

 **Union
Investment**

Climate change as part of risk and opportunity management

Investing in an age of extreme weather events

Climate change is having a disruptive impact on our world – and therefore also on business models. Asset managers now have no choice but to take account of these issues in how they deal with risk and opportunity.

Foreword

Dear reader,

Climate change will permanently change our environment and our society and therefore also the world of business. The 2015 UN Climate Summit in Paris and the targets agreed there made it abundantly clear: a huge global effort is needed from all us if we are to succeed in limiting global warming and mitigating its dire consequences.

Back in 2006, the Stern report warned that 1 per cent of global GDP would need to be spent on bringing down greenhouse gas emissions in order to protect the environment. This requires new and innovative business models, as existing ones are being rendered obsolete. For asset managers like ourselves, this means that climate factors must be firmly embedded into all investment processes. We will in effect be adding sustainability as a fourth pillar to the established investment trinity of risk, liquidity and returns.

Because we believe that climate change will impact on the economy as much as it will on society, we are working on various projects that will incorporate climate-related topics into our system of risk and opportunity management. The following report on investing in an age of extreme weather events illustrates how we are integrating aspects of sustainability into our investment processes.

I trust that you will find it informative.

Dr Henrik Pontzen,
Head of the ESG Department in portfolio management



We work for your investment

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1 Introduction

Climate change is having a disruptive impact on our world – and therefore also on business models

Duration is key: short-term shock vs long-term structural change

Climate change caused by human activities is making extreme weather events more frequent and severe

The total cost of natural disasters in 2018 was put at US\$ 160 billion

Environmental factors are beginning to impose massive changes on the world of business. Whether in the form of rising sea levels or extreme heatwaves, climate change is having a disruptive impact. It is threatening business models across the world, while providing opportunity for others. This is increasingly being reflected in our ratings and valuations and is therefore of huge significance to investors. After all, the way in which companies respond to climate change, adapt their strategies accordingly and implement new roadmaps focused on sustainability will be key to the health of their businesses – and hence how they fare in the capital markets.

The effect of climate change on business models will to a large extent be determined by the timing and duration. Certain phenomena, such as extreme weather events, have a direct and immediate impact, but one that is usually temporary in nature. Although these kind of 'climate shocks' hit businesses and equity markets in the short term, the investment case will only really begin to be influenced, either in a positive or negative sense, by long-term, structural changes. But should the short-term effects become more frequent or achieve a degree of regularity, they may also trigger fundamental change in the business landscape.

Certain kinds of natural disaster belong in this category of short-term phenomena. They are occurring with ever greater frequency and are thus increasingly become a structural factor. As a powerful expression of our changing climate, they illustrate the growing importance of environmental issues for economies around the world. Yes, there have always been floods, heatwaves and hurricanes. But there is mounting evidence from academic research that the industrialised world is responsible for the rising frequency and intensity of such extreme weather events. Through significant increases in pollution, deforestation and built environments, mankind is interfering with fragile ecosystems and complex climate patterns – sometimes with severe consequences. For example, there has been a threefold increase in extreme heatwaves in western and southern Europe in recent times. The probability of experiencing sustained periods of temperatures above 40 °C in these regions stood at just 3 per cent in 1950; it now stands at almost 10 per cent. The 'once-in-a-century' summer is becoming increasingly frequent¹

2018 – a year of extreme weather events

As the frequency of extreme weather events increases, so does the impact on the economy. For the global reinsurance industry, 2018 was the fourth most expensive year since 1980 in terms of payouts. The reinsurance giant Munich Re put the worldwide cost of natural disasters at US\$ 160 billion last year – equivalent to around 0.2 per cent of global economic output. Hurricanes Michael and Florence in North and Central America as well as various typhoons in Asia caused a total of US\$ 57 billion in loss and damage. It cost US \$24 billion to deal with the devastating forest fires in California. That equates to around 0.1 per cent of US GDP.

