CORE MATTERS

Climate scenarios and equity returns

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Our Core Matters series provides thematic research on macro, investment, and insurance topics

- This report assesses the impact of standard climate scenarios on total returns of EU and US equity indexes over the medium to longer term.
- The scenarios considered are baseline, net zero, delayed transition, no further action. The last two are the most likely, based on firm commitments (as measured by MSCI "Implied Temperature Rise") and recent literature.
- We use the scenarios based on a tool provided by Oxford Economics as the reference point and compare results with alternative approaches, incl. proprietary regression models, the National Institute General Economic model, a proprietary CAPE model, as well as one bottom-up alternative by MSCI model.

5Y CAGR Equity TR

% yoy

Net zero versus baseline scenario		
EMU	- Oxford model	-0.8
	- AVG altern. models	-1.2
	GIAM equity research projecton	-1.0
US	- Oxford model	-2.3
	- AVG altern. models	-1.5
	GIAM equity research projecton	-1.9

**** AVG of OE and alternatives approaches

- All the approaches contain estimates of *transition risk*, i.e., how the reduction of greenhouse gas (GHG) affects profits and valuations. The impact of *physical risk* - very limited for the next few years - but highly relevant in the long run, is fully or partially included in the models.
- The models may differ in their underlying assumptions about the speed and intensity of the adjustment, as well as the decarbonization process and the ability to deliver technological improvements. Differences can be found in the response of policy makers to the climate issue and in the model specifications.
- High transition costs in the near term have a visible impact on equity returns over the next 5Y in the "net zero" scenario. In EMU our reference model, OE, shows a difference in equity TR of -0.8% per annum relative to the baseline. The average of the alternative models is -1.2%. In the US, the delta is higher, both for OE (-2.3%) and for the alternative models (-1.5%). Taking the average of these estimates would give a cumulative loss compared to the baseline of 5% in EMU and 9% in the US over five years.
- Over a 15Y horizon, the delayed transition scenario is the one in which equity returns suffer the most: we could get a cumulative loss versus the baseline of 17% in EMU and 13% in the US.
- In the longer term (2050), the no further action scenario shows strong adverse effects on equity returns as fallout of increased physical risks dominates. On the contrary, the outcome of the net-zero scenario would be the best.

CONTENT

This publication focuses on the impact of climate change on the equity market. Stocks are very long-term assets - in principle perpetual - and will be particularly exposed to the evolution of the impact of climate on economic activity.

In assessing the impact of climate change-related shocks on the TR of EMU and US stock markets, we use Oxford Economics (OE) as reference climate scenario and macroeconomic model. We focus first on a 5-year horizon, then on a 15-year horizon, and finally to 2050. Indeed, OE model allows for flexibility and can be integrated with proprietary satellite models, for example the one developed to stress-test credit spreads (see core matter: "A climate stress test model for credit spreads"). We then make a robustness check of the OE results versus alternative approaches (incl. proprietary ones).

After defining climate risk and how it affects equity markets, we describe the assumptions behind the main climate scenarios. We then focus on the different types of models, with OE as a reference, used to assess the impact of climate risk on TR, highlighting common features and differences. The results of the models are then analysed in detail over the three specified time horizons.

1. Climate risk and equity markets

Climate change can be defined as the long-term shift in global temperature over a given time horizon (2050 or 2100, by convention). It is almost universally agreed that human activity is the main cause of the recent temperature increase via Greenhouse gas (GHG) emissions - mostly carbon dioxide but also other gases like methane. This, in turn, is responsible for a growing **physical risk,** namely the likelihood of severe and extreme natural events such as fires, storms or rising sea levels, which could flood coastal areas, where much of the world's population lives, and where most of the world's GDP is produced. These events can cause loss of life and economic damage, through lost output or destruction of assets (housing, plants etc.).

To reduce such expected damage, it is necessary to lower the GHG intensity of GDP at a faster rate. This will require a massive transformation of our energy mix to carbon neutral sources. Most of the reduction in GHG intensity will be driven by the implementation of new regulations (including higher taxes on the most polluting fuels), creating **transition risk** for many businesses, currently based on legacy technologies.

