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30-year return forecasts (2021–50): Part 2

January 2021

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Long-run asset class performance: 30-year return forecasts (2021–50)

Summary

Equities still on top with sovereign and credit left further behind

Schroders Economics Group produces thirty-year return forecasts on an annual basis, which incorporate the impact of climate change. In this paper, we outline the methodology used to forecast returns for a range of asset classes. This is based on a series of building blocks and estimates of risk premia. We also compare the return forecasts to last year's assumptions and examine the impact from climate change.

Our base case for climate change remains the partial mitigation scenario where there is some action taken to reduce carbon emissions. Temperature increases are more limited thanks to the introduction of carbon emission mitigation policies. We find that productivity is broadly lower in 'hotter' countries due to temperature rises. This is especially the case for the commodity-exporter countries. Meanwhile, 'colder' countries can achieve higher productivity growth subject to the assumptions we make around transition costs. Finally, those economies that invest in low-carbon technologies will likely be rewarded with a boost to their productivity and return profile.

Compared to last year, cash return forecasts for the developed markets such as the US and UK are lower. This has largely been driven by downward revisions to our policy rate forecasts for these economies. In turn, this has weighed on the return forecasts for the developed sovereign and credit bond markets. For instance, our US cash, sovereign and credit bond forecasts are lower primarily because of our lower real rate assumptions while there was a slight downgrade due to climate change. In comparison, our cash and government bond returns for Asia Pacific have been upgraded mostly led by our climate change adjustments to productivity.

Our equity returns forecasts have fallen for most developed countries. US equity returns are slightly lower due to climate change and the decline in the initial dividend yield assumption. This has contributed to the downgrade in the forecast for global equities. Meanwhile, there have been return upgrades for the Asian markets particularly in Hong Kong and Singapore. The latter have reaped productivity gains under climate change. However, there has been a notable return downgrade in China driven mainly by the fall in the dividend yield. This has trimmed the aggregate return forecast for the emerging markets.

Overall, accounting for climate change, equities are still expected to outperform other asset classes over the next 30 years. On a regional basis, emerging equities are expected to outperform most developed equity markets. Meanwhile, our forecasts suggest that credit and property will still deliver better returns than sovereign bonds. Furthermore, the return gap between sovereign bonds and equities has widened since last year. So investors will still need to move up the risk curve in search of higher returns over the next 30 years and it is important to invest actively.

Throughout our analysis, we have had to make a number of assumptions. There is little agreement as yet in the literature about the quantitative impact of climate change on economic activity for a given quantity of warming. There is also debate on the costs of transition and the form mitigation efforts will take. Consequently, the variability in asset return forecasts depends on the models used and assumptions made. Nonetheless, the direction of travel is clear and these estimates provide a consistent framework for assessing the potential effects of a development which will have profound effects on the world economy and financial system.

Table 1: Long-run return assumptions with climate change (2021–50)

% p.a.	Currency	Yield	Capital gain	Nominal return	Inflation	Real return
Cash						
$ cash	USD	1.6	N/A	**1.6**	2.1	**-0.4**
£ cash	GBP	1.4	N/A	**1.4**	1.8	**-0.4**
€ cash	EUR	1.0	N/A	**1.0**	1.7	**-0.7**
¥ cash	JPY	-0.2	N/A	**-0.2**	0.6	**-0.8**
G4 cash	Local	1.0	N/A	**1.0**	1.6	**-0.6**
Government bonds (10-year)						
US Treasury bond	USD	2.7	N/A	**2.7**	2.1	**0.6**
UK Gilt	GBP	2.0	N/A	**2.0**	1.8	**0.2**
Eurozone (Germany)	EUR	1.7	N/A	**1.7**	1.7	**0.0**
JGB	JPY	0.2	N/A	**0.2**	0.6	**-0.4**
G4 bond	Local	1.8	N/A	**1.8**	1.6	**0.1**
Credit						
US Investment Grade	USD	3.9	N/A	**3.9**	2.1	**1.8**
US High yield	USD	4.9	N/A	**4.9**	2.1	**2.8**
Euro Investment Grade	EUR	2.2	N/A	**2.2**	1.7	**0.5**
Euro High Yield	EUR	3.6	N/A	**3.6**	1.7	**1.8**
Equity markets						
US	USD	1.5	3.8	**5.3**	2.1	**3.2**
UK	GBP	3.5	3.1	**6.8**	1.8	**4.9**
Europe ex.UK	EUR	2.1	3.6	**5.8**	1.5	**4.3**
Japan	JPY	1.9	1.1	**3.0**	0.6	**2.4**
Pacific ex. Japan	Local	2.6	4.9	**7.5**	2.4	**5.0**
Emerging markets	Local	2.5	4.3	**6.9**	2.5	**4.3**
MSCI World	Local	1.8	3.5	**5.4**	1.9	**3.4**
Global (AC) Equity	Local	1.8	3.6	**5.6**	2.0	**3.5**