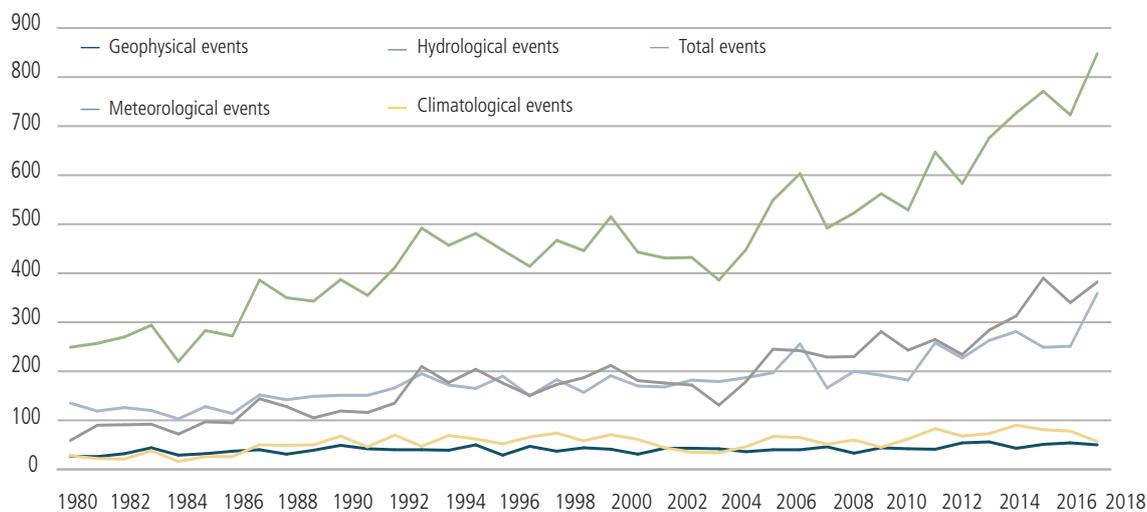
¹ Kew et al. (2019).

Europe, meanwhile, was badly affected by heatwaves and drought. The prolonged dry period was the continent's most expensive single weather phenomenon, costing around US\$ 3.9 billion. It should be noted that while more than half of the damage caused by the US hurricanes was protected by insurance, only just over 7 per cent of Europe's drought damage was covered.²

Storms and floods are occurring with ever greater frequency

Number of global natural disasters since 1980

Type



Source: Munich Re, NatCatService; as at 30 April 2019.

The drought also had an impact on food supplies. According to estimates from the UN Food and Agriculture Organization, worldwide wheat consumption exceeded production to the tune of 30 million tonnes in the 2018/19 growing year. There is unlikely to be any acute shortage – grain stores around the world are well stocked. However, last year's 6.3 per cent increase in producer prices for bread and cereal products in Germany shows the dramatic impact that the climate can have on the economy and therefore on companies and their business performance.

Drought in Europe drives up grain prices

But even this example shows that there are not just risks. Companies that supply innovative solutions for irrigation or for more resilient seed, for example, could help to mitigate the effects of climate change. Their businesses are among those that would flourish under the changing conditions. It's therefore essential for any asset manager that climate change, with all its risks and opportunities, is integrated into the investment process.

Climate change is now an essential factor in risk and opportunity management

² Munich Re (2019).

2 Question, methodology, findings

The integration of sustainability criteria into the investment process is complex because of the many different ways in which these criteria interact and impact upon each other. For analysis to be comprehensive, it has to take account of three factors: environmental, social and governance (ESG).

Focused analysis due to high complexity

To illustrate the integration of ESG factors, in this study we have deliberately ignored some of this complexity and concentrated on specific aspects, i.e. the influence of extreme weather events on business models and directly on the capital markets. The analysis focuses on individual regions, weather phenomena and companies, although we are well aware that full integration of this sustainability factor alone would require the study to be widened to take in other regions and phenomena.

Hurricanes and droughts as illustrative examples

For the moment, however, we will focus on the potential economic effects of hurricanes in North and Central America. We will also touch on the issue of droughts in central Europe, which have so far escaped any in-depth analysis because of their (as yet) relative infrequency.