In the short term, transition risk is the most important factor, as it disrupts existing business models, forcing the implementation of new technologies and potentially creating a large amount of stranded assets (e.g., coal mines). **In the long term**, however, **most the damage from physical risk dominates**, which is not easy to quantify and is inversely correlated with the speed of the change in tech mix. Moreover, even in the most optimistic temperature reduction scenario, the physical risk does not disappear.

> *Transition risk is the most important factor short term, physical risk in the long-term.*

Analysis of the impact of climate change on the economy and the financial system is evolving fast. Therefore, we cannot simply assume that the stock market has already fully priced in all the evidence on climate change. In particular, transition risk information could be more easily incorporated into current valuations than physical risk information. In fact, the former is "easier" to model than the latter. The key input, GHG/sales intensity, is widely available at company level, both historically and prospectively (from brokers as well as ESG specialists). **Exposure to physical risk is much more complex to derive** and there is considerable disagreement between different methodologies. In addition, physical risk is not perceived as imminent, while transition risk (particularly in the energy, electricity, and transport sectors) has a high profile in the media and among analysts.

Certainly, the valuation of climate change impacts will continue to evolve over time as new damages occur, new climate-related regulations and fiscal subsidies are implemented (US IRA) and the cost of substituting high-carbon technology with low-carbon technology evolves. **This will lead to a continuous re-pricing of climate risk by stock markets in the coming years.**

2. Climate scenarios

We start by considering the main climate scenarios, included in the commercial model produced by Oxford economics, which was already introduced in the core matter "A climate stress test model for credit spreads":

- **Baseline**: climate commitments already taken are pursued and the process continues smoothly, but the policy measures prove to be inadequate to tackle climate change. It carries high physical risk and low transition risk.
- **Net Zero**: Net zero carbon emissions are achieved in 2050 thanks to quick policy response, technological improvements, and coordination among countries. It carries low physical risk and high transition risk.
- **Delayed Transition**: policy response to global warming extends beyond 2030. After that, stronger policy action is put in place, creating substantial inflationary pressures. It carries low physical risk and very high transition risk.
- **No Further Action**: Governments fail to take appropriate action, with consequent high rise in temperature negatively weighting on productivity growth, particularly in warm countries. It carries very high physical risk and low transition risk.

We compare the climate OE scenarios with those developed by the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) as well as those of MSCI.

As far as climate policies are concerned, they are all broadly consistent because they are based on the common scenario narratives developed by the NGSF consortium.

> *Climate scenarios by OE, MSCI and NGFS are broadly consistent.*

We note a decent match among scenarios (less for the no further action one) by different providers when we compare temperatures, in particular the **global warming** variable (see table below).

Temperature by 2050

Provider	Scenario		
	net zero	delayed	no further action
Oxford Economics	1.5°	1.7°	2.2°
NGFS	1.4°	1.6°	3°
MSCI	1.5°	2°	3°

Source: OE, NGFS, MSCI technical documentations

3. Equity TR conditional on climate scenarios

The OE scenarios are our reference point, but to cross-check and critically view their results, we use the outcome of several alternatives: three top-down equity approaches (**proprietary regression, CAPE models, the NGFS scenarios**) and one bottom-up alternative, the **MSCI model**. Each one is based on consistent climate scenarios.

It is worth noting that:

- OE and NIGEM developed macroeconomic climate models that also include financial variables.
- These are well-known macro-econometric models, which have been adapted to include climate impact modules. The carbon tax is the main climate policy tool for both, but macro modelling diverges, especially the reaction function of the Central Banks.
- Instead, the MSCI model is based on a stock-specific simplified discounted cash flow (DCF) approach. It is bottom-up, with a perpetual horizon. Importantly, climate risk impacts are estimated at the stock level and are then aggregated into sector and country indexes, using index stock weights.
- The CAPE model is a truncated DCF that estimates a stream of earnings and a terminal value in different climate scenarios. Thus, we derive earnings growth rates from our base case, to which we apply the delta in OE scenarios to their base case; the proprietary CAPE target is determined for each level of inflation in different scenarios.
- Proprietary approaches rely on OE macroeconomic projections, used as inputs: 2 ordinary least-square (OLS) regression and 1 CAPE model described above.

