

Long term returns and climate risk – Alternative economic paradigms for long-term investors

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Alternative structural economic 'Paradigms'

Productivity rebound

- The crisis spurs a new wave of innovations, which increases productivity growth and hence the trend growth rate of the global economy. Equilibrium real interest rates rise. Because this is a supply-side driven improvement, inflation pressures do not take off, although central banks are able to use the additional policy space opened up by a higher equilibrium rate to achieve their inflation targets.

Central bank rethink

- The crisis spurs a further rethink in inflation bank inflation targeting frameworks. Either higher targets, or some form of price level framework is adopted. In addition, a controlled reflation through discreet programs of co-ordinated fiscal and monetary stimulus, sometimes called helicopter money, would be deployed. These new frameworks are largely seen as credible. A long period of very loose monetary policy, allowing the economy to recover and eventually run "hot", follows.

Back to the new normal

- The crisis is a permanent shock to the trend level of economic output, but otherwise the global economy returns broadly to its pre-shock state. Trend growth rates and the equilibrium interest rate look like the "new normal" secular-stagnation environment post-GFC, while average inflation outcomes are lower.

Full fiscal dominance

- The crisis prompts a very fundamental alteration in the balance between monetary and fiscal policy, to the point where fiscal policy is the primary tool of macroeconomic management and governments, not central banks, effectively set the price level. Monetary policy is kept very accommodative and the central bank balance sheet is used to fund government spending. In this way, fiscal and monetary policy become subservient to politically driven debt financing that is not consistent with price stability. Inflation rises very high. After an initial spurt higher, growth actually sag lower, as high and volatile price growth weighs on economic activity.

Deflationary slump

- The crisis lowers trend growth, equilibrium interest rates, and inflation even further, effectively leading to "secular stagnation on steroids". Either because the virus becomes endemic and forms of social distancing permanently constrain economic activity, or because lasting behavioural changes at firms and households outlive the virus, the global economy is held back well into the future. Policy errors deployed in response entrench a low inflation regime.

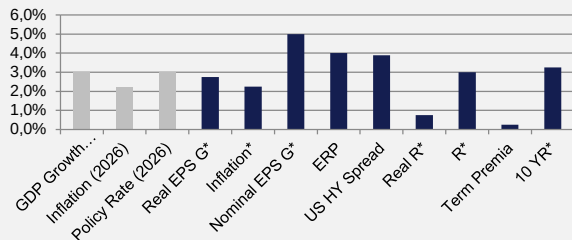
Lowflation acquiescence

- Inflation continues to fall beneath base case for structural reasons, but this is accepted by central banks as opposed to fought. The side effects of further stimulus are judged to be in excess of the benefits, and so reflation is not pursued. As a consequence, we settle into a lower inflation regime, perhaps with inflation policy targets reduced. As CBs do not fight the falling inflation, financial instability is not exacerbated, and asset prices are not propelled higher by continuous policy loosening. The asymptotic lowering and stabilisation of inflation is seen as a stable equilibrium as opposed to a transition.

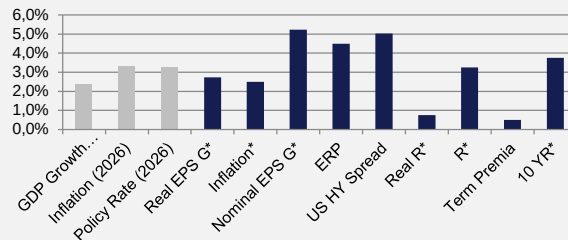
Source: ASI Research Institute, March 2021