Source: Thomson Datastream, Schroders Economics Group, January 2021. Note: Returns are in local currency.

Cash

Real cash returns revised lower

Real interest rates

One of the key building blocks for our long-run forecast is our assumption regarding the returns on cash, which are almost entirely driven by movements in key policy rates in the major developed economies (such as the Bank of England base rate, or the Federal funds rate).

Historically, we have used a multi-stage approach. In the initial stage we forecast the real return on cash to remain negative. This is because the de-leveraging of both private and public sector balance sheets, in the developed world, keeps monetary policy extremely accommodative. Negative real rates also remain an attractive way of ameliorating the debt burden. Given the economic impact of Covid-19,

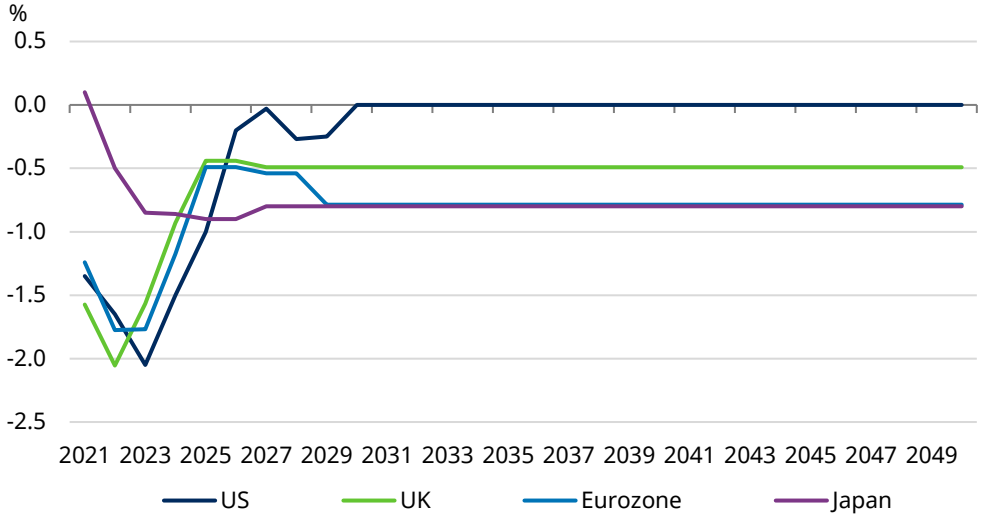
the de-leveraging phase has been extended compared to last year's forecasts. We have discussed this in more detail in the Covid-19: the inescapable truths faced by investors.

The second stage of our cash forecast is a normalisation in cash rates, before we reach the final stage, with positive real cash rates. This terminal value of real cash returns is based on an historic average, to which we make adjustments to reflect our views going forward about the strength of trend growth.

Chart 1 helps to illustrate the expected evolution of real cash rates where normalisation of cash rates is to be largely complete by 2025. Overall, real cash rates in the developed world are assumed to be lower compared to last year's forecasts which is largely a consequence of the Covid pandemic. To arrive at our nominal cash return forecast, we combine our assumption on real cash rates with inflation expectations over the next 30 years.

Policy normalisation has been delayed by Covid

Chart 1: Expected evolution of real cash rates



Source: Schroders Economics Group, January 2021.

Inflation

For the first time, we have incorporated climate change into our inflation forecasts using the Cambridge Econometrics model. Our base case for climate change is the partial mitigation scenario where there is some action taken to reduce carbon emissions. Temperature increases are more limited thanks to the introduction of carbon emission mitigation policies starting from 2025.