Focus of the analysis: US (hurricanes) and Europe (drought)

The reasons for this focus are obvious. Firstly, these are the regions in which western asset managers hold most of their investments, as investment activity is still largely concentrated on the equity and bond markets of the developed countries. Secondly, the data is current, which means that the effects of these phenomena are more easily quantifiable. And at the start of this year's hurricane season and before summer arrives, the question remains as to whether – and to what extent – the extreme weather events and their effects on the capital markets might be repeated in 2019. In Europe, at least, the first signs of drought have already been seen. According to the German meteorological service, the starting conditions for vegetation in many areas of Germany are already worse than they were this time last year. A dry first quarter means that soil moisture is below the long-term average. If the weather stays dry, there could be a drought even worse than that experienced in 2018.³

Intuitively, it seems obvious that if droughts and hurricanes in the coming decades are more frequent or more intense than in the past, a number of sectors are likely to suffer in the short term. Examples include food producers, who rely on consistent crop yields and will be affected by more frequently occurring periods of drought, and marine transport companies for whom low river levels will cause problems. Challenges are also expected for the retail chains and producers of all kinds that are based on coasts in hurricane regions.

So when asset managers invest in these securities, they have to take greater account of extreme weather events in the risk management process. This applies to both equities

³ DWD (2019).

and bonds. Costs, and thus ultimately also funding activities, could be significantly affected by extreme weather events, either because of an increased need for capital for reconstruction/bridging finance or because of higher insurance premiums.

Impact of extreme weather events on companies is important for equities and bonds

2.1 Identifying the companies affected

But how can we identify the companies whose business models will be affected by extreme weather events? And once these companies have been identified, how can we tell which way their share price is likely to move? To find answers to these questions, traditional fundamental research (into sectors and equities) must be extended to include additional methods and aspects. When examining climate factors, these would include:

Extending traditional fundamental research to include ESG factors and other methods

- **Duration** (Do extreme weather events have long and/or short-term impacts on a business model?)
- **Timing** (Is a company affected before (ex ante), during, and/or after (ex post) the event itself?)
- **Direction** (Is a company positively or negatively affected by extreme weather events? Can it use its products and services to make those affected more resilient in the face of extreme weather events or is it impacted by disrupted production? Is it a question of opportunity management or of risk management?)

The combination of these aspects explains the exponential increase in the complexity of research. It is possible to conceive of companies/sectors that would suffer from the effects of extreme weather events in the short term but be resilient in the long term. So the net effect (and thus the share price) may fluctuate significantly, depending on the investment horizon. Union Investment meets these challenges by more closely integrating all areas of portfolio management and extending the 'research module'. Specifically, this means that in addition to strengthening the active, fundamental research, we are increasingly focusing our attention on innovative tools and methods. The following section begins by describing one such newer approach: smart data analysis. It then moves on to the more 'traditional' extension of company analysis to include climate-related aspects.

Union Investment: closer integration and extension of the research to include innovative tools

2.1.1 Smart data approaches

Smart data: bringing order to data chaos produces information gains

Big data analyses are one element of a comprehensive information sourcing system. The findings of these analyses can be used to evaluate companies. While the snapshot analysis may seem rather trivial in view of the quantity of data to be analysed, the true added value and information gain lies in very large data sets. Ultimately, the challenge is to extract the relevant 'smart data' from the unsorted mountain of 'big data'. To analyse the effects of hurricanes at state level, for example, we work with MarketPsych, a leading provider of smart data in the US. Every day, linguists and computer scientists at MarketPsych analyse some two million English-language articles from sources such as Reuters, Twitter and blogs. AI helps to sort and automatically evaluate the texts, putting the data into a structured format. This produces up to 400,000 data sets that are updated every minute.

From region ...