Economic and market assumptions associated with each Paradigm

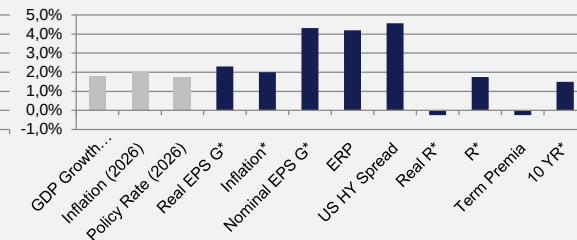
Productivity_Rebound



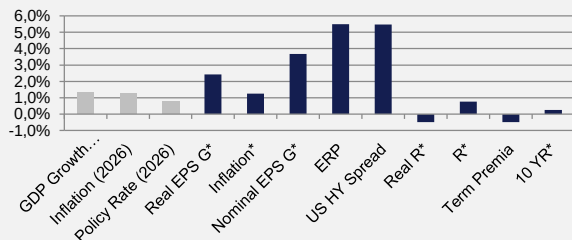
Central_Bank_Rethink



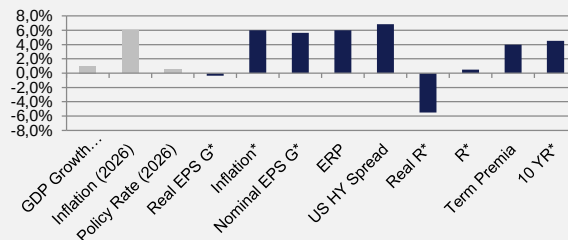
Back_To_New_Normal



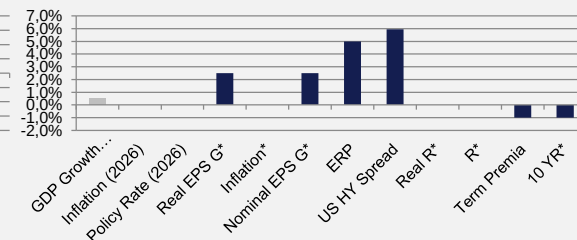
Lowflation_Acquiescence



Full_Fiscal_Dominance



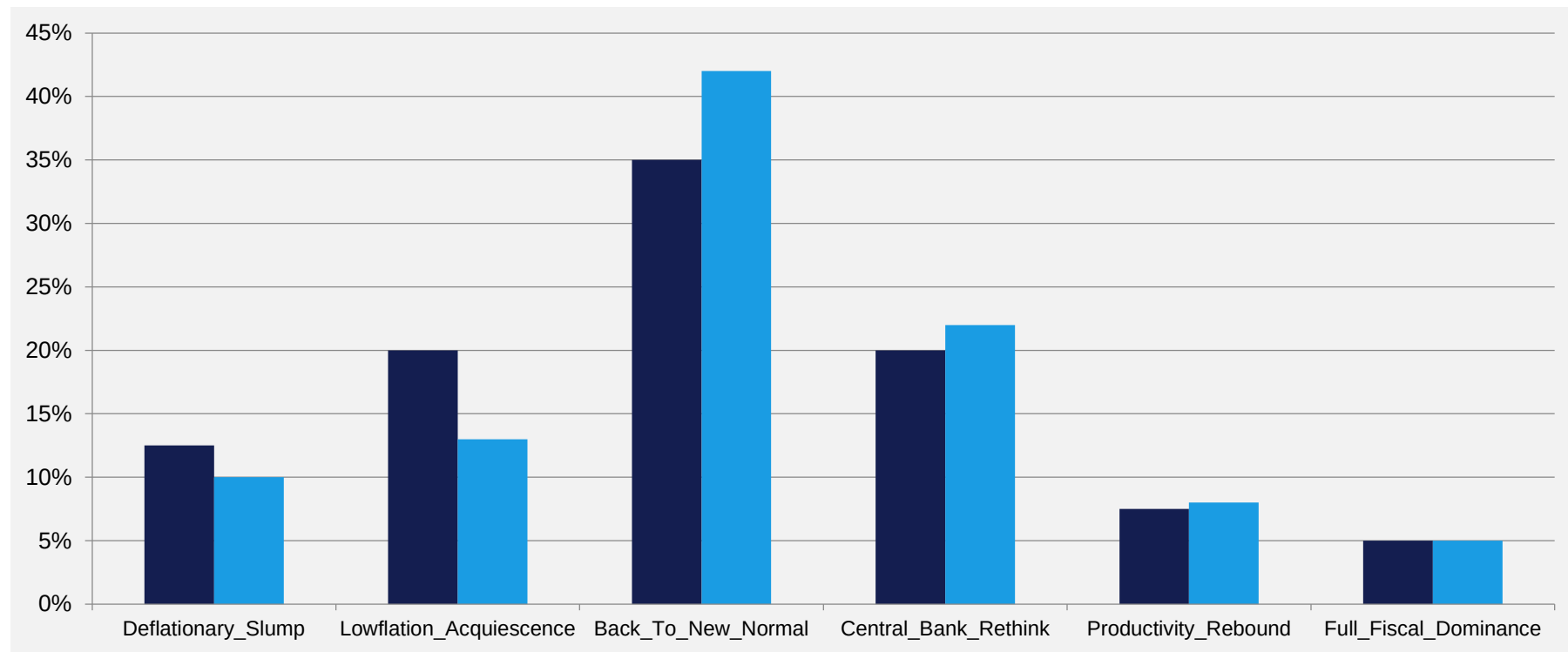
Deflationary_Slump



Source: SAA Team, Aberdeen Standard Investments, March 2021

Paradigm Probabilities

Q4 2020 (dark blue) vs Q2 2021 (light blue) – US economy

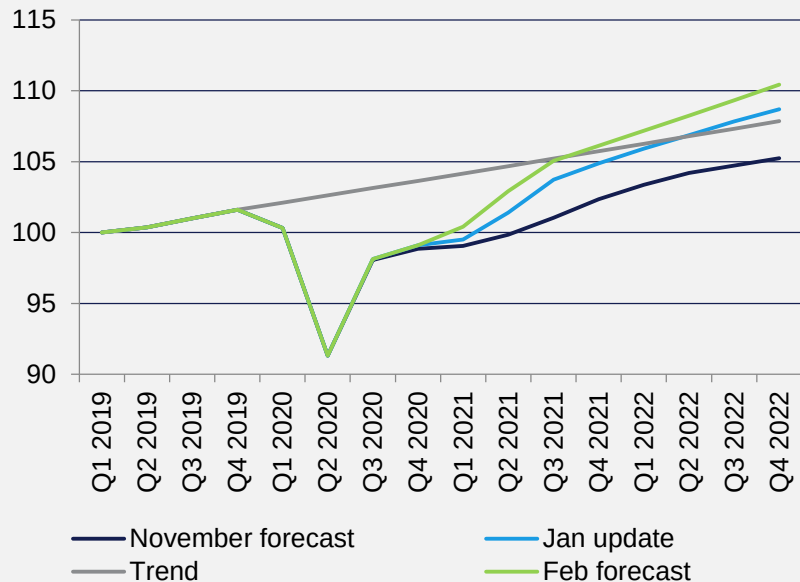


Source: ASI, May 2021. Forecasts provide no guarantee of future outcomes.

Medium-term GDP outlook (Q4 2020 vs Q2 2021)

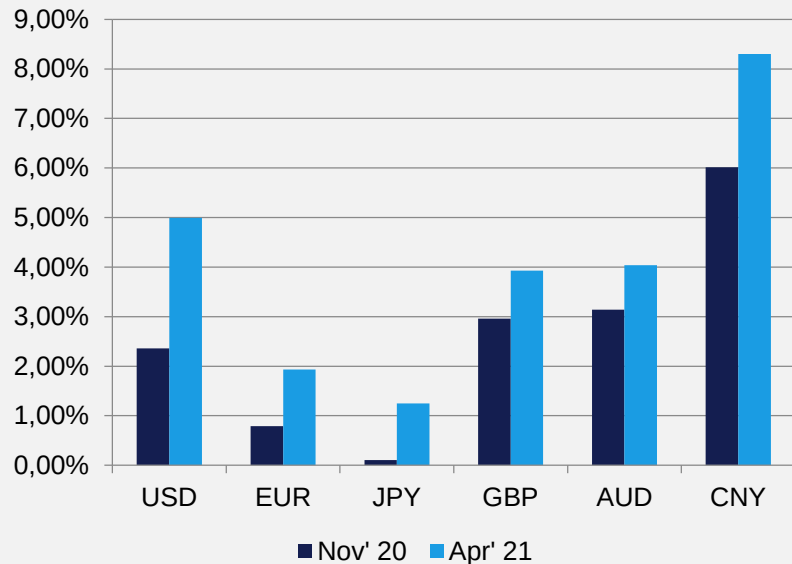
Vaccine success and Biden stimulus package significantly raised US growth expectations

US GDP path meaningfully higher given more fiscal stimulus. But multipliers lower than 'normal'



Source: Haver, Aberdeen Standard Investments, March 2021

Comparison of probability weighted nGDP growth rates (% ann.), 2019Q4 to 2024Q4, Nov 2020 vs April 2021