The following sections (3.1 – 3.5) describe the specifics of each approach.

3.1 Oxford Economics model for equities

The comprehensive OE climate model uses a carbon tax as the main instrument of climate policies. It then delivers the impact of these policies on macro and financial variables.

OE forecasts equity returns using behavioural equations where the macro inputs are climate-driven. Their stock market valuation model consists of a set of three equations for:

- **CAPE target:** a function of (potential) GDP, government bond yield, prices, oil price, volatility in GDP and prices, corporate tax rate, global savings.
- **Sales revenues:** function of domestic and global demand plus world import/GDP.
- **Operating margin:** a function of sales revenues, foreign margins, business investment, output gap, effective exchange rate.

The model then combines CAPE and earnings (margin x revenues) to produce the market price outcome. When the estimate for the dividend yield[1] is finally added, the OE model is able to forecast a TR for the country equity index.

3.2 Proprietary time series regression models

We use macro variables projected by the OE model under each climate scenario as inputs in two proprietary regression models. Both have the equity index (price return) as the dependent variable, to which a dividend return is added[2].

The first model estimates the annual change in the price of US and EMU equity indices as a function of key macroeconomic and financial variables, such as real GDP, core inflation, companies' earnings, government bond yields and credit spreads.

The second model is the one we already employ for our proprietary 5Y returns report (see core matter "Stormy for now, then brighter but volatile –5-year returns forecasts"). It uses as dependent variable the 5Y change in price of the reference stock market. The dividend return, based on its historical contribution to the overall TR, is then added.

3.3 NIGEM model

For each of the NGFS scenarios[3], the macroeconomic impact is calculated using an econometric model[4], similar in logic to OE: the main climate policy tool is a carbon tax. However, the macro modelling differs from the OE, particularly with regard to the reaction function of central banks to higher inflation (harsher in NIGEM). Concerning equities, a Gordon's discounted earnings methodology is used to forecast a path for equity prices. By adding a dividend return[5], we then arrive at a TR path.

We use the results from the latest available NGFS release (October 2022), which includes physical risk for the first time, proving once again that climate modelling is an ongoing exercise.

NGFS scenarios are widely used for regulatory purposes. But several assumptions are questionable[6]: for example, some features of the path for asset prices that do not look very convincing, such as the close similarity of bond yields response across countries or the reaction of equity prices, which is very concentrated in the first year of the simulation. Lastly, some sensitivity analysis would be useful to stress-test model results.

3.4 CAPE methodology

Our CAPE model uses as inputs our expectations for earnings growth (EPS), pay-out ratio (PR), dividend yield (DY), buyback yield and target CAPE at the end of the 5-year horizon. The target for CAPE is derived from its historical average, adjusted for the forecast of inflation and 10-year interest rate levels. The terminal nominal CAPE for US is 23X and for EMU is 15.6X. We double-check the implied CAPE valuation using our proprietary PE macro equations to ensure consistency between annually estimated PE targets and long-term valuation estimates based on CAPE.

Starting from our baseline assumption for annual EPS growth (5% in US; 3% in EMU), we derive EPS growth in each climate scenario by applying the delta to the baseline obtained from the OE model.

1 Dividend return estimates are derived using the univariate regression against price returns.
2 See Note 1.
3 The transition pathways for the NGFS scenarios have been generated with three macro integrated assessment models – IAMs.
4 NIGEM is a global macroeconomic model, used by policymakers for economic forecasting, scenario building and stress testing, developed and maintained by NIESR (National Institute of Economic and Social Research).
5 See Note 1.
6 i.e., introducing alternative tools to carbon tax, which is the main climate policy tool.