Climate change seems likely to cause both a demand and supply shock. The demand shock is due to the fact that higher temperatures mean productivity is set to be lower in some economies, which means lower income growth. In addition, lower growth because of climate change also acts as a shock to the supply side. Cambridge Econometrics assumes that the supply side shock on prices will prevail: lower productivity growth means the productive capacity of the economy is reduced relative to what it might have been in the absence of climate change, so it is inflationary. Possible channels could be the squeeze on supply chains and the higher cost of economic activity over time as carbon-based energy sources are phased out.

Climate change is inflationary for some countries

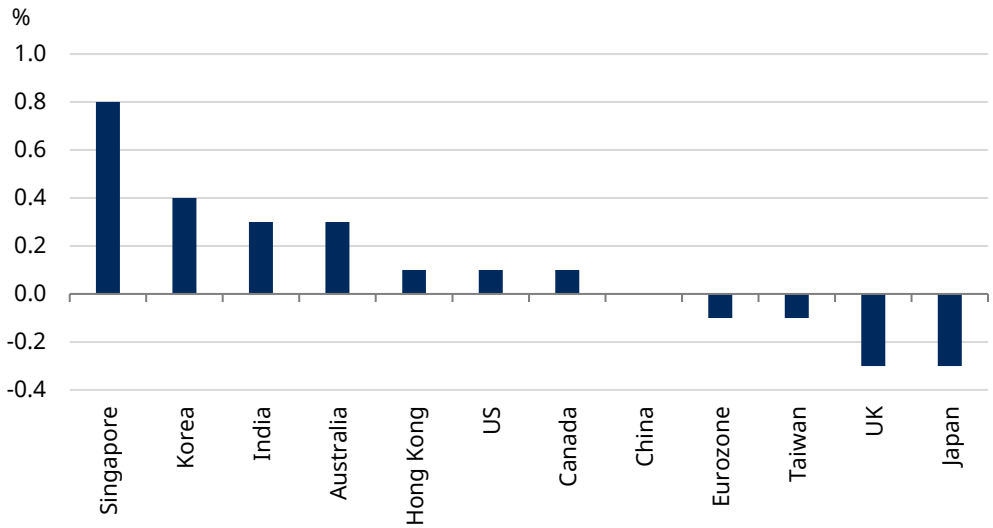
Table 1 compares our inflation forecasts for partial mitigation with last year's analysis. Here we combine our 'no climate change' inflation forecasts with adjustments from the more sophisticated climate change modelling from Cambridge Econometrics. For instance, they are able to incorporate the impact on productivity, and in turn on inflation, from a move to clean technology. Overall, climate change will be inflationary where productivity is lower than in a no climate change scenario. As shown in chart 2, this is the case for countries like South Korea, India and Singapore. In comparison, it has a deflationary impact on the eurozone, Japan, UK and Taiwan, as they see an improvement in productivity thanks to a shift to clean technology.

Table 2: Inflation forecasts compared to the previous year (with and without climate change)

% p.a. over the next 30 years	Previous year without climate change (2020–49)	Current year without climate change (2021–50)	Climate change impact	Current year with climate change (2021–50)
US	2.0	**2.0**	0.1	**2.1**
UK	2.0	**2.0**	-0.3	**1.8**
Eurozone	1.6	**1.8**	-0.1	**1.7**
Japan	1.1	**1.0**	-0.3	**0.6**
Canada	2.0	**1.8**	0.1	**1.9**
Australia	2.5	**2.3**	0.3	**2.5**
Hong Kong	2.0	**2.0**	0.1	**2.1**
Singapore	1.7	**1.2**	0.8	**2.0**
Taiwan	1.2	**1.3**	-0.1	**1.2**
Korea	2.0	**1.9**	0.4	**2.3**
China	2.8	**2.3**	0.0	**2.3**
India	4.0	**4.2**	0.3	**4.5**

Source: Cambridge Econometrics, Schroders Economics Group, January 2021.

Chart 2: Changes in inflation from incorporation of climate change (% p.a. 2021–2050)



Source: Cambridge Econometrics, Schroders Economics Group, January 2021.

Climate change and cash returns

Climate change impacts productivity...

