THE BIG BOOK OF SI

Sustainability investing – meeting the needs of the present generation without compromising those of generations to come

ROBECO
The Investment Engineers

2 Three megatrends shaping the world

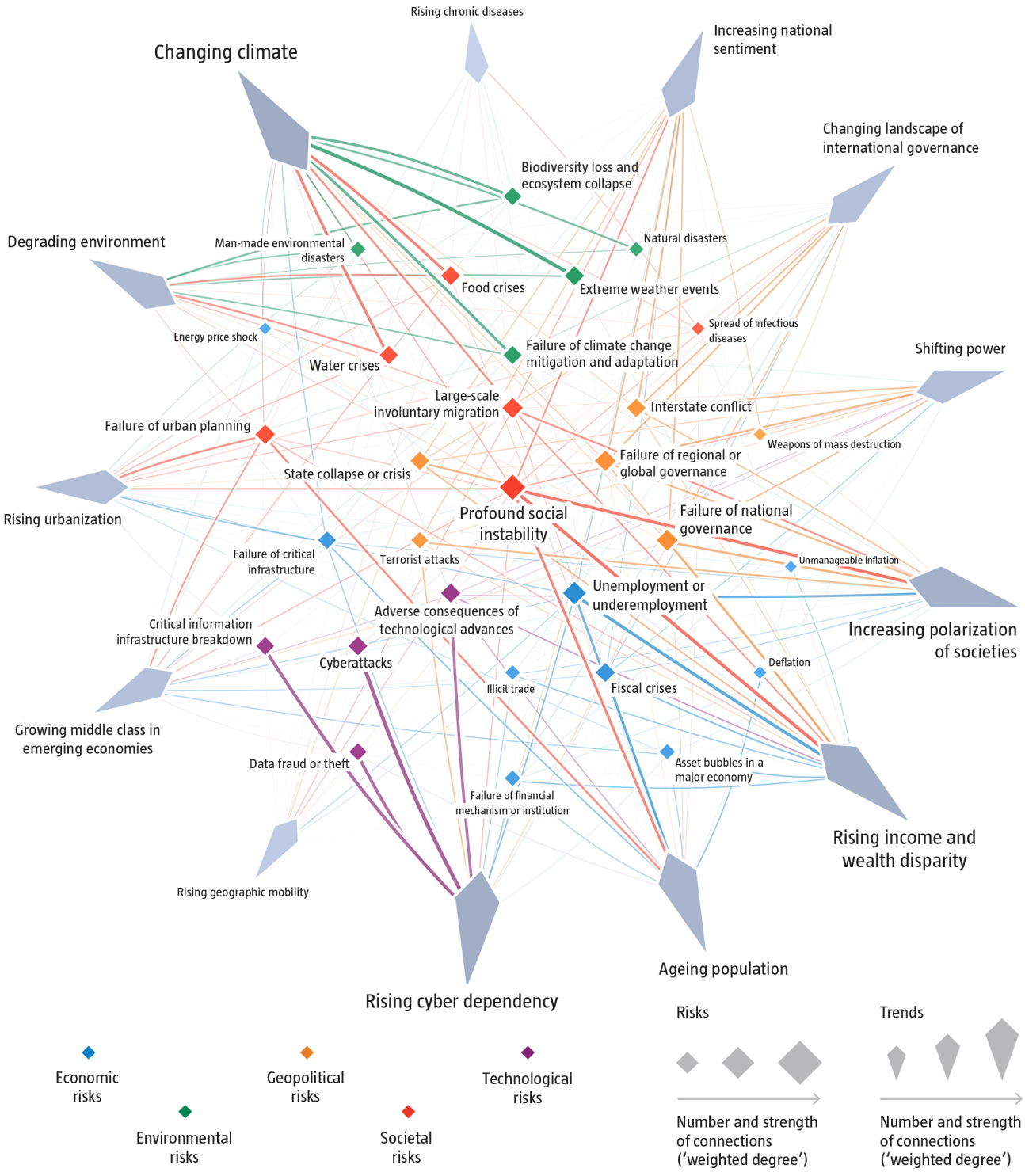
Sustainability is a broad phenomenon with many different angles. One of the sustainability themes currently receiving widespread attention is climate change – and rightly so. It is an important issue that needs to be addressed by regulators, companies and investors. And yet sustainability is about much more than just global warming.

