creates an evolving investment framework that both investors and companies must focus on in order to stay ahead of the curve. We highlight below a few areas of particular importance for picking stocks in a saturated world.

First, over time, it is likely that pressure will build for governments to adopt regulations and policies more suited to a scarcity framework. For example, policy could incentivize "good" behavior or penalize – possibly via punitive taxes – companies that inefficiently or excessively consume environmental resources, or contribute far more than their peers to

[17] Buchanan (2000), *Ubiquity*: *The Science of History… Or Why the World is Simpler Than We Think.*
[18] Jared Diamond- Guns, germs and steel; UN convention on biological diversity; German federal ministry for economic cooperation and development.

carbon emissions. This changing operating framework creates a competitive dimension for companies in resource-intensive industries, such that those with best-in-class resource usage and ESG practices will win. Even if governments are slow to establish appropriate frameworks, market forces will continue to drive resource prices higher, which will also alter the relative competitive landscape. Within this framework, investors should investigate the ability of company management teams to lead in changing political, economic and environmental circumstances. Proven ability for innovation and acuity will be rewarded, as these management teams will have the best chances of adapting to either gradual or sudden change.

Second, financial systems will most likely evolve towards a model where capital is allocated to investment opportunities with the best sustainable growth prospects, rewarding companies with efficient processes and resource utilization, as well as innovators and entrepreneurs. Scarcity economics will not only apply to the use of environmental resources but also potentially to other resources, including capital. Although interest rates are expected to stay low – even close to zero – in many countries for the foreseeable future, the need to deleverage combined with a low velocity of money and regulations encouraging capital hoarding are resulting in some degree of capital scarcity for many companies or governments.

Demonstrable promoters of productivity and efficiency will profit, especially when the efficiency gains are applicable to resources or processes under strain."

Third, true innovation is key at times of structural change, and spotting the next leaders will be rewarding. In particular, innovation in the way we share information or produce, transport and use materials, will be crucial for developing sustainable growth models. Demonstrable promoters of productivity and efficiency will profit, especially when the efficiency gains are applicable to resources or processes under strain. For example, technologies enabling productivity increases in water treatment – desalination, purification and waste management – will be particularly valuable, especially in large and growing emerging market countries in light of potentially drastic climate change.

Another area of sustainable growth will be for companies who can improve the monitoring, prevention and reduction of environmental damages. For example, Toyota has clear leadership in hybrid and electric vehicles; consumer goods giant Unilever has developed dry shampoo and single-rinse laundry products to reduce water usage by its customers.

When thinking about innovation, one must also be open to radically new ideas and technologies that could have dramatic impacts on the established production systems in various industries. Graphene is such an example. Graphene is a sheet of carbon one atom thick that is over 100 times stronger than steel and conducts electricity better than copper. When it becomes commercially viable, it could revolutionize resource consumption in many industries including electronics, construction and energy. Graphene coating can make copper almost 100 times more resistant to corrosion, while graphene-based nano-materials have promising applications in renewable energy, with the potential to improve both the capacity and charge rate of rechargeable batteries. Nano-porous graphene could outperform the best commercial water desalination techniques, and Samsung Advanced Institute of Technology has developed a new transistor structure using graphene that can overcome the limits of conventional silicon[19]. Recently, engineers at the University of Texas have pioneered the application of graphene in DNA sequencing, dramatically improving the speed and cost. In the future, large-scale DNA sequencing may be commercially viable, allowing doctors to better predict and diagnose diseases, or even tailor a drug to an individual genetic code[20]

Conclusion

Growth investing may seem inimical to a saturated world with lower levels of overall economic growth and shifting growth patterns, particularly as fragmentations in the global village intensify (as discussed in our previous paper). But we believe the discipline to continually evaluate the sustainability of growth will be crucial to successful equity investing in a saturated world. Traditional analysis of company business models and competitive advantage remain important, but investors will also need to integrate new ways of understanding competitiveness in a scarcity economics context, with reference to resource intensity and environmental impacts. In this framework, the premium for growth companies should rise as "good" growth becomes scarcer. Given the risk of tipping points, any investor with a long-term horizon

[19] Samsung.com, May 2012.
[20] *Science Daily,* 3rd Oct 2012.

should be minimizing portfolio risk by ensuring they invest in resilient companies with highly efficient resource usage and the flexibility to adapt quickly to changing conditions.

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