As we discuss in our accompanying paper, climate change has consequences for productivity. In particular, productivity is impacted by the physical costs of higher temperatures and the transition costs of mitigation efforts taken to reduce global warming. We can assess the consequences for fixed income assets by making use of the productivity figures to modify our interest rate and bond returns. Following the framework developed by Laubach and Williams[1], long run equilibrium interest rates move in line with changes in trend growth in the economy. Assuming that the supply of labour is not affected by climate change, then changes in productivity feed directly into changes in trend growth. In turn, this directly affects the long run or equilibrium interest rate for the economy.

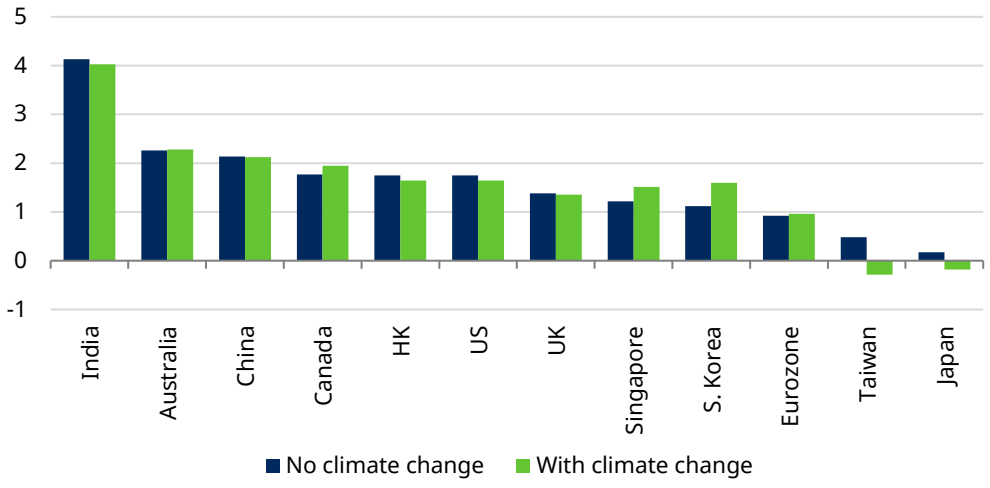
...where productivity is generally lower in 'hotter countries'

We find that some countries experience higher productivity based on the partial mitigation scenario. The economic growth of 'cold' countries, such as Switzerland, Canada and UK, generally increases as annual temperatures increases. On the other hand, productivity is broadly lower in 'hotter' countries due to temperature rises. That said, some of these economies such as Hong Kong and Singapore will also have offsetting factors such as investments in clean technology. In the US, we find that productivity is lower with climate change due to the drag from both physical and transition costs.

To incorporate climate change into the nominal cash forecasts, we take the difference between productivity based on the partial mitigation scenario and no climate change scenario. This difference in productivity is then added to the no climate change cash return forecast.

Chart 3: Cash return forecasts with and without climate change

Nominal cash returns (% p.a. 2021–2050)



Source: Cambridge Econometrics, Schroders Economics Group, January 2021.

Overall, with climate change, our cash return forecasts for developed countries such as the US and Japan are lower (chart 3). For the US, the lower cash return forecast is driven by the lower productivity assumption under climate change and by a change in the cash rate assumptions as shown in chart 4. For Hong Kong, the nominal cash return forecast is the same as the US given that the Hong Kong currency is peg to the US dollar. Meanwhile, cash returns are expected to be higher for countries such as South Korea and Singapore. This is because their productivity is boosted by the technological change required to address the full decarbonisation of their economies, a factor which we incorporate this year.

[1] Laubach and Williams, Measuring the natural rate of interest, Review of Economics and Statistics (2003).

Table 3: Cash return forecasts with and without climate change

% p.a.		Nominal return (no climate change)	Climate change impact	Nominal return (climate change)
Cash				
US	USD	**1.8**	-0.1	**1.6**
UK	GBP	**1.4**	0.0	**1.4**
Eurozone	EUR	**0.9**	0.0	**1.0**
Japan	JPY	**0.2**	-0.4	**-0.2**
Canada	CAD	**1.8**	0.2	**1.9**
Australia	AUD	**2.3**	0.0	**2.3**
Hong Kong	HKD	**1.8**	-0.1	**1.6**
Singapore	SGD	**1.2**	0.3	**1.5**
G4 cash	Local	**1.1**	-0.1	**1.0**