Every sector has its own challenges, be they sustainable supply chains and the social risks of sugar consumption in the food industry, sensible pricing models and business ethics in healthcare, or risk culture and product stewardship in the financial sector. There are also sustainability issues to consider from a country perspective: the strength of institutions, investment in education and access to natural resources to name but a few.

In this chapter we discuss three important themes that specialists across the globe believe to be among the most important ecological, social and governance matters of our times[3]. We explain how they can affect investors from a strategic perspective (climate change), a bottom-up perspective (cybersecurity) and a country perspective (inequality).

3. World Economic Forum, Global Risk Report 2018

Figure 2: Megatrends as defined by the World Economic Forum



Source: World Economic Forum, Global Risk Report 2018

MEGATREND 1: CLIMATE CHANGE

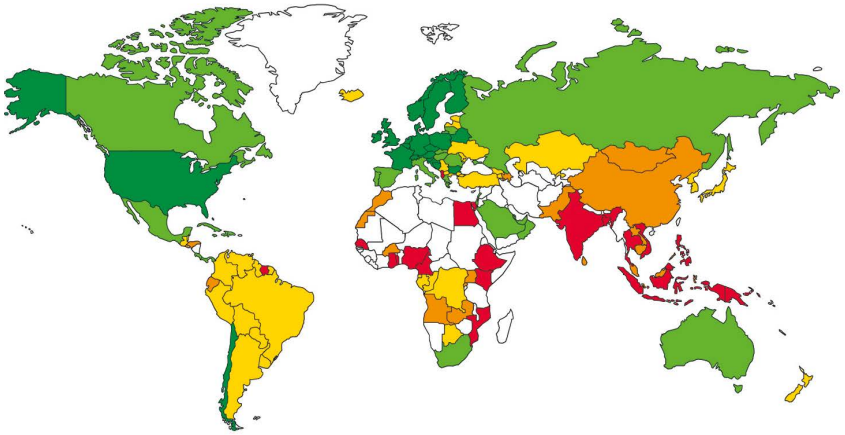
Fact: 97% of climate experts agree humans are causing global warming

The scientific consensus is that global warming will get worse before it – hopefully – gets better. And global warming could also lead to 'global weirding' – in other words, a greater number of extreme weather events. This means not just drought but also, for example – somewhat paradoxically – more severe winters in Europe caused by a seasonal change in the path of the Gulf Stream, which is currently responsible for the mild climate in northwest Europe. Global weirding will be an increasing drag on the world economy. One reason for optimism, however, is how the concerns surrounding it resulted in the Paris Agreement – an agreement within the United Nations Framework Convention on Climate Change (UNFCCC) dealing with greenhouse gas emissions mitigation (even without the present support of President Trump).

To assess how global warming could affect expected investment returns, we first need to consider the ambitions formulated in the Paris climate agreement – the central aim of which is to keep the rise in global temperature 'well below' 2°C above pre-industrial levels and attempt to limit its rise to no more than 1.5°C. An increase in temperature of 2°C above pre-industrial levels is considered by the Intergovernmental Panel on Climate Change (IPCC) to be a maximum, above which major environmental harm can be expected. But several prominent scientists believe the danger level to be lower, and are advocating a maximum rise of 1.5°C.

Nevertheless, studies suggest that the terms of the Paris Agreement will not be enough to keep the temperature rise below 2°C. Taking into account the promised reduction in greenhouse gas emissions, we are still currently on schedule for a mean surface temperature increase of well over 2°C according to the IPCC's Fifth Assessment Report (2014).