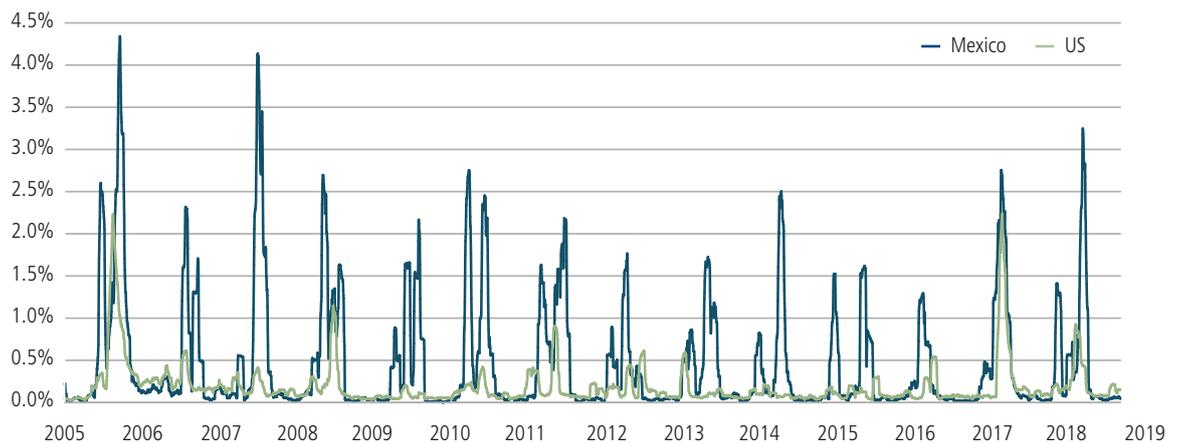
Analysis of reporting: hurricanes are relevant in Mexico and the US

The analysis tells us, for example, the regions in which key words such as 'hurricane' and 'storm' occur with particular frequency. Mexico stands out here, as does, to a lesser extent, the US. The findings for the United States reveal a strongly seasonal effect: during the hurricane season in autumn, media coverage increases. This is a clear indication that hurricanes, at least at certain times, could have quite an impact on the economy.

Hurricane reporting: high seasonality and relevance

Coverage in traditional and social media over time*

A value of 3 per cent means that 3 per cent of the articles analysed on one day contained key words such as 'hurricane' or 'storm'.



Source: MarketPsych, 28 April 2019 * Rolling 30-day average.

... to sector ...

In a second step, other data providers offer indications as to which specific companies could be affected by the storms. The analysis horizon can be further adjusted by narrowing the search parameters, for example by share of revenue in the affected areas, or by sector, or according to whether a company is in our own portfolio or is part of the potential investment universe. The results show that Mexican property developers, infrastructure providers, insurers and construction companies generate higher revenue in the at-risk regions.

Incremental narrowing of the analysis parameters

However, it is not possible to determine with absolute certainty at this stage whether the effect of the climate factor will be positive or negative. A reinsurer is, of course, likely to be adversely affected if a number of natural disasters occur in close succession, as there will be more insured losses and therefore more payouts. In the longer term, though, the effect on the business could well be positive as a result of increased demand for insurance services and higher premiums.

Effect of climate factors is not always clear-cut

... down to individual company level

A similar method of identifying affected companies, also based on large data sets, is the examination of earnings calls and annual reports. By searching for certain key words in teleconferences with analysts after reporting figures have been announced, or in the accompanying quarterly and annual reports, it is possible to draw inferences as to the extent to which a company expects to be affected by extreme weather events. A historical analysis provides information on the degree to which a business model is affected overall, and also the frequency with which it is affected. It also reveals the extent to which investors are focused on sustainability factors.

Analysis of teleconferences and annual reports provides additional information

An analysis of earnings call recordings made over the past 15 years shows that hurricanes play an important role, particularly in the reports of US insurance companies. At Allstate Corp. (home contents insurance), Brown & Brown (reinsurance) and Markel Corp. (specialist insurance), the word 'hurricane' came up more than 200 times in the earnings calls examined. The frequency of mentions also gives an indication of the intensity of the hurricane season. In 2005, when Hurricane Katrina caused such devastation, the key word came up a total of 140 times in the earnings calls of these three insurers alone. This analysis method also reveals a degree of hurricane dependency in the business models of Kansas City Southern (freight transportation) and Briggs & Stratton (power generators).