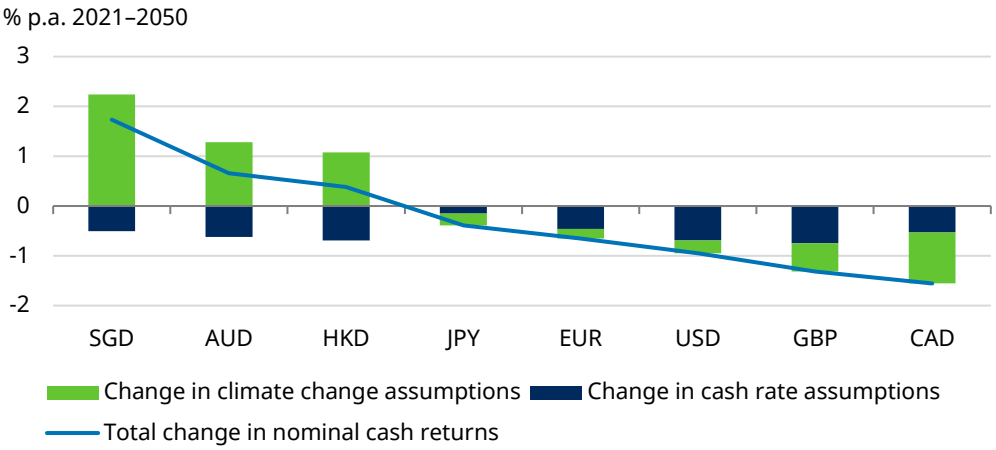
Source: Schroders Economics Group, January 2021.

Table 4: Cash return forecasts compared to the previous year (with climate change)

% p.a.	Currency	Nominal return (previous year)	Nominal return (current year)	Real return (previous year)	Real return (current year)
Cash					
US	USD	2.6	**1.6**	0.5	**-0.4**
UK	GBP	2.7	**1.4**	0.7	**-0.4**
Eurozone	EUR	1.6	**1.0**	-0.3	**-0.7**
Japan	JPY	0.2	**-0.2**	-0.9	**-0.8**
Canada	CAD	3.5	**1.9**	1.5	**0.1**
Australia	AUD	1.6	**2.3**	-0.8	**-0.2**
Hong Kong	HKD	1.3	**1.6**	-0.7	**-0.4**
Singapore	SGD	-0.2	**1.5**	-1.9	**-0.5**
G4 cash	Local	2.0	**1.0**	0.1	**-0.6**

Source: Schroders Economics Group, January 2021.

Chart 4: Impact on nominal cash returns: breakdown of changes in our assumptions compared to last year's estimates



Source: Schroders Economics Group, January 2021.

Sovereign bonds

Cash downgrades in the developed markets will weigh on the developed bond outlook

Our return assumption on sovereign debt builds on the return we have for cash, adding a term premium to forecast the returns to longer maturity (10-year) bonds. As with our cash methodology, we estimate the maturity premium from historical averages (in this case 20 years) and make an adjustment to reflect our own views. Table 5 provides an illustration of the building blocks used to forecast sovereign bond return before accounting for climate change.

Using the historical average maturity is a sensible base, as there is a maximum steepness a yield curve can reach before the carry and roll becomes too attractive for investors to ignore, thus encouraging them to buy long-dated bonds and flatten the curve again. We apply a 20–40% discount to the historic steepness of the yield curve for all countries. This is to reflect the view that yield curves are likely to be flatter going forward than they have been since the early 1990s, as a result of loose monetary policy, central bank asset purchases and a weak growth outlook.

The UK and eurozone see slightly smaller discounts than other markets. For instance, in the UK, following Brexit, the expected reduction in migration will limit the UK's flexibility to respond to sudden changes in demand. So the Phillips curve (the relationship between unemployment and inflation) should steepen. This would therefore increase the chances of higher inflation, resulting in a higher term premium demanded by investors.