3.5 MSCI Climate value at risk (CVAR)

The CVAR provided by MSCI is a 15-year discounted cash flow (DCF) model applied to each global listed stock, using firm specific cost of capital (WACC) to discount future cash flows based on the NGFS projections. The main output is a net discounted valuation impact, which is divided into 3 components: **policy-related, technological opportunity, and physical risk**. The policy risk is estimated as an increase in costs over time due to regulation, which then translates into future GHG reduction path projections. Technological opportunity is a positive driver, which, when added to the policy component, corresponds to the transition impact. It depends on the number of de-carbonization patents at firm level and the current share of green revenues. Physical risk exposures are based on a MSCI proprietary dataset on the geographical location of company assets and their expected losses due to climate events (floods, hurricanes, heat waves, etc.).

Based on MSCI methodology, we spread the cumulated discounted negative impact at present (t_0) to the future at the cost of equity (COE). Our proprietary estimate of COE is 9% for EMU, 7.5% for the US, both based on MSCI World market risk of 4%, to which we add the specific country beta.

4. Short-term (5-year) climate impact

The following table shows the impact of the only scenario that deviates significantly from the baseline over a 5-year horizon: the 'net zero' scenario. By construction, the TR of the delayed scenario is equal to the baseline over a short horizon, as only beyond 2030 corrections to override the climate issue will be put in place. The 'no further action' scenario will materially dent equity returns after 2030 as well.

For **EMU,** the OE reference model comes up with a -0.8% difference in the CAGR of equity TR. The average of the alternative models is -1.2%. Among the alternatives, the NIGEM (-2.9%) is the most misaligned outcome. This is mainly because the NIGEM model concentrates the impact at the very beginning of the transition and incorporates a very strong response by Central Banks. The bottom-up approach of the MSCI gives an overall result of -1.5% (-1.1% transition and -0.4% physical risk).

We conclude that the above-mentioned difference in the CAGR of equity TR of -0.8% is close to the highest band of the range of reasonable results and we would give a negative tweak to our reference number (OE model): averaging the OE (-0.8%) and the alternative outcomes (-1.2%) we get **-1%.** This **is the negative impact on equity TR we expect per annum over five years, if the 'Net zero' scenario materializes**.

5Y CAGR Equity TR

% yoy

Net zero* versus baseline scenario		
EMU	**- Oxford model**	**-0.8**
	- Regr model AVG (1;2)	-0.5
	(1) Regr model	*-0.9*
	(2) Regr model	*-0.1*
	- NIGEM**	-2.9
	- CAPE based	-0.7
	- bottom up MSCI ***	-1.5
	- MSCI transition (1+2)	*-1.1*
	(1) MSCI Policy (-)	*-2.8*
	(2) MSCI Tech (+)	*1.7*
	- MSCI physical (-)	*-0.4*
	- AVG altern. models	**-1.2**
	GIAM equity research projecton******	**-1.0**
US	**- Oxford model**	**-2.3**
	- Regr model AVG (1;2)	-1.1
	(1) Regr model	*-1.2*
	(2) Regr model	*-1.0*
	- NIGEM	-2.8
	- CAPE based	-0.7
	bottom up MSCI	-1.2
	- MSCI transition (1+2)	*-1.0*
	(1) MSCI Policy (-)	*-1.4*
	(2) MSCI Tech (+)	*0.4*
	- MSCI Physical (-)	*-0.2*
	- AVG altern. models	**-1.5**
	GIAM equity research projecton******	**-1.9**

*Divergent net zero for NGFS

**Average of 3 NIGEM models, release of Oct 2022

*** MSCI CVAR calculation as of March '22; bottom up figures include the impacts of policy (-), tech (+) and physical risk (-). We discount impacts at CoE.

**** AVG of OE and alternatives approaches

In the 'Net zero' scenario, we expect an annual negative impact on equity TR over five years of -1% in EMU, -1.9% in US.