Figure 3: Potential vulnerability to climate change



Very vulnerable | Vulnerable | Intermediate
Less vulnerable | Least vulnerable | Unrated sovereigns

Source: Standard & Poor's 2014

What does it mean for investors?

It is important for investors to assess the impact of climate change on asset class return expectations. The most significant physical impacts of climate change will be seen in the second half of this century, but the consequences for forward-looking asset markets may become apparent much sooner. When expectations for climate change are adjusted, the markets and asset prices will reflect these developments, possibly sooner than the physical changes of global warming make themselves felt.

Macroeconomic and market impact: three scenarios

The macroeconomic impact of climate change will be heavily influenced by environmental policies. It is impossible to calculate this impact with any degree of certainty, but we can sketch some very rough, highly stylized scenarios. These are based on a report by the University of Cambridge Institute for Sustainability Leadership[4]. The most benign scenario consists of a rapid shift from a fossil-fueled world economy to a low-carbon economy, which would require tremendous investment in new infrastructure, research and development, and new business models. The shift would be costly and produce a short period of high volatility and slow growth. According to HSBC[5], nearly half of coal and oil assets would become stranded (essentially worthless) in this scenario. How could such a scenario be achieved? A global carbon tax, the introduction of carbon budgets, a hefty increase in investment in low-carbon technologies and an end to investment in or subsidies for fossil fuel extraction should do the trick.

A more plausible scenario is a world in which past trends essentially continue, with temperatures rising to 2.0-2.5°C above pre-industrial levels by 2100. The world would succeed in slowly reducing its dependency on fossil fuel, but it would take longer for the positive benefits of the new low-carbon economy to make themselves felt. Economic growth would be even lower than in the first scenario.

A third scenario would involve prioritizing growth to the detriment of climate change risks. Initially, economic growth would depend quite heavily on fossil fuels. But market confidence on the future performance of the economy would gradually worsen due to environmental degradation, water stress and increasing resource constraints, which would impact production capabilities and regional social cohesion.

4. Unhedgeable risk: How climate change sentiment impacts investment (CISL, 2015).

5. HSBC 'Statement on Climate Change' (October 2016)

The Cambridge study modelled the impact of these scenarios on four types of portfolios: conservative (low risk), balanced, aggressive (high risk) and fixed income only portfolio. The first three portfolios are diversified across asset classes and geographies. Equities will be most affected in the third scenario. Unsurprisingly, the long-term impact of the third scenario on the expected returns of the most risky portfolio is highest, because it has a larger exposure to equities. The fixed income only portfolio performs better than the other portfolios in the third scenario.

Figure 4: Summary of portfolio performance (long-term after 5 years) by structure and scenario, nominal per cent

Portfolio structure	Baseline	Two degrees	No migration
High fixed income	4%	-3%	-4%
Conservative	12%	9%	-26%
Balanced	16%	17%	-30%
Aggressive	21%	25%	-45%

Source: University of Cambridge

The impact of the various scenarios on sectors and regions has also been analyzed in the Cambridge study. In the first two scenarios, the worst-performing sector in developed markets would be real estate[6], followed by basic materials, construction and industrial manufacturing. The best-performing sectors would be transport, agriculture and consumer retail. Investment risks can be mitigated by switching out of the worst-performing sectors and into the better performers. The study also reveals differences between countries in terms of the vulnerability of their economic fundamentals and how they respond to shocks. Brazilian stocks, for example, are reasonably resilient whereas the Chinese market fairs less well. The study concludes that in the end, slightly less than half of the returns impacted by climate change can be hedged through cross-industry and regional diversification.

An important implication is that an investment manager wanting to hedge against the second and third scenarios would be advised to focus on fixed income products from developed markets. While their long-term returns may be low, such an approach should minimize downside losses. This is to be expected, as a 2018 report by HSBC suggests, the vulnerability of countries to the negative impacts of climate change varies widely, with poorer and countries with lower credit ratings the most vulnerable.

As global warming is tackled in the coming decades, investors will need to know what to invest in – and what to avoid. This ranges from multi-billion-dollar projects harnessing renewable energy to new business models in traditional industries such as car manufacturing, utilities and energy.