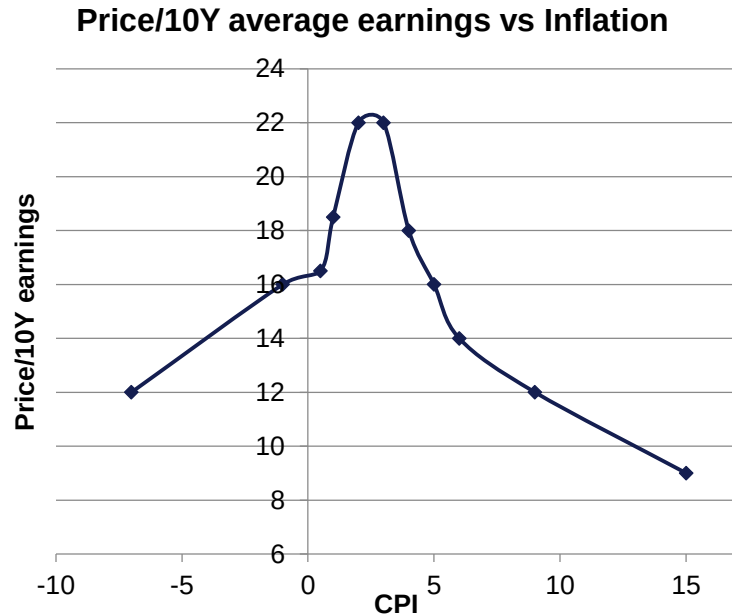


Source: ASI, June 2020

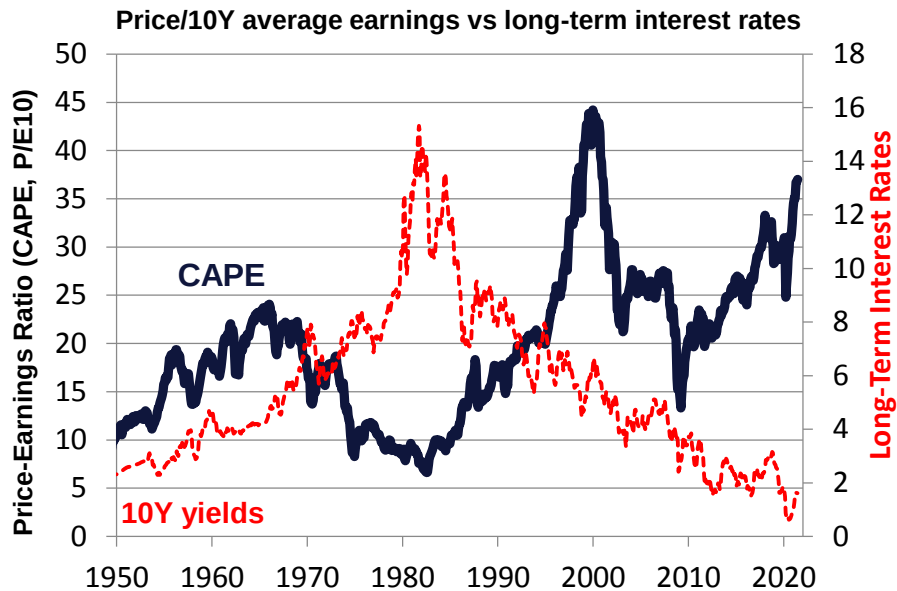
Investment returns across paradigms

Economic paradigms matter to investment returns.

History shows cyclically adjusted price/earnings ratios are sensitive to economic conditions

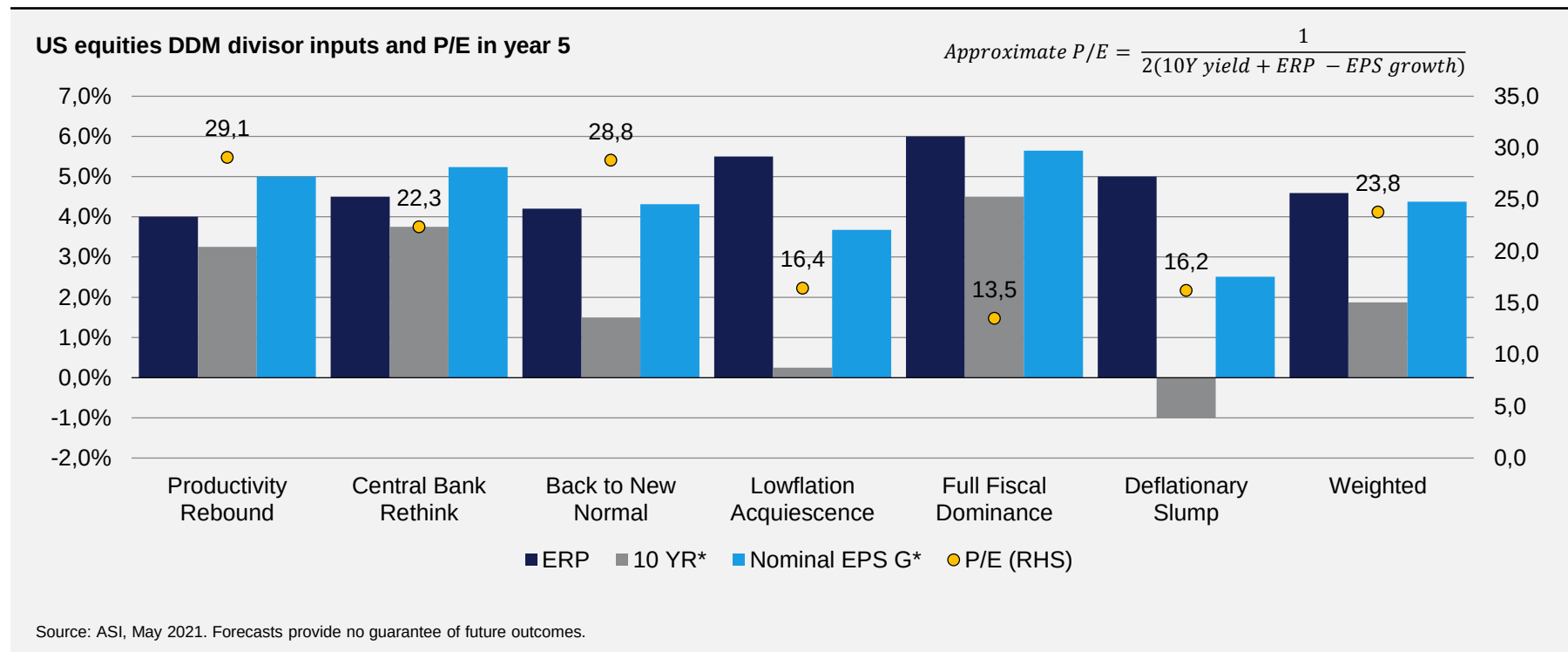


Source: Shiller, Haver, ASI, May, 2021



Equity Returns Drivers and fair value P/E across paradigms

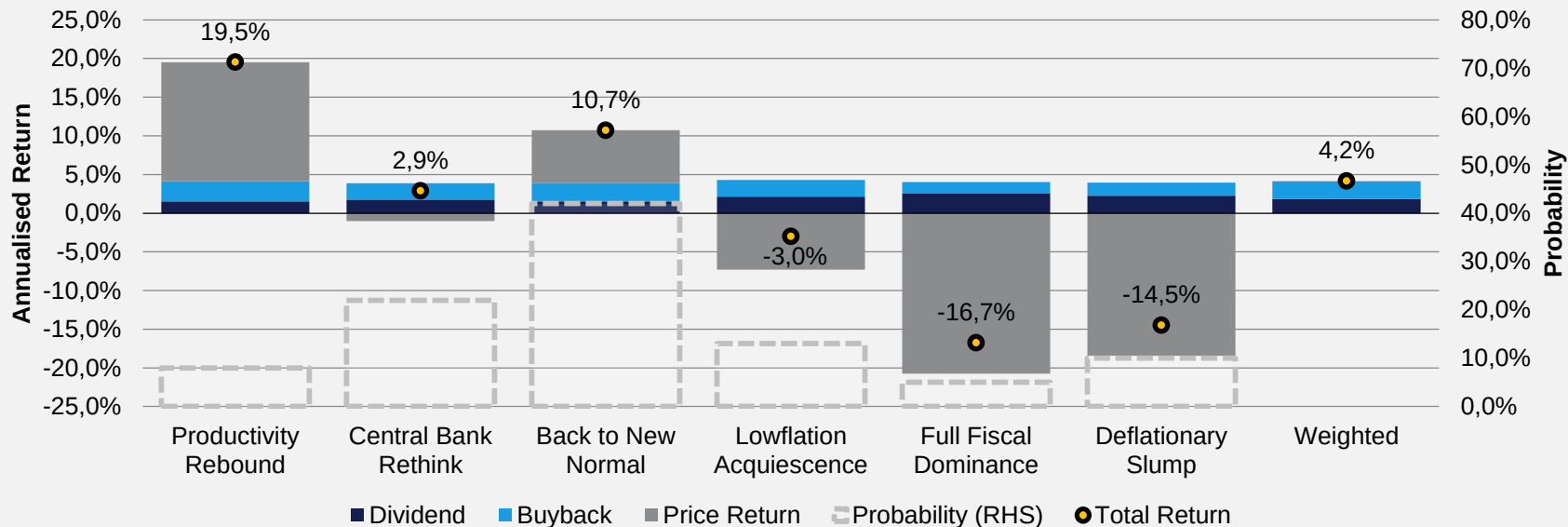
Assumptions per paradigm



Equity returns decomposition across Paradigms

Equity returns are highly sensitive to long-term growth and inflation assumptions