Hurricanes play havoc with the business of US insurers

Excursus:

Heat in Europe

Similar results are found for 'heatwave' and 'drought' in Europe, albeit on a lesser scale. At Bayer, the word 'drought' came up 64 times in earnings calls over the past 15 years – and seven of those were in the last year alone. The pharmaceuticals giant needs water as an input factor, and logistically is also heavily dependent on functioning waterways. The low water levels of the River Rhine mean that this can no longer be guaranteed. BASF spelled out the problem very clearly in its latest annual report, describing how the main production plant in Ludwigshafen was unable to receive some of its supplies via the Rhine in the second half of 2018. That had a significant impact on the company, as normally around 40 per cent of its raw materials are delivered by boat. It made efforts to replace river transportation with alternatives such as rail and road, but production was significantly impaired during these periods and, as a result, net profit was down by around €250 million on the forecast level. Fertiliser manufacturer K+S and steel conglomerate ThyssenKrupp reported similar, albeit less pronounced, effects. The latter reported "production restrictions [...] as a result of logistical problems due to low water levels on the River Rhine".

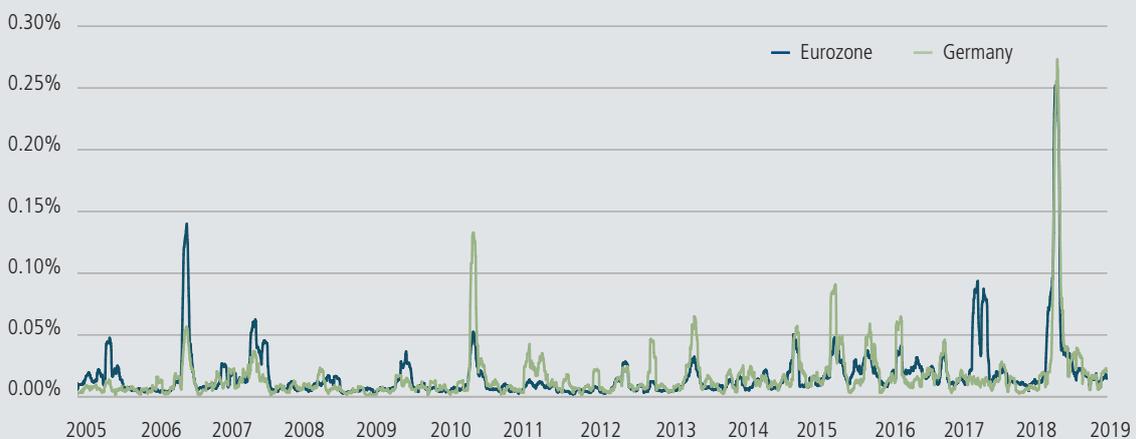
It is not (yet) possible to establish a significant statistical correlation between the drought events and equity market performance. However, it is noticeable that the companies referred to above have clearly underperformed the DAX, especially since summer 2018. Climate-related factors will influence performance even more strongly in future and will be as important as company-specific factors.

The word 'drought' comes up 22 times in the earnings calls of Munich Re. The world's largest reinsurer is probably too internationally diversified for drought as a climate phenomenon to be a major factor in the overall analysis. However, by far the most mentions of 'drought' came in 2012. This was a year when South America and the US suffered extreme and prolonged periods of heat, which also caused problems for the German multinationals mentioned above.

Heatwave coverage: swings apparent, relevance low

Coverage in traditional and social media over time*

A value of 0.2 per cent means that 0.2 per cent of the articles analysed on one day contained key words such as 'heatwave', 'drought' or similar.



Source: MarketPsych, 28 April 2019 * Rolling 30-day average.