US delta is higher than in EMU, both for OE (-2.3%) and for the alternative models (-1.5%). Contrary to what we have seen for EMU, our reference model seems a little bit too pessimistic (as it forecasts a strong negative effect on cyclically-adjusted PEs in the 'net zero' scenario). **All in all, we expect a negative impact of -1.9%** (average of the OE and alternative models impacts) **per annum over 5 years on equity TR if the 'Net zero' scenario materializes.**

If we want to have an idea of how much of the impact is due to transition and to physical risk, the only separate estimate we have is from the MSCI model, which suggests that transition risk is the main component, ranging from 72% of the impact in EMU to 84% in the US.

15Y CAGR Equity TR under different climate scenarios

% yoy

		difference vs baseline	
		net zero*	delayed
EMU	**Oxford model**	-0.3	-1.2
	Bottom up MSCI **	-1.1	-1.1
	- MSCI transition (1+2)	-0.7	-0.6
	(1) MSCI Policy (-)	*-1.9*	*-1.1*
	(2) MSCI Tech (+)	1.2	0.6
	- MSCI physical (-)	-0.4	-0.5
US	**Oxford model**	-0.1	-1.2
	Bottom up MSCI	-0.8	-0.5
	- MSCI transition (1+2)	-0.6	-0.3
	(1) MSCI Policy (-)	-0.9	-0.4
	(2) MSCI Tech (+)	0.3	0.1
	- MSCI Physical (-)	-0.2	-0.2

*Divergent net zero for NGFS

** MSCI CVAR calculation as of March '22; bottom up figures include the impacts of policy (-), tech (+) and physical risk (-). We discount impacts at CoE.

5. Long-term results

We also show longer-term projections (15Y and up to 2050) to gauge what different climate scenarios mean for equities beyond the 5-year horizon. Since delayed and 'no further action' scenarios only become relevant in the longer-dated periods, we have included them as well in the long-term analysis.

5.1 Over 15-years

Estimates by OE and MSCI differ across scenarios. They depend on the underlying assumptions regarding the speed and intensity of adjustment, as well as the decarbonization process, while also including differences in policy makers' reaction to the climate issue and different model specifications. Assumptions about the ability to deliver technological improvements are also key. The incidence of physical risk (captured in the MSCI model fully, while only partially in the OE model) also becomes more important than over the 5-year horizon: this is quite clear if we look at its impact in the 'no further action' scenario for EMU.

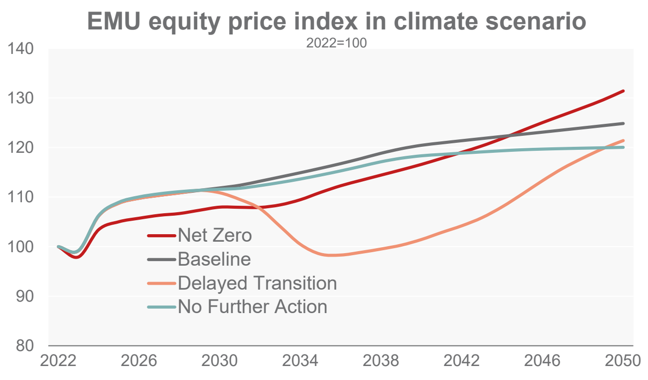
As a result of all the above, the 'net zero' adjustment process is quicker and less impactful than the delayed adjustment in the OE model, whereas MSCI considers the 'net zero' scenario to be more costly, with effects to be felt over a longer period than according to OE.

5.2 Up to 2050

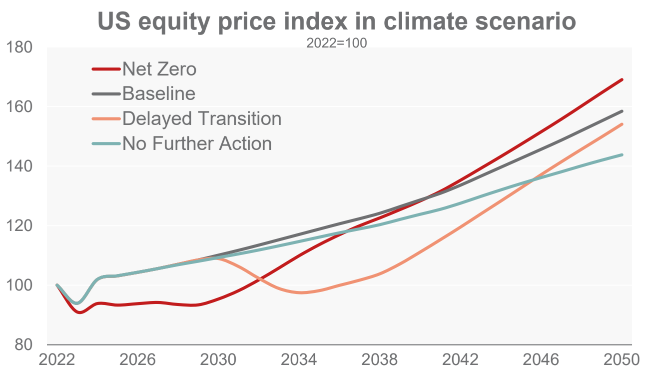
The following time series charts, from the OE model, show that decarbonisation scenarios are J-shaped: as the transition to a greener economy is costly, equity prices start with a sharp decline. Of course, the timing and the duration may vary depending on the assumptions used in each model.