5Y US equities total return decomposition (% pa)

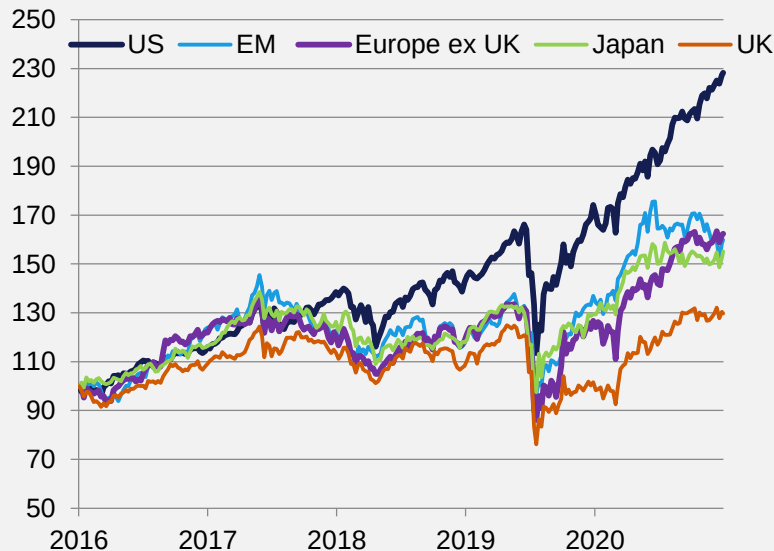


Source: ASI, May 2021. Forecasts provide no guarantee of future outcomes.

Regional equities – ‘mean reversion’ or more of the same?

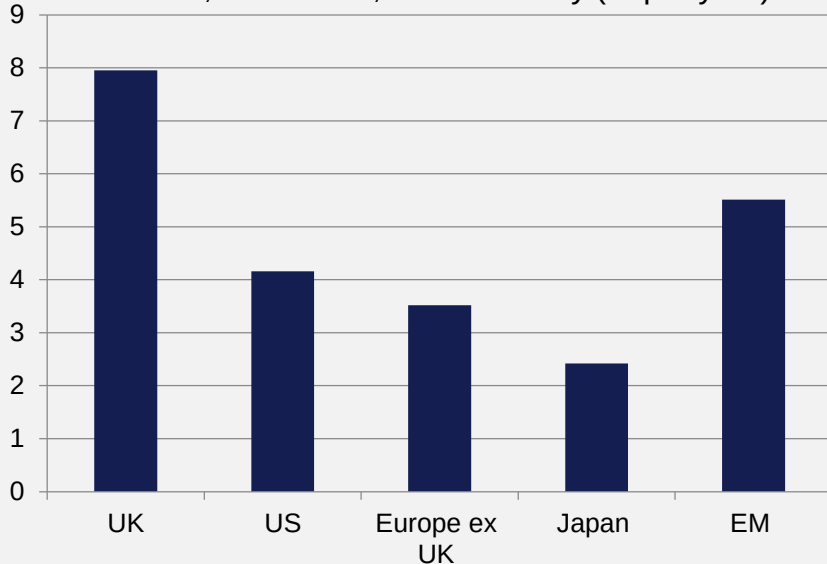
US has had bigger decline in interest rates + stronger growth. So less catching up.

US has seen a strong period of outperformance



But we don't forecast much catch up (except UK/EM)

ASI forecasts, 5Y horizon, local currency (% per year)



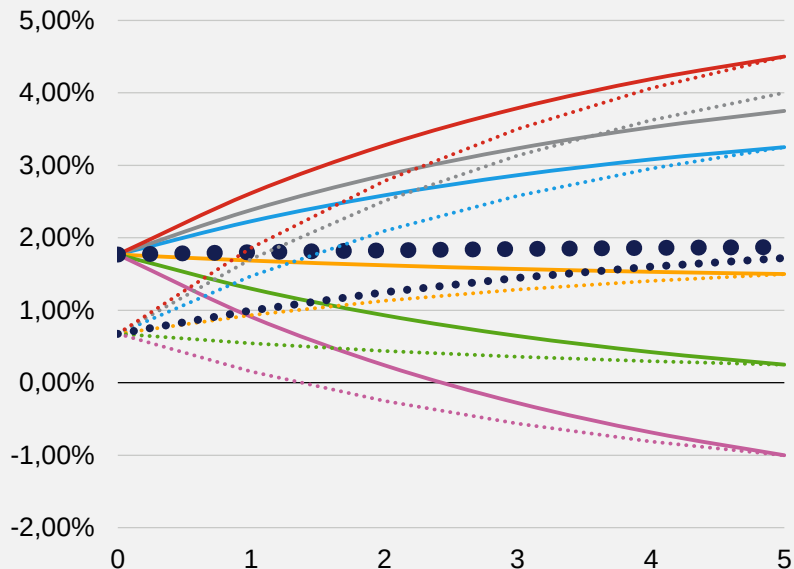
Total return indices, expressed in USD for S&P 500, Topix, Euro Stoxx 50, MSCI EM, FTSE 100. Expected returns generated by ASI SAA research. Forecasts do not guarantee future outcomes.
Source: ASI, Bloomberg.

Government Bond Yield Pathways

5Y Paradigm 10 yields, dotted lines are prev forecasts

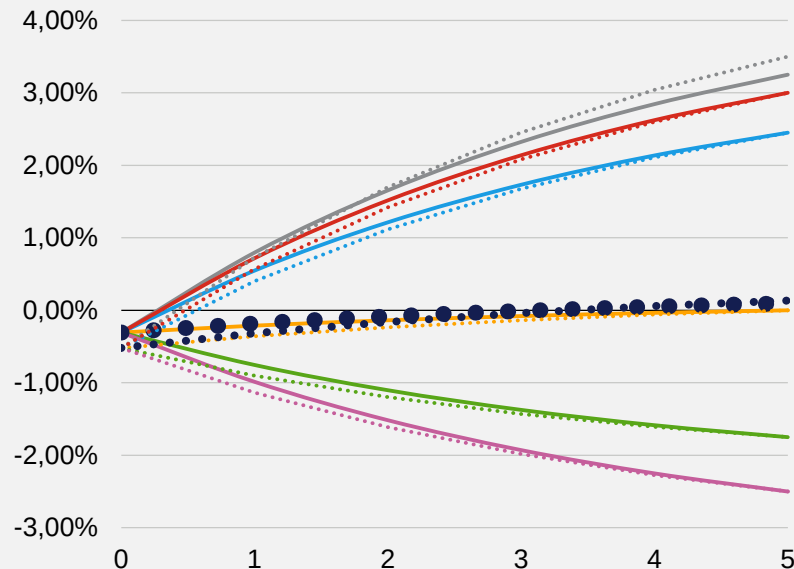
- Productivity Rebound
- Central Bank Rethink
- Back To New Normal
- Lowflation Acquiescence
- Full Fiscal Dominance
- Deflationary Slump
- Weighted

US Treasuries



Source: ASI, May 2021. Forecasts provide no guarantee of future outcomes.