'A scenario of prioritizing growth to the detriment of climate change risks would produce better returns in the short term, but lower gains in the long run. So supporting the energy transition is not just in the best interests of the people living on our planet, but can also help deliver strong investment returns'

6. The physical impacts of climate change such as rising sea levels, storm surges and extreme weather events will inevitably damage or destroy property.

MEGATREND 2: RISING INEQUALITY

Fact: Global inequality has fallen over the past 30 years but risen sharply locally

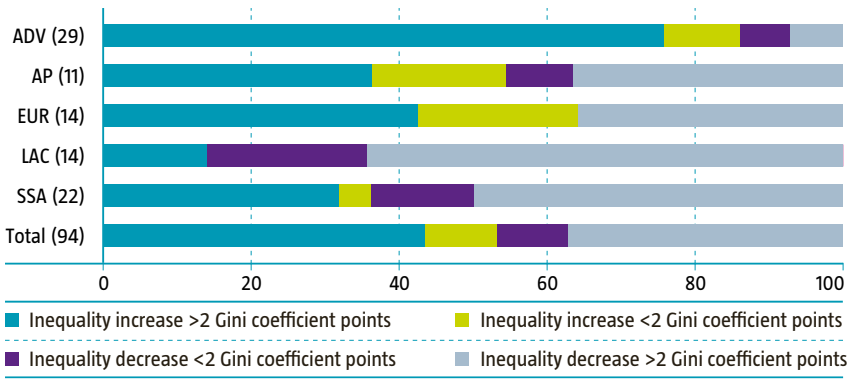
Since the publication of Thomas Piketty's controversial book, Capital in the Twenty-First Century, inequality has become a dominant topic in the political debate in many countries. Rising inequality is receiving increasing interest, especially in the wake of the Brexit vote and Donald Trump's election victory, as the income gap played heavily in the rhetoric of both winning campaigns. The lasting significance of inequality is also reflected in the 2018 Global Risks Report by the World Economic Forum in which 'rising income and wealth disparity' is ranked third among the top risk trends that will shape global developments over the next decade[7].

Although the extent of disparity in income and – in particular – wealth is hard to measure, and different methods of calculation produce different results, most studies conclude that inequality is increasing. Fresh evidence for this is provided by a recent report by the International Monetary Fund, which states that while global inequality *between* countries has fallen in the past three decades, it has risen sharply *within* countries[8]. According to this study, 53% of countries have seen an increase in income inequality over this period, with the rise particularly pronounced in advanced economies (especially the US), but also in some large emerging markets such as China, Russia and India. Between 1995 and 2015, the proportion of wealth held by the top 1% in China doubled from 15% to 30% and rose from 22% to 43% in Russia, while in the US this figure increased from 22% in 1980 to 39% in 2014[9].

The most commonly used measure of inequality is the Gini coefficient. It uses statistical analysis to determine inequality based on, for example, income. The coefficient can range from zero to one, where zero means perfect equality (everyone has the same income), and one means perfect inequality (one person holds all the income). The US's Gini coefficient surged from 0.316 in 1980 to 0.377 by 2015 (post-tax, post-transfer income). In China, the equivalent Gini values surged from 0.327 and 0.346 in 1980 to 0.515 and 0.525 by 2014[10].

7. The Global Risks Report 2018, World Economic Forum, Switzerland, 2018
8. IMF Fiscal Monitor: Tackling Inequality, October 2017
9. World Inequality Report 2018
10. Solt, Frederick: The Standardized World Income Inequality Database (SWIID); SWIID Version 6.2, March 2018

Figure 5: Change in inequality by region, 1985-2015
(Percent of total number of countries in region)



Source: IMF Fiscal Monitor: Tackling Inequality, October 2017

Note: Total number of countries represented in each bar is shown in parentheses. Absolute changes in Gini coefficient greater than 2 points are considered economically significant (See Atkinson 2105 for further discussion of economically significant changes).
ADV = advanced economies; AP = Asia and Pacific; EUR = Europe; LAC = Latin America and the Caribbean; SSA = sub-Saharan Africa

What are the major drivers of rising inequality?