2.1.2 Analysis of business relationships and dependencies

But the risk of loss or damage or factory shutdowns – temporary or permanent – is not limited to businesses that operate directly in storm-hit regions. Companies with complex value chains that have suppliers or subsidiaries in these regions also have to be included in any risk and opportunity analysis. Additional tools are available to determine the extent to which globally operating companies – whose business might not at first glance appear to be greatly affected by hurricanes – would nonetheless suffer loss because of their links to the region. The analysis includes the following aspects:

- **Revenue** (What percentage of an organisation's total revenues are earned within at-risk regions?)
- **Value chain** (Where are potentially affected subsidiaries, partners, suppliers, customers, etc. based?)
- **Dependency** (What is the degree of dependency?)

Coca-Cola, for example, has extremely close ties with the hurricane region via its Mexican licensing partner Coca-Cola FEMSA, which is responsible for bottling and distribution in the Central and South American market. The effects of a prolonged shutdown at the plants in Mexico could therefore also be felt in Atlanta, well over a thousand miles away. The same applies to toy manufacturer Hasbro, which has various customer relationships in the Mexican hurricane region, or to Ford and other vehicle manufacturers that not only have their own production plants in Mexico but are also reliant on Mexican suppliers.

This analysis can be combined with other data, such as that from ports in the affected regions. So, for example, if the analysis of value chains is combined with that for freight routes and port use, an additional level of hurricane impact is revealed. The temporary closures of ports in Florida had a significant impact on the cruise industry, for instance, and thus on providers such as The Walt Disney Company, Royal Caribbean Cruises and Carnival Corporation. The problem is similar for manufacturers of consumables such as food producer Sysco, whose supply chains mean it is reliant on ports being open.

Complex value chains create new dependencies

Whether subsidiary, supplier, customer or port: global integration creates an additional level of risk

A regional focus is not always a disadvantage: price/quantity effect has a bearing

Data has to be combined with fundamental research to produce real information gains

Beware of jumping to conclusions

The fact that all these aspects can be included in the analysis does not mean that they all have a substantial impact on the business performance of every company analysed. Our study showed that internationally diversified companies can usually absorb temporary disruptions in one region very well. It is also not necessarily a disadvantage for a business to focus on at-risk regions. The analysis of regional energy companies around the Gulf of Mexico has shown that the effect of the temporary shutdown of storm-hit plants is negligible. Since the disruptions affect all regional competitors, no direct substitution of the product concerned is possible, so the effect of the reduced sales quantity is to push up the price. The same price/quantity effect has also been documented in other sectors.

The various examples illustrate that the integration of ESG factors into the research and investment process is extremely complex. Particularly for multinational companies, which are generally of most interest to investors, a wide range of regional factors have to be taken into account with regard to climate change (far more than those referred to above). For one thing, the way in which data is processed is crucial, while for asset managers, the expertise of specialists is paramount. As the examples have shown, **a purely data-based approach is of little use without validation by experienced analysts and portfolio managers.**

Excursus:

Greater transparency with (still) little information content

In light of the pressure being exerted by regulators and above all by investors, the question of transparency in relation to sustainability issues is becoming increasingly important. According to their own reports, the majority of global corporations are significantly affected by climate change. The UK-based non-governmental organisation CDP (formerly the Carbon Disclosure Project) surveyed companies in 2018 to assess the risks and opportunities associated with climate change. More than 7,000 companies took part – and in many cases the depth of detail in their responses goes far beyond that contained in the mandatory reports to investors or to the stock exchange supervisory authority. The increasing integration of sustainability factors into investment decisions and the greater pressure put on issuers as a result are creating additional transparency here.

Twenty-one of the 25 US companies analysed by Bloomberg⁴ said that they have identified inherent climate-related risks that could potentially have substantial financial or strategic implications for their business models. Chip manufacturer Intel, whose production process is extremely water-intensive and whose factories are primarily located in drought-susceptible regions such as Israel, China and America's south-west, mentions the risk of sharply rising input costs.