German Bund

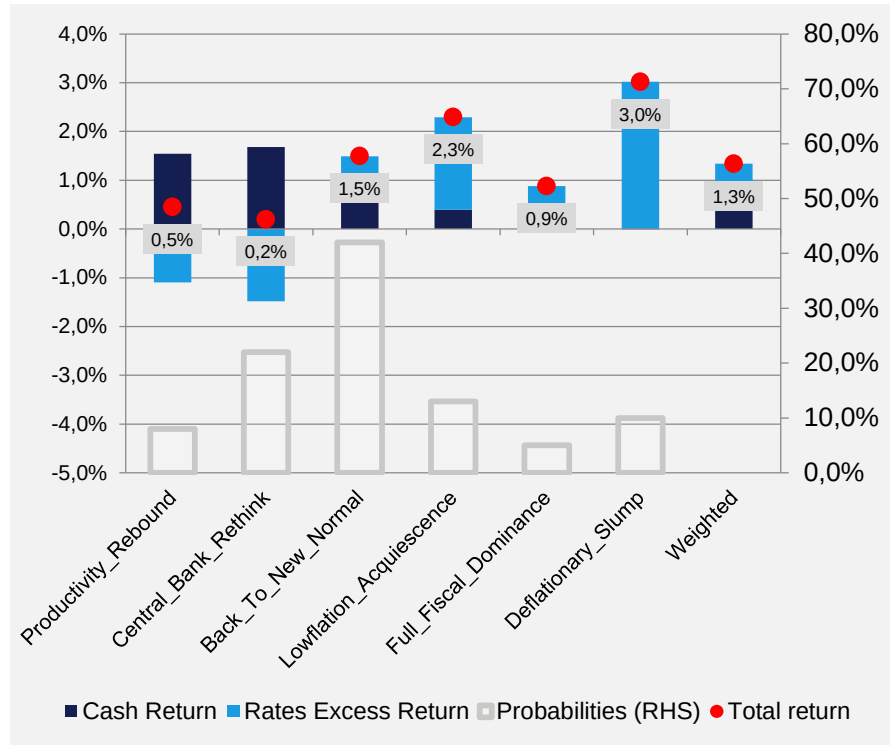


Source: ASI, May 2021. Forecasts provide no guarantee of future outcomes.

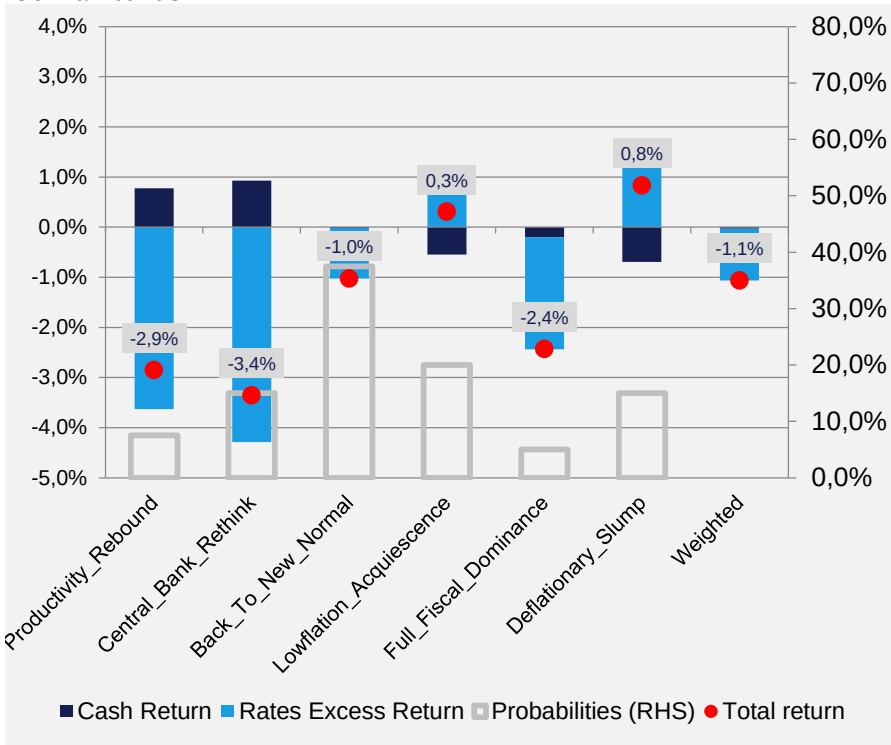
Low starting yields mean government bond returns offer low returns

Decomposed returns per paradigm (5Y horizon)

US treasuries

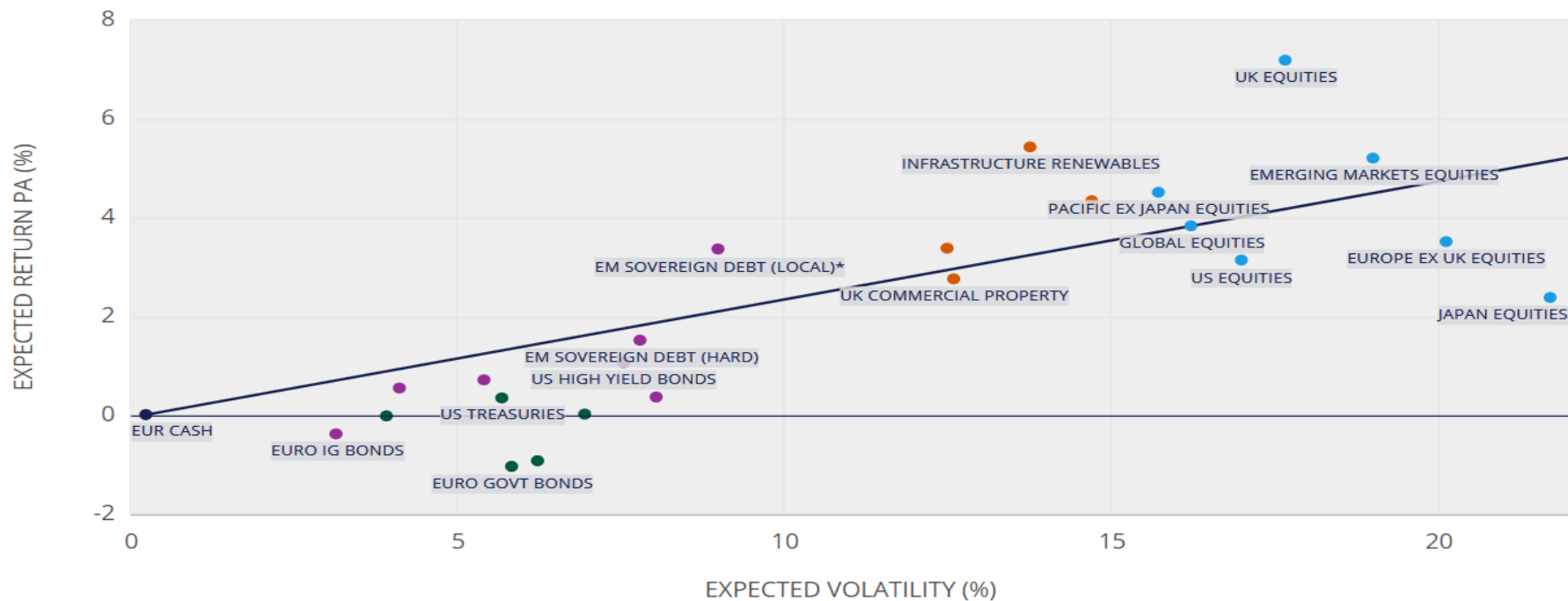


German bunds



Source: ASI, May 2021. Forecasts provide no guarantee of future outcomes.