Economic literature and empirical evidence suggest that there are various causes for the rise in inequality but that the following drivers appear to be the most important:

- **Globalization**, by increasing the supply of cheap labor through the integration of emerging markets into the global economy, which has displaced low-income jobs in advanced economies.
- **Technology**, as a shift in production processes has increased the demand for skilled labor at the expense of low-skilled workers.
- **Migration**, which has increased the supply of labor in advanced economies.
- **A rising profit share of GDP**, which means the share of the economic pie that is flowing to corporate profits has increased while the share going to labor has decreased. This is benefitting higher-income earners as a larger share of their income is profit-based.
- **Monetary policy**, as expansionary monetary policy in recent years has led to asset price inflation, which increases wealth inequality by boosting the price of equities and housing (assets typically held more by richer households).
- **Declining unionization**, which has considerably diminished the collective bargaining power of workers, reinforcing the pressure on wages.

While all of these aspects have contributed to an increase in intra-country disparity, globalization and migration have been important forces behind a decrease in the gap between certain countries, and in particular between emerging markets and advanced economies.

Why does it matter for investors?

Rising inequality has fueled discussions on its economic impacts in addition to the potential wider social and political implications. To date, however, the debate has been controversial and the economic literature inconclusive. Inequality can affect economic growth through different channels. It can promote growth as it provides sufficient incentives to accumulate capital, increase productivity and investment, and reward innovation and entrepreneurship. On the other hand, it can be damaging as it causes poverty, contributes to a sub-optimal allocation of human resources (low-income groups have limited access to education and health care), reduces social mobility, erodes social cohesion, leads to the concentration of political power, and boosts populist policies. All of these have a dampening effect on investment and productivity, undermine economic growth, and have the potential to cause macroeconomic and financial disruption[11].

A 2017 IMF paper found that the effect of income inequality on economic growth can indeed be either positive or negative, but that at a certain level – a Gini value of 0.27 – inequality starts to have a negative impact on economic development[12]. These findings are in line with a study by the OECD, which estimated that an increase in the Gini measure by 3 points from 0.29 to 0.32 (which has actually occurred over the past two decades) would result in a negative impact on growth of 0.35 percentage points per year over 25 years. This represents a cumulative loss of 8.5% of GDP[13]. So while in theory some degree of inequality is vital to propel growth in a free-market economy, it can have a negative impact if it becomes too extreme.

'Given the rising inequality in many countries – with potentially far-reaching and disruptive economic, financial, political and social implications – investors would be well advised to seriously consider this matter when making investment decisions'

11-. Grigoli, Francesco & Robles, Adrian: Inequality Overhang, IMF Working Paper 17/76, 2017

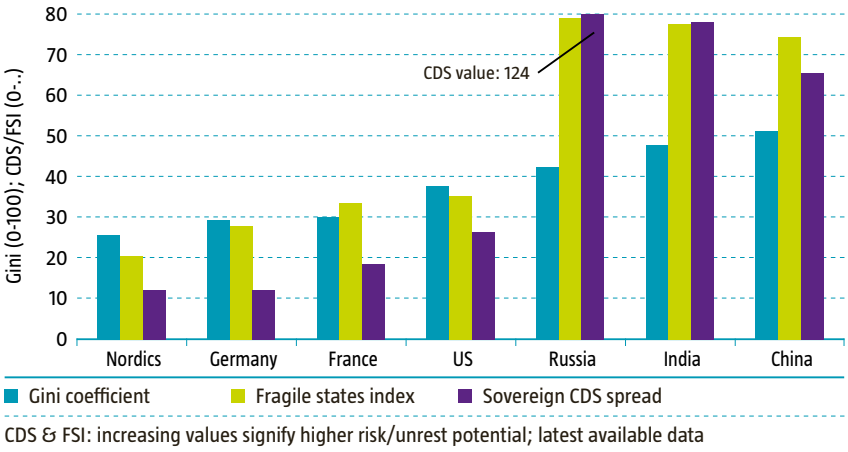
12. OECD: Focus on Inequality and Growth; OECD, December 2014