Table 5: Cash, sovereign bonds and linkers without climate change

2021–50 (% p.a.)	US	UK	Eurozone	Japan
3 stage model	-0.3	-0.6	-0.8	-0.8
Cash real return	**-0.3**	**-0.6**	**-0.8**	**-0.8**
Inflation	2.0	2.0	1.8	1.0
Nominal cash return	**1.8**	**1.4**	**0.9**	**0.2**
Bond maturity premium	1.1	0.6	0.7	0.4
Bond return	**2.8**	**2.0**	**1.7**	**0.6**
Inflation insurance premium	-0.2	-0.7	N/A	N/A
Inflation linked bonds	**2.7**	**1.6**	**N/A**	**N/A**

Source: Schroders Economics Group, January 2021. Note: UK inflation linked bond returns use RPI inflation for the nominal returns.

For the UK and US, we also forecast the returns on inflation-linked government debt, by applying a discount to the returns on the nominal bonds. It is to be expected that inflation-linked bonds offer a lower return than nominal, owing to the insurance they offer against rising prices. The reason for the greater yield discount applied to UK linkers compared with US TIPS (Treasury Inflation Protected Securities) is because of technical market reasons related to the relative liquidity and structure of the two markets[2]. Note that we are assuming no difference in duration with nominal bonds.

Climate change and sovereign bond returns

Compared to last year, sovereign bond forecast reductions for the US, UK, eurozone and Japan are largely driven by downward revisions in our assumptions on real cash returns (table 7).

In comparison, our government bond returns for Asia Pacific have been upgraded since last year, as cash returns for Australia and Singapore are now higher than our previous estimates. The upgrade has been mostly driven by our climate change adjustments to productivity. By contrast, relative to last year, Canadian government bonds have deteriorated as a result of lower productivity on the back of lower revenues from commodity exports.

Sovereign debt should outperform cash, but returns still muted

Table 6: Sovereign bonds and linkers forecast returns with and without climate change

2021–50 (% p.a.)	Currency	Nominal return (no climate change)	Climate change impact	Nominal return (climate change)
US Treasury bond	USD	**2.8**	-0.1	**2.7**
UK gilt	GBP	**2.0**	0.0	**2.0**
Eurozone (Germany)	EUR	**1.7**	0.0	**1.7**
JGB	JPY	**0.6**	-0.4	**0.2**
Canada	CAD	**2.6**	0.2	**2.8**
Australia	AUD	**2.6**	0.0	**2.6**
Hong Kong	HKD	**3.1**	-0.1	**3.0**
Singapore	SGD	**2.0**	0.3	**2.3**
G4 bond	*Local*	**1.9**	-0.1	**1.8**
Inflation-linked (IL)				
Barclays 7–10 year IL Gilts	GBP	**1.6**	0.0	**1.5**
Barclays 7–10 year TIPS	USD	**2.7**	-0.1	**2.6**

Source: Schroders Economics Group, January 2021.

[2]UK linkers make up a bigger share of the total gilt market (roughly 20%) than TIPS do of the Treasury market (less than 10%). Thus, *relative to their main market*, TIPS are less liquid than UK linkers, and thus have a price discount (e.g. lower prices, thus higher yield and smaller differential between nominal and TIPS yield).

Table 7: Sovereign bond return forecasts compared to the previous year (with climate change)

% p.a.	Currency	Nominal return (current year)	Nominal return (previous year)
US Treasury bond	USD	**2.7**	3.7
UK Gilt	GBP	**2.0**	3.5
Eurozone (Germany)	EUR	**1.7**	2.4
JGB	JPY	**0.2**	0.7
Canada	CAD	**2.8**	4.3
Australia	AUD	**2.6**	2.0
Hong Kong	HKD	**3.0**	2.3
Singapore	SGD	**2.3**	0.5
G4 bond	*Local*	**1.8**	2.9
Inflation-linked (IL)			
Barclays 7–10 year IL Gilts	GBP	**1.5**	2.5
Barclays 7–10 year TIPS	USD	**2.6**	3.2

Source: Schroders Economics Group, January 2021.

Credit and emerging market debt (EMD) bonds

Our credit returns are forecast using the risk premium or excess return of credit (both investment grade and high yield) over sovereign bonds for the respective market. The two key drivers of credit's excess return are the changes in spreads and the expected loss through defaults, both of which are closely linked to the economic cycle. For this reason, we combine regression analysis of spread changes and default losses with our long run US growth forecast to predict the excess return of US high yield and investment grade credit over Treasuries. Using regression analysis again, we exploit an historical relationship and use the excess returns of US credit to estimate the excess returns of UK and European credit over UK gilts and German Bunds respectively.