Expected returns (mean of Paradigms), % per year, EUR-hedged, 5 Year horizon

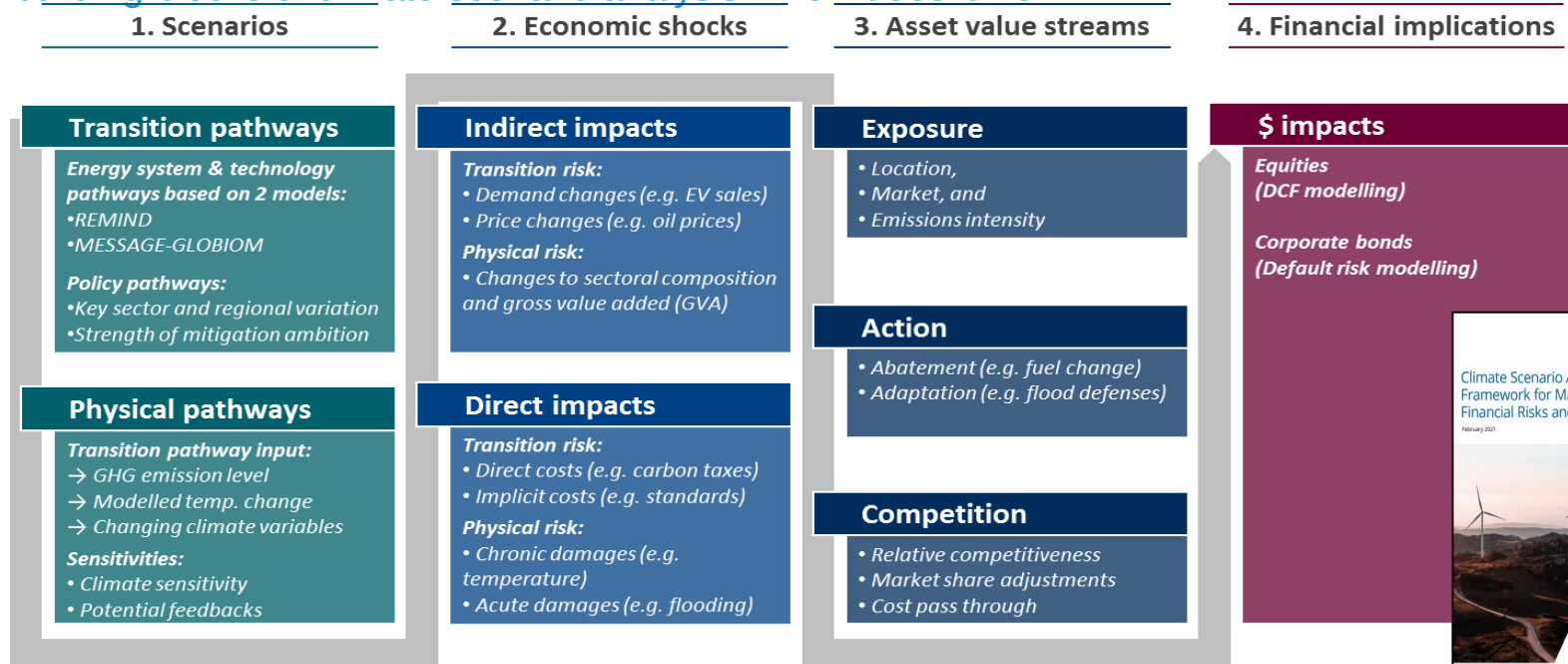


Source: ASI, 2021. Forecasts do not guarantee future outcomes.

Adding climate scenarios to the forecast

Working in partnership with Planetrics to quantify the impacts of climate scenarios

The building blocks of climate scenario analysis – how does it work?

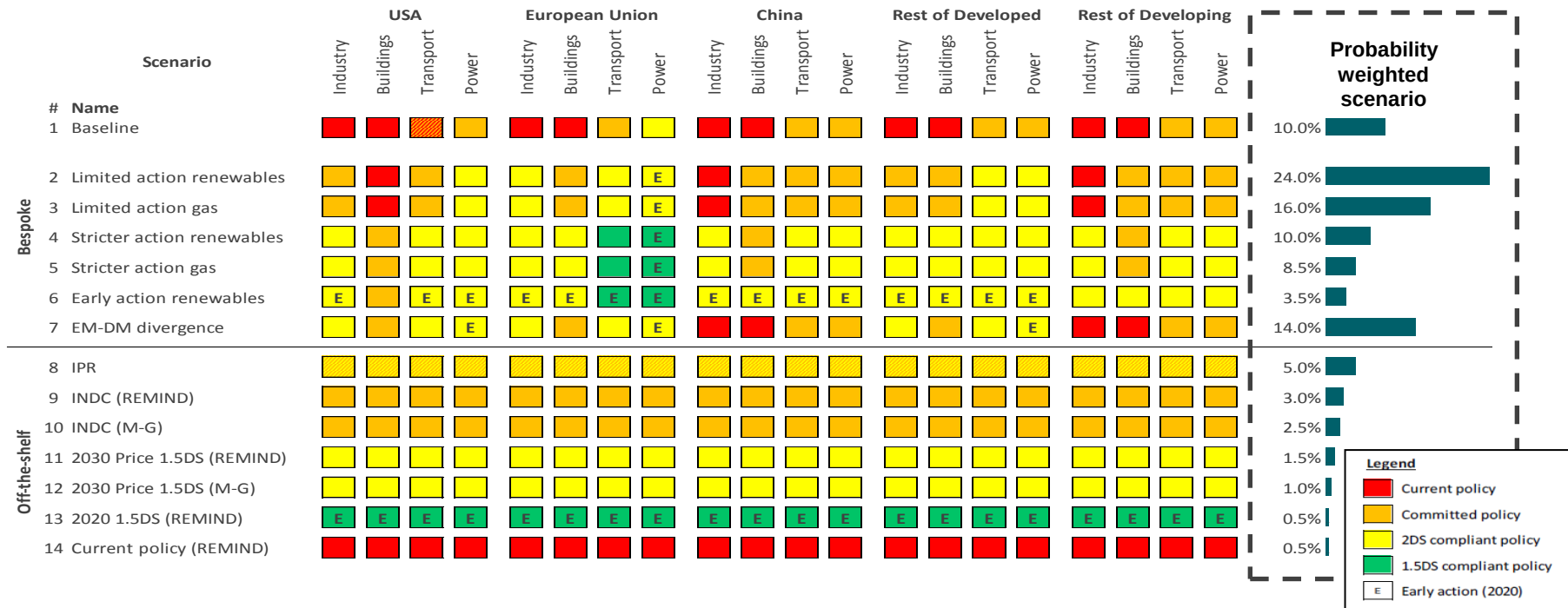


Source: ASI, adapted from Planetrics



Our bespoke approach to climate scenario analysis

We take a probability weighted view based on a range of off the shelf and bespoke scenarios