13. See Dabla-Norris, Era et al.: Causes and Consequences of Income Inequality: A Global Perspective; IMF Staff Discussion Note SDN/15/13, June 2015

There is considerable evidence that the potential for social and political unrest is higher in countries with more significant levels of inequality, and these countries are also considered to have inferior sovereign credit quality. This is evident from the chart below, which shows that lower levels of inequality (as illustrated by the Gini coefficient) correspond with lower risk premiums and potential for unrest (as represented by sovereign CDS spreads and the Fund for Peace's Fragile States Index, respectively), even though inequality is of course not the only explanatory factor.

It is no surprise that the issue of inequality has gained substantial attention from policymakers and international organizations such as the IMF, OECD and World Bank alike. Investors, too, would be well advised to keep a close eye on the developments in inequality, which could result in subdued economic prospects, a higher level of social uncertainty, more volatile – and lower – investment returns, and a reduced number of attractive investment opportunities. A structured approach to incorporating country-specific ESG information in investment processes could help inform investment decisions.

Figure 6: Greater inequality correlates with more social unrest and higher risk premiums



CDS & FSI: increasing values signify higher risk/unrest potential; latest available data

Source: The Fund for Peace, Bloomberg, The Standardized World Income Inequality Database (SWIID)

MEGATREND 3: CYBERSECURITY

Fact: In 2017, 6.5% of internet users were victims of identity fraud, with fraudsters stealing USD 16 billion

Societies and economies are becoming increasingly digitized and connected. While this has many advantages, it also comes with downsides. Whether it is foreign governments interfering with elections elsewhere, cyber extortionists using ransomware, or the widescale loss of sensitive customer data, the public is increasingly being confronted with a problem that computer experts have been seriously concerned about for a long time: cybercrime.

Russian hackers' attempts to influence the 2016 US presidential election probably appeal most to the public's imagination in this respect. However, 2017 saw an unprecedented number of other cyberattacks hitting the headlines as well.

What's more, while not technically a cybercrime, the 2018 Facebook/Cambridge Analytica row concerning the exploitation of user data has put the whole issue of data ownership and related security matters firmly on the political agenda.

Public concern backed up by some worrying figures

The recent rapid increase in public concern about cybersecurity is not based on a whim, but confirmed by a host of worrying figures:

- Research by cybersecurity firm Symantec shows that the number of ransomware attacks around the world rose by 36% in 2017.
- Symantec has also found that 1 in 123 emails is infected by malware.
- 6.5% of internet users were victims of identity fraud in 2017, with fraudsters stealing USD 16 billion, according to Javelin Strategy & Research.

Costs and investment spending for companies on the rise

Unsurprisingly, the cost of cybercrime has gone through the roof. The cost of cybercrime as reported to IC3, the Internet Complaint Center, skyrocketed from USD 18 million in 2001 to USD 1,330 million in 2016 – a compound annual growth rate of 31%. And it is well known that reported numbers of cybercrime incidents underestimate the true figure. The companies affected are naturally reluctant to disclose such occurrences as they may harm their reputation and, consequently, have a negative impact on their commercial operations.

The reported commercial damage is also likely to be significantly understated. A study by Deloitte suggests that the indirect and less tangible costs of cyberattacks may well represent the bulk of the total cost of cybercrime. According to the study, beneath-the-surface costs can amount to 90% of the total impact on an organization and are likely to be experienced two or more years after the incident. Typically, the reputational damage reflected in the devaluation of the brand leads to a loss of customer relationships and lost contract value.

The growing number of cyberattacks has prompted a spending spree by governments, private enterprises and individuals to counter the threat of cyberattack. In the US, spending on cybersecurity has grown by roughly 12% per year since 2010.