The charts give a clear picture of the equity TR path in each scenario up to 2050 according to OE:

- in the '**no further action'**, the equity price appreciation should be the lowest.
- In the '**delayed transition' scenario**, there should be a significant decline in the period from 2030 to 2035 followed by a catch-up, bringing the trend price of equities between the baseline and the 'no further action' scenario.
- The '**Net zero' scenario** is the one in which equity prices fall over the next 15 years, but then rise again, **peaking** in 2050.



Source: Oxford Economics, GIAM calculations



Source: Oxford Economics, GIAM calculations

6. Conclusions

In this core matter, we have highlighted that the only scenario that deviates significantly from the baseline over a 5-year horizon is the '**Net zero'** scenario. For the latter, we could expect a **negative impact on the annualized TR of equities in the range -0.8% to 1.2% in EMU, -1.5% to -2.3% in the US. Taking the average point would give a cumulative loss relative to the baseline of 5% in EMU and 9% in the US over five years.** Of course, **US IRA** and other future decisions on fiscal incentives/disincentives could eventually change the magnitude and sign of the difference in the TR projections.

Instead, as expected, the impact of climate risk becomes relevant **on a 15-year basis** in the delayed scenario, at around -1.2% per year in the EMU and between -0.5% and -1.2% in the US. **Taking the average point would give a cumulative loss relative to the baseline of 17% in EMU and 12% in the US over fifteen years.**

The 'net zero' scenario will be the best one for equity TR in the **very long term (2050)**. Instead, if no further action is taken, the physical risk will only be partially mitigated by lower transition costs, and the overall outcome will be the worst.

For sure, the valuation of the impact of climate change will continue to evolve over time, as new risks materialise, new climate-related regulations come into force and the cost of replacing high-carbon technology with low-carbon technology evolves. This will lead to a continuous re-pricing of climate risk by markets over the coming years. This makes any attempt to assess the impact on returns subject to exceptionally high uncertainty.

Appendix 1: Probability of scenarios

In the literature, analyses of the impact of climate change are usually carried out for individual scenarios. However, to assess their impact on valuation, it is crucial to have an idea of the probability and time dimension of climate scenarios. They are not all equally likely: reaching the 'Net Zero' scenario by 2050, for example, is extremely improbable. There are a few approaches to assessing the likelihood of standard scenarios. We report on two of these.

The first one is MSCI's **Implied Stock Temperature methodology**, which uses a dataset of companies' stated targets[7] to measure how companies are aligning with global climate goals. It is a calculation of how much companies' 5-year projected carbon emissions implicitly exceed or fall short of current Nationally Determined Contributions (NDC) carbon budgets, as agreed by signatories to the 2015 Paris Climate Agreement. At a minimum, the NDCs target a maximum global temperature increase of 2°C by 2100. The left table below shows that only 1/3 of high emitting/transition risk companies in the EU and North America are implicitly targeting a Net Zero related temperature. A further 1/4 targets a temperature between 2° and 3°, which is consistent with a 'Delayed transition' scenario. The remaining companies are not currently targeting GHG reductions (because currently not obliged by regulation or they deny complying). The median implied temperature (bottom of the table) for Europe and Asia Oceania is 2,5°; North America and China have a value close to 3°, while EM are close to 4°. This is at best consistent with a Delayed scenario.