Source: ASI /Planetrics August 2020

Comparison of key model inputs across scenarios

Energy demand, renewable energy share, and carbon price

	Scenario	Description	Temperature change		Oil demand			Coal demand		Gas demand		Electricity			2050 non-fossil fuel power generation share			Carbon prices* (US\$2019/t CO ₂)		
			2050	2100	Peak oil (year)	2050 proj. (Mbbi/day) (Current = 98)	Annual growth (2020-2050) (Current = 1.49%)	2050 proj. (Mtce/year) (Current = 5386)	Annual growth (2020-2050) (Current = -0.50%)	2050 proj. (Bm3/year) (Current = 3929)	Annual growth (2020-2050) (Current = 2.94%)	2050 proj. demand (EJ/year) (Current = 97)	Annual growth (2020-2050) (Current = 2.20%)	EV share 2050 (%) (Current = 2.6%)	All (Current = 32%)	Wind (Current = 8%)	Solar (Current = 2%)	2020	2035	2050
	Baseline	Baseline of existing market assumptions	1.8	2.6	2030	107	0.29%	4394	-0.68%	6171	1.52%	177	2.03%	62%	55%	21%	4%	3.0	15.5	19.6
Bespoke	Limited action renewables	Limited new policy action; renewables tilt	1.9	3.2	2040	103	0.17%	6841	0.80%	5500	1.13%	243	3.11%	56%	83%	18%	48%	2.5	24.5	28.8
	Limited action gas	Limited new policy action; gas tilt	1.8	2.4	2030	97	-0.03%	4355	-0.71%	6181	1.52%	178	2.04%	66%	56%	21%	4%	5.5	24.5	33.5
	EM-DM divergence	Larger DM-EM policy divergence	1.8	2.4	2040	100	0.07%	4274	-0.77%	6241	1.55%	176	2.01%	65%	56%	21%	4%	8.3	26.1	40.4
	Stricter action renewables	Stricter but delayed new policy action; renewables tilt	1.8	1.9	2040	105	0.23%	1668	-3.83%	4115	0.15%	257	3.30%	69%	94%	21%	55%	2.8	76.2	156.2
	Stricter action gas	Stricter but delayed new policy action; gas tilt	1.8	1.9	2030	74	-0.93%	1916	-3.39%	5862	1.34%	179	2.06%	79%	72%	28%	8%	34.0	89.8	176.7
	Early action renewables	Stricter immediate policy action; renewables tilt	1.7	1.7	2035	99	0.03%	706	-6.55%	3563	-0.33%	261	3.35%	75%	96%	21%	56%	2.8	82.6	170.0
Off-the-shelf	IPR (Forecast Policy Scenario)	Inevitable Policy Response*	1.9	1.9	2025	50	-2.22%	967	-5.56%	3687	-0.21%	187	2.21%	100%	93%	37%	29%	33.4	187.9	349.2
	INDC (REMIND)	Current Paris Agreement commitments; renewables tilt	2.2	3.4	2035	101	0.10%	6461	0.61%	5439	1.09%	250	3.21%	43%	82%	18%	47%	2.1	19.3	25.3
	INDC (M-G)	Current Paris Agreement commitments; gas tilt	1.9	2.5	2030	98	0.00%	3391	-1.53%	6123	1.49%	173	1.95%	59%	55%	21%	4%	0.0	60.9	108.5
	2030 Price 1.5 DS (REMIND)	Delayed Paris alignment; renewables tilt	1.9	1.6	2030	82	-0.59%	184	-10.65%	1651	-2.85%	280	3.60%	79%	97%	23%	57%	2.1	181.4	377.3
	2030 Price 1.5 DS (M-G)	Delayed Paris alignment; gas tilt	1.8	1.5	2030	21	-5.01%	921	-5.72%	2943	-0.96%	198	2.41%	100%	89%	36%	13%	0.0	438.5	885.2
	2020 1.5 DS (REMIND)	Immediate Paris alignment; renewables tilt	1.7	1.4	2030	73	-0.98%	175	-10.79%	1655	-2.84%	298	3.81%	89%	97%	22%	56%	2.1	181.4	377.3
	Current policy (REMIND)	Current policy action; renewables tilt	2.3	4.1	2040	110	0.39%	8896	1.69%	6372	1.62%	230	2.92%	29%	67%	14%	34%	2.1	2.6	4.1
	Probability weighted mean**		1.8	2.5	N/A	96	-0.09%	4115	-0.89%	5429	1.08%	209	2.59%	66%	73%	22%	26%	8.0	52.7	93.8
	Paris Alignment (probability weighted)**		1.8	1.8	N/A	82	-0.60%	1385	-4.43%	4271	0.28%	224	2.82%	80%	88%	26%	36%	16.6	118.5	234.8

Current energy demand figures based on 2019 data from the BP Statistical Review of World Energy and the IEA Global EV Outlook. Current growth rates based on 2014-2019

Energy growth rates are calculated relative to the current figure. They are averaged across the 30 year period and therefore hide the periods of growth and decline seen in some scenarios.

* <https://www.vivideconomics.com/the-inevitable-policy-response/>

** PWM figures based on assigned weights across scenarios

*Bespoke scenario 'World' carbon prices are derived from bespoke scenarios based on sector-region carbon prices and the sector-region's share of 2020 total World emissions under the bespoke baseline

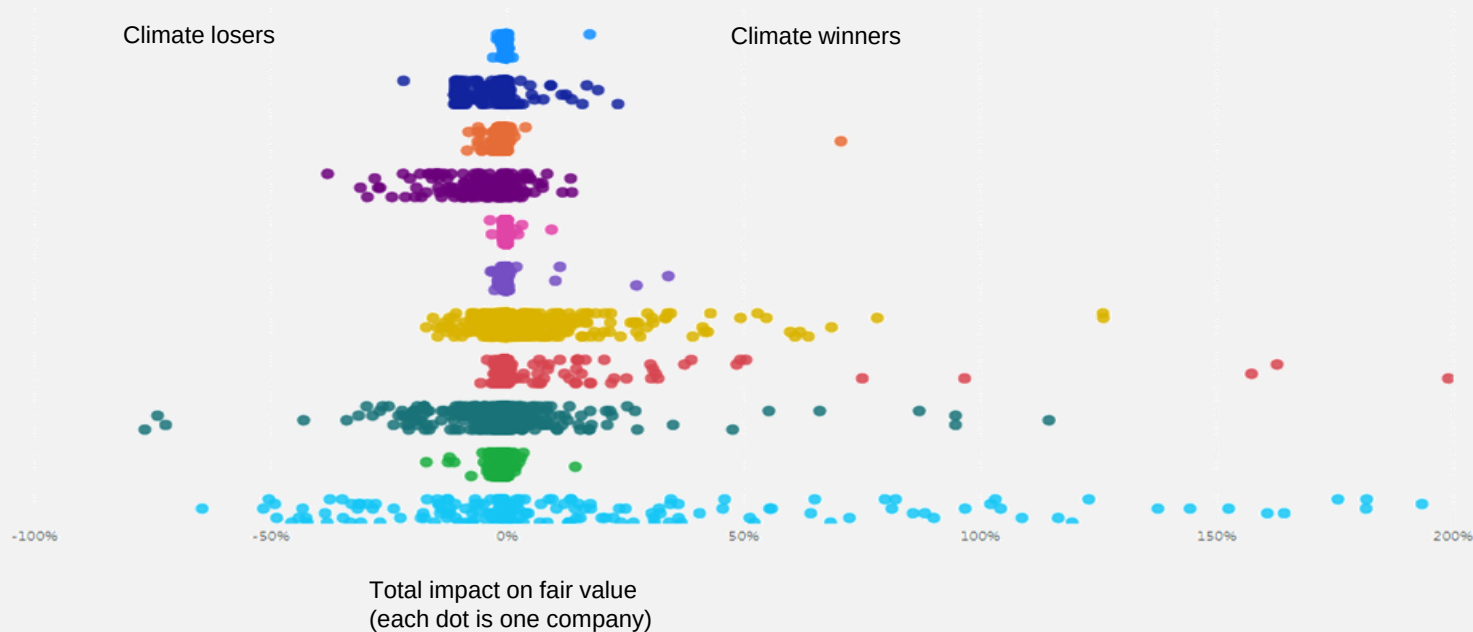
** Paris Aligned figures are calculated from the seven scenarios with a 2100 temperature change below 2 degrees, using the same weightings applied to the PWM