While the size of the global market in cybersecurity is difficult to estimate due to the proliferation of new products and services from hundreds of new market entrants, reputable market forecasters Gartner and IDC both put the current size at around USD 80-90 billion. Combining growth forecasts from Gartner and IDC, it seems safe to predict that global spending on cybersecurity will exceed USD 100 billion per year by 2019.

The growth of the cybersecurity market is being driven by three overarching trends:

1. A dynamic threat landscape

The sophistication of cyberattacks has been increasing steadily over time, even though the technical knowledge required by attackers has been declining. This is due to an explosion in the availability of easy-to-use cyberattack tools. This has forced the cybersecurity community to respond with ever-more sophisticated products to keep the threats at bay. Effectively, cyber attackers and defenders are locked in an arms race and the end is nowhere in sight. This arms race is one of the major drivers of the growth in cybersecurity spending.

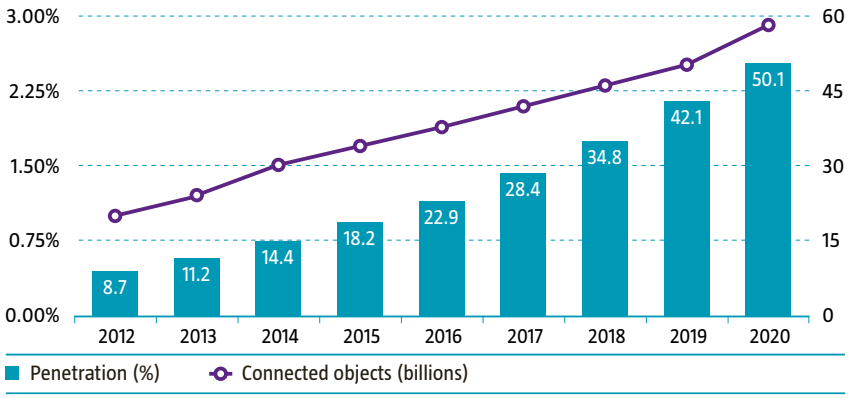
2. Increasing regulatory pressures

New EU regulations, including the General Data Protection Regulation (GDPR) and Network and Information Security (NIS) Directive, are being implemented in 2018. These regulations apply to all companies with business activities in Europe, which in a practical sense extends their scope of application around the world. Obviously, companies are highly motivated to protect themselves against the growing risks of cyberattack and data loss as these regulations come into effect, and cybersecurity spending is therefore expected to increase dramatically.