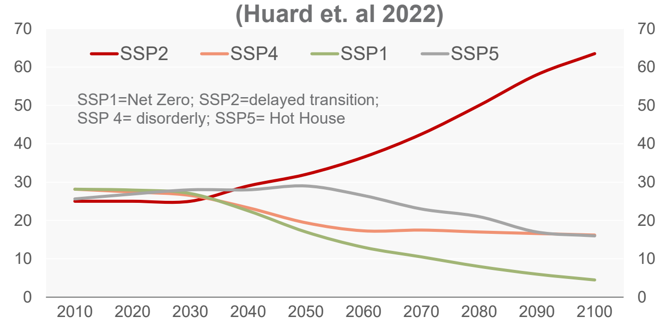
The second approach estimates the **probability of future GHG concentration scenarios**. Huard et al (2022)[8] have recently analysed a set of probabilistic carbon dioxide emissions as simulated by different Integrated Assessment Models (IAM, used by NGFS). They are mostly based on growth paths and technological evolution/diffusion. Some of these models also make assumptions about the path of carbon taxes and subsidies. They consider stochastic time paths of key variables (e.g., GDP growth and carbon intensity) that determine the main GHG emissions and associated temperature paths over time (Shared Socioeconomic Pathways SSP[9]). IAM model simulations are then solved for the main temperature increase consistent with the better-known climate scenarios considered by NGFS or OE (Net Zero, Delayed transition, etc.). The chart on the right below averages the results of such simulations linked to climate scenarios: overall, the passage of time tends to reduce the likelihood of the two most extreme scenarios, Net Zero (SSP1) and Hot House (SSP5, 3+°C increase), while the "Middle of the Road" SSP2 (equivalent to *delayed transition*) tends to dominate all others. The main evidence is that, despite the different mechanisms at work in individual IAM models, on average, carbon intensity does not finally decline faster than growth until 2035. This makes the delayed transition (SSP2) GHG path relatively more likely over time. The SSP1 'net zero' scenario instead requires a very steep and timely adjustment in carbon intensity, which is less likely, and may even be inconsistent with the recent historical experience. Summing up, the two methods (MSCI and GHG concentration scenarios), although quite different in logic, lead to a similar result: a temperature increase of between 2° and 3° by the end of the century, which is consistent with a delayed scenario.

MSCI Implicit 2050 Temperature Target / GHG Intensive Sectors

Scenario	Europe	North America	Asia Oceania	China	EM + CEE
Net Zero (<2° C)	37%	30%	37%	25%	17%
Delayed (2° C to 3° C)	20%	21%	20%	28%	20%
Disorderly (3° C to 5° C)	18%	28%	22%	27%	23%
Hot House (> 5° C)	24%	22%	20%	20%	40%
Total	100%	100%	100%	100%	100%
Median	2,5°	2,9°	2,5°	2,8°	3,9°
No. Obs.	617	836	883	369	606

Source: MSCI, GIAM calculations.
(*) Sectors: Energy, Utilities, Industrials, Construction

Probability (%) of SSP Scenarios (Huard et. al 2022)



Source: Huard et al. 2022, GIAM Research

[7] We use the MSCI climate data set to compute temperature ranges coherent to firms' projections and match them with scenarios. The share of firms reporting in each cluster represents the implicit 2050 temperature target.
[8] Huard et al (2022) Estimating the Likelihood of GHG Concentration Scenarios from Probabilistic Integrated Assessment Model Simulations.
[9] They consider the SSP1 (Net Zero) sustainability pathway, the SSP2 (delayed transition) pathway, the SSP 4 disorderly scenario and the very extreme SSP5 (Hot House) scenario, which implies no cut in Coal emissions. The probabilities are simulated over time by starting with an equal likelihood in 2020.

Appendix 2: Main hurdles to scenario matching

The main issues in matching the scenarios among the different sources are related to:

- the identification of the base scenario: we considered as “base scenario” the one in which each individual country implements its current commitment. It is likely that some of these pledges are already reflected in market valuation. Moreover, when a base scenario was not provided (MSCI), we took our proprietary baseline used for 5y projections (Jan ’23) as a reference.

- the physical risk in each alternative scenario: damages from physical risks and the costs of adapting to climate risks (e.g., building waterfalls or relocating cities) are not fully taken into account in some models. For example, OE considers economic losses related to temperature, as natural disasters such as heat waves and forest fires; however, it excludes those not directly related to temperature, such as floods and storms. The NGFS scenarios provide only an indicative illustration of how acute physical risks could materialise over the course of the scenarios.

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