Investment return implications

Using climate scenarios to identify strategic portfolio risks and opportunities

Little impact in aggregate but massive dispersion of impact within and between sectors

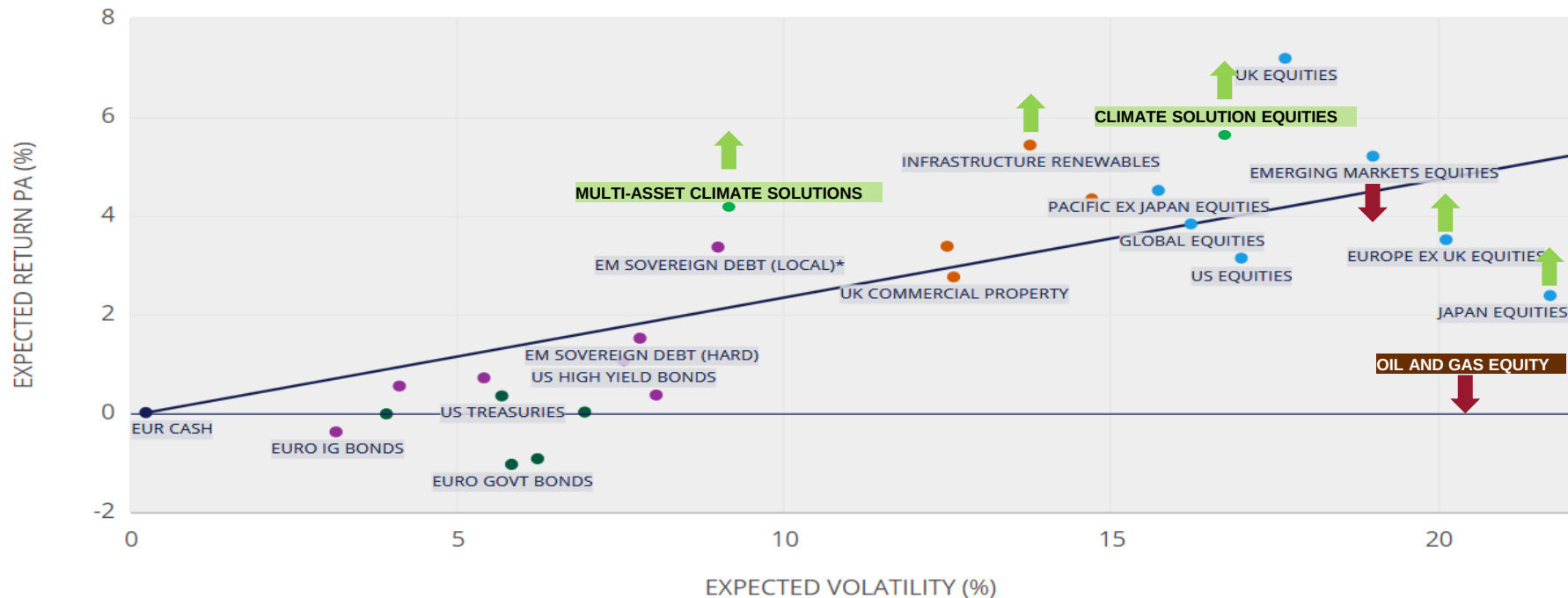
Valuation impairment of global equities in mean ASI climate scenario



Source: Aberdeen Standard Investment, Vivid Economics, 2020. Forecasts do not guarantee future outcomes.

Expected returns, mean of Paradigms, including mean climate scenario

% per year, EUR-hedged, 5 Year horizon



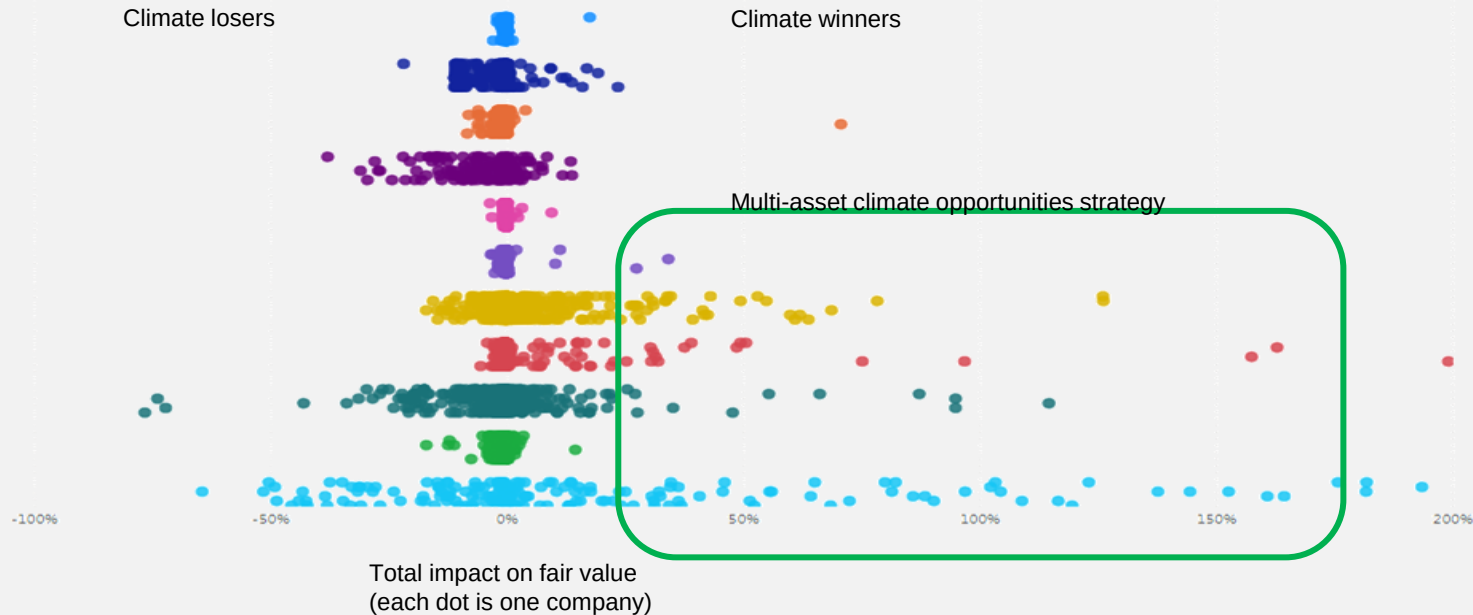
Source: ASI, 2021. Forecasts do not guarantee future outcomes.

ASI has developed new strategies to enable climates to access opportunities

Harnessing the massive growth in new clean technologies as we transition to 'Net Zero'

Valuation impairment of global equities in mean ASI climate scenario

- Communication Services
- Consumer Discretionary
- Consumer Staples
- Energy
- Financials
- Health Care
- Industrials
- Information Technology
- Materials
- Real Estate
- Utilities



Source: Aberdeen Standard Investment, Vivid Economics, 2020. Forecasts do not guarantee future outcomes.

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