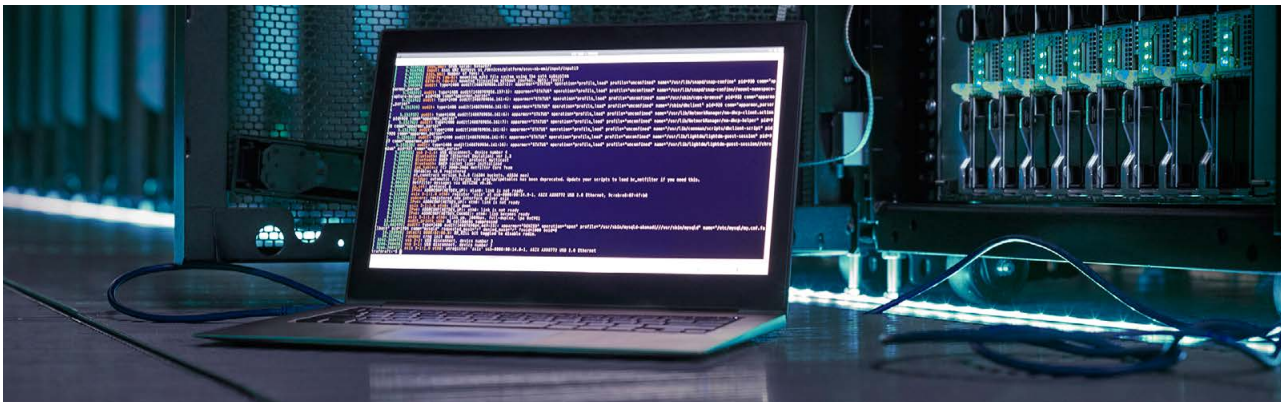
3. An expanding attack surface

The growing need for cybersecurity is ultimately driven by increases in data generation and data traffic, as these provide cybercriminals with access to an ever-expanding number of human and digital targets. Connectivity, driven by the rapidly growing number of internet users and, much more significantly, the connection of sensors, machines and wearable devices to the internet, is set to accelerate. Estimates of the explosive growth of big data vary, but one thing is absolutely clear: the amount of digital content will explode in the coming years.

Figure 7: Cisco's projections for the Internet of Things



Source: Cisco



What does it mean for investors?

Obviously, cybersecurity spending is a fast-growing cost for many businesses; a clear negative. For the moment, however, this is unlikely to impact profit margins too severely. At less than 5% of total IT spending for most companies, the cost of cybersecurity can still be absorbed relatively easily.

What is less predictable, and potentially much more devastating, is the cost associated with a 'successful' breach or data privacy issues – which can be reflected in sharp share price drops, as was seen after the Equifax breach (see below) and Facebook/Cambridge Analytica scandal in 2018. It is therefore in investors' interests to urge companies to up their cyber games. This involves encouraging them to improve not just their technology, but their behavior.

Organizational culture is at the root of the problem and the solution

No matter what companies spend on technical cybersecurity solutions, their success ultimately hinges on the judicious and disciplined implementation of cybersecurity policies. In most cyber incidents, negligent or risky behavior, ignorance of – or disregard for – procedures, or the sloppy implementation of security policies by company employees lies at the root of the problem. People are the weakest link in any organization's cybersecurity armor.

A case in point is the Equifax breach, which was caused by a failure to install patches for a tool called Apache Struts, leaving the company's systems vulnerable to cyberattacks. Equifax was warned long before the breach about the fix that was needed. The situation could thus have been prevented had the right processes been in place and followed diligently.

Much, therefore, depends on a firm's culture, explicit policies and agility when it comes to developing resilience to cyberthreats. These factors are rapidly becoming an important part of an organization's governance profile. To ensure that companies have the right culture and policies in place, investors have to be vigilant that firms are following procedures, training their workforces and keeping up with the latest developments. Active engagement on the topic of cybersecurity by investors can play a vital role in helping companies minimize the threat of cyberattack.

'The increasing connectedness of societies and economies is leading to risks of security breaches, data privacy issues and false information. No matter how much companies spend on technical cybersecurity solutions, success ultimately hinges on the judicious and disciplined implementation of cybersecurity policies. Investors need to anticipate both IT spending and culture'

Investment opportunities

The bright side of all this is that the rapid growth in cybersecurity spending is providing ample opportunities for solution providers to start successful businesses. The current marketplace is a mix of established, usually mature, cybersecurity vendors that made their mark in older security products such as anti-virus software and firewalls, and a new breed of companies that are rolling out next-generation cybersecurity products and services. The market's quick growth is providing a welcome tailwind for everyone involved, but competition is fierce and success is not guaranteed[14], so investors need to take a highly active approach in this area.

CONCLUSION

Climate change, inequality and cybersecurity are just three examples of the many megatrends currently rapidly changing the world around us. Demographic developments, the dark side of urbanization and polarization in the political sphere are a few more megatrends identified by the World Economic Forum in 2018. However, these three in particular are topics we frequently see in the media spotlight – because they are so close to home. It is the joint responsibility of governments, companies and investors worldwide to safeguard a sustainable future for ourselves and for generations to come. These trends have an impact on how we live, how we produce and work, and ultimately also on how asset managers invest. The three topics also show that sustainability is no longer an isolated investment theme, but a phenomenon with many faces, and its habitat is not limited to a handful of industries and sectors, or even a specific region.

14. A Robeco Trends Investing white paper (forthcoming) discusses the strategies investors can employ to benefit from this exciting growth market.