Telecommunications giant AT&T, which operates a costly infrastructure to offer its products, makes explicit reference to the risks posed by an increase in the number of hurricanes or wildfires. In 2017 alone, AT&T spent US\$ 627 million on mitigating or dealing with the consequences of natural disasters. Disney is concerned about the well-being of visitors, who tend not to flock to its parks in such huge numbers when temperatures rise. Bank of America is aware – in a

kind of second-round effect – that homeowners will be unable to service their mortgages if their properties are damaged by storms or floods. If insurance payouts increase, so will premiums. These might then become unaffordable for more and more homeowners, especially in the worst-affected regions, and this would ultimately put home loans at risk.

However, some companies do see opportunities in climate change. The pharmaceuticals firm Merck & Co. anticipates growing demand for its products that combat tropical and weather-related diseases. Apple is positioning its main sales driver, the iPhone, as a piece of emergency kit. Equipped with torch, siren, radio and first-aid app, it can be charged from a car battery or via a hand crank and provide valuable assistance in the event of disaster.

This may all sound a little contrived. And it may seem surprising that companies apparently still see no urgent need to significantly adapt their business models to the new circumstances brought about by climate change. But it is becoming clear that the topic is gaining traction even at the world's most valuable companies.

⁴ Bloomberg (2019).

2.2 Case study: extreme-weather-resilient companies

To succeed in an age of extreme weather conditions, investors have to also account for fundamental factors when building their portfolios. It is not enough simply to know that a company profits from the impact of climate change. For successful investment, it is equally important that the business model, management quality and valuation are right. The main benefit of primarily data-based analysis is that it helps to restrict the investment universe or create a new level of risk management for the existing portfolio. For the final security selection, however, fundamental research is essential. In an ideal scenario, this can minimise risk while also actively exploiting opportunity.

Strengthening resilience as opposed to profiting from misfortune

Not profiting from misfortune, but strengthening resilience – an important point

It is important to stress again at this point that this is not about profiting from extreme weather events and, ultimately, the suffering they can cause. In addition to minimising risk, our primary concern is to help companies strengthen the resilience of the local population to extreme weather events.

By bringing together all the available information, we can identify various companies that are well placed to cope with an increase in the incidence of storms. These are corporations whose products and services are particularly in demand when people are preparing for hurricanes and in the recovery period afterwards. The following section looks at two examples of such companies. It's important to note that our report should not be construed as a recommendation for the relevant shares. The information is provided solely to illustrate the results that can be achieved from specific analysis in the context of extreme weather events.

US DIY chain provides products and services – but also runs volunteer programmes

The first example is **Home Depot**. The US DIY chain sees an uptick in sales not only when houses or infrastructure have to be protected from an impending hurricane but also during reconstruction in the aftermath. The word 'hurricane' was mentioned 40 times in its 2017 earnings calls, illustrating the relevance for investors. The company sees itself as a partner to the local community and works with disaster response teams to ensure that its stores are reopened as quickly as possible and stay open for longer hours, and in particular that they are constantly restocked with the materials needed. Home Depot also relies on the support of its charitable foundation and the programmes it has set up to coordinate volunteers.

In 2017, Harvey and Irma – two of the highest category hurricanes (four and five) – made landfall in Florida and the Gulf of Mexico. The period that followed revealed the positive and negative effects of storms and the resultant flooding on Home Depot's business. In the third quarter of 2017, for example, 236 branches had to close temporarily due to storm warnings or storm damage. However, revenue increased by around US\$ 280 million – solely through hurricane-related sales. That is more than 1 per cent of the total revenue in the relevant quarter. By way of comparison, the weakness of the US dollar at that time contributed significantly less – US\$ 100 million – to the bottom line.⁵

⁵ The Home Depot (2017).

At the same time, however, the company incurred costs of US\$ 104 million for staff, logistics, and repairs to storm damage. In addition, the revenue that can be attributed to the hurricanes comes from the sale of low margin goods such as plywood and generators, which makes the contribution to earnings difficult to predict. Companies offering relevant products and services may see an increase in demand when a hurricane hits, but it clearly does not necessarily follow that they will then see a positive impact in their earnings. Fundamental research is therefore always essential.

The second example is the **Fluor Corporation**, a US multinational specialising in capital goods. It provides services in the areas of engineering, procurement, maintenance, equipment hire and project management, and its customers include US government institutions. In 2005, in the wake of the category 5 hurricanes Katrina and Rita, Fluor was commissioned by the US Department of Homeland Security and Federal Emergency Management Agency (FEMA) to build more than 54,000 emergency housing units in the state of Louisiana to accommodate around 160,000 people who had been left homeless by the storms. The company was able to supply personnel, materials and planning services almost immediately. In 2017, Fluor helped to restore electricity supplies in Puerto Rico. The contract was awarded by the engineering corps of the US army after hurricanes Irma and Maria left more than a million people without power in September 2017. The overhead power lines that covered most of the island had been particularly badly hit. Here too, Fluor worked with local companies. It transported huge amounts of equipment to the island from the US mainland, enabling power supplies to be restored.

DIY chain provided aid and helped with reconstruction

There are many other companies that provide similar products and services and are also in demand when hurricanes hit. Beside wholesalers and retailers, these include companies specialising in waste management (collection, disposal, recycling), water treatment (purification, disinfection), pest control, and painting and decorating supplies.

3 Outlook

Analysis must be extended in all directions

The interim status of the analysis, as outlined above, shows that the integration of sustainability factors into research and investment processes is both critical and highly complex. The various methods presented can be applied to other questions as well as the one posed here, i.e. how extreme weather events – as a tangible effect of climate change – affect different business models.

Aim: to screen the entire investment universe using climate criteria

Our aim is to fully screen all the companies in which we invest for the risks and opportunities that climate change brings – and not to stop at extreme weather events. At the same time, we are including the topic of climate change in our analysis, for example with regard to CO2 intensity and governance structures. We are also gradually expanding our investment universe and thus researching more potential companies on the basis of these criteria.

Climate risk factor as an additional level of analysis

As active asset managers, we are currently working on various projects that address these very aspects. At the analysis level, for example, we gain a more rounded company valuation by modelling a climate risk factor that helps to predict share price performance alongside established factors such as 'market', 'style' and 'size'.

Long/short baskets as specific investment opportunities

Using the various analysis methods described here, we put together baskets of equities to enable investment in specific climate change winners (long basket) and losers (short basket). The more diversified baskets are used both in opportunity management and in risk management. The aim is to structure these according to the long-term or short-term nature of the impact of climate change, so that a more diversified and thus also more long-term asset allocation is possible.

Initial signs are very promising. For example, a long basket for hurricanes made up of (re-)insurers, wholesalers and retailers, manufacturers of capital goods, and producers of consumables shows a seasonal outperformance at the end of the hurricane season. A regression to the specific storm reporting also produces evidence of a correlation between the extreme weather events and share price. This evidence is not (yet) statistically robust, but an increase in extreme weather events means we can expect the putative correlation to become stronger. In the medium term, that would have a positive effect on baskets of shares compiled in this way.

Finally, we are stepping up our climate-related engagement. Of the 4,000 or so dialogues we held with companies in 2018, almost one in eight made specific reference to sustainability. Our speeches at annual general meetings present a similar picture: in 2018, we addressed the topic of climate change in virtually every speech we made at the AGMs of companies listed on Germany's DAX index. We have continued this approach during this year's AGM season. This direct contact also flows into our research and investment process as an input factor. As this study shows, the question of whether the management can present a credible climate strategy will become increasingly important in assessing a company's future viability.

One thing is clear: climate change is already hugely relevant to investment and is becoming even more so. We have no doubt that sustainability factors will increasingly become established as a core aspect of fundamental research. And that is why we are continuing to drive ESG integration forward through a range of different projects.

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