For investment grade credit, we also attempt to account for losses from downgrades (table 8). To forecast this for the next 30 years, we believe that the best approach is to apply an historic ratio of downgrade losses to spreads to the current forecast spread. This provides a downward adjustment to the spread to allow for the downgrade losses. As might be expected, this results in downward revisions to our forecast returns for investment grade (IG) credit this year.

Table 8: Adjusting forecast spreads in IG credit for downgrade losses

	Downgrade loss, %	Median spread, bps	Downgrade loss/Median spread, %	Current forecast spread, bps	Loss adjusted spread, bps
US IG	-0.37	136	-0.27	164	119
EU IG	-0.34	101	-0.33	80	53
UK IG	-0.52	136	-0.39	138	85

Source: Schroders Multi Asset, January 2021.

Finally, we also estimate the relationship between US high yield (HY) and emerging market debt (EMD) spreads and use this to drive the EMD spread projection, while also assuming an historic ratio holds for EMD defaults and US HY defaults (table 9).

Table 9: Credit bond return forecasts without climate change

	US IG	US HY	UK IG	Euro IG	Euro HY	EMD
Spread	1.2	5.4	0.8	0.5	5.1	3.7
Default loss	0.0	3.2	0.0	0.0	3.2	1.5
Return over government bonds	1.1	2.1	0.8	0.5	1.8	2.2
10-year government bond return	2.8	2.8	2.0	1.7	1.7	2.8
Nominal return	**4.0**	**5.0**	**2.8**	**2.2**	**3.5**	**5.1**

Source: Schroders Economics Group, January 2021. Note: Returns are in local currency.

Climate change and credit bond returns

Changes to credit returns have two key drivers in our climate change work. As we have seen, cash rates are impacted quite considerably in some cases, and this has knock-on effects for government yields and credit returns. In addition, there is an impact on growth from climate change, which feeds into our forecast for default rates and spreads in credit assets.

Given that we have revised US, UK and eurozone cash returns lower, it should not be surprising that credit returns are also expected to be lower as a consequence of climate change. At the same time, credit default rates have stayed the same as the US GDP growth forecast has remained broadly unchanged compared to last year. We do not make any assumptions for stranded assets, which could affect the default rates of some companies in the index.

Credit returns ease on the back of lower cash rates

Table 10: Credit and EMD bond return forecasts with and without climate change

% p.a. 2021–50	Currency	Nominal return (no climate change)	Climate change impact	Nominal return (climate change)
Credit				
US IG	USD	**4.0**	-0.1	**3.9**
US HY	USD	**5.0**	-0.1	**4.9**
UK IG	GBP	**2.8**	0.0	**2.8**
Euro IG	EUR	**2.2**	0.0	**2.2**
Euro HY	EUR	**3.5**	0.0	**3.6**
EMD	USD	**5.1**	-0.1	**5.0**
Asian Credit (JACI Index)	USD	**4.6**	-0.1	**4.4**

Source: Schroders Economics Group, January 2021. Note: Returns are in local currency.

Table 11: Credit and EMD bond return forecasts compared to the previous year (with climate change)

% p.a.	Currency	Nominal return (current year)	Nominal return (previous year)
US IG	USD	**3.9**	4.7
US HY	USD	**4.9**	5.9
UK IG	GBP	**2.8**	4.2
Euro IG	EUR	**2.2**	2.9
Euro HY	EUR	**3.6**	4.9
EMD	USD	**5.0**	5.7
Asian Credit (JACI index)	USD	**4.4**	5.4

Source: Schroders Economics Group, January 2021. Note: Returns are in local currency.

Equities

Our equity return assumptions use a Gordon's growth model approach, in which returns are generated through the initial dividend yield and the growth rate of dividends (via earnings growth). Earnings are assumed to grow in line with productivity (i.e. growth in GDP per working age population).

While this forecast for productivity is the basis of our earnings and dividend growth assumptions, we make adjustments for areas where earnings and trend productivity have not tended to grow in line. This is the case in the emerging markets, where productivity gains have historically not translated fully into earnings growth, hence we scale earnings growth downwards, and Europe where earnings growth has tended to exceed productivity growth (hence an upward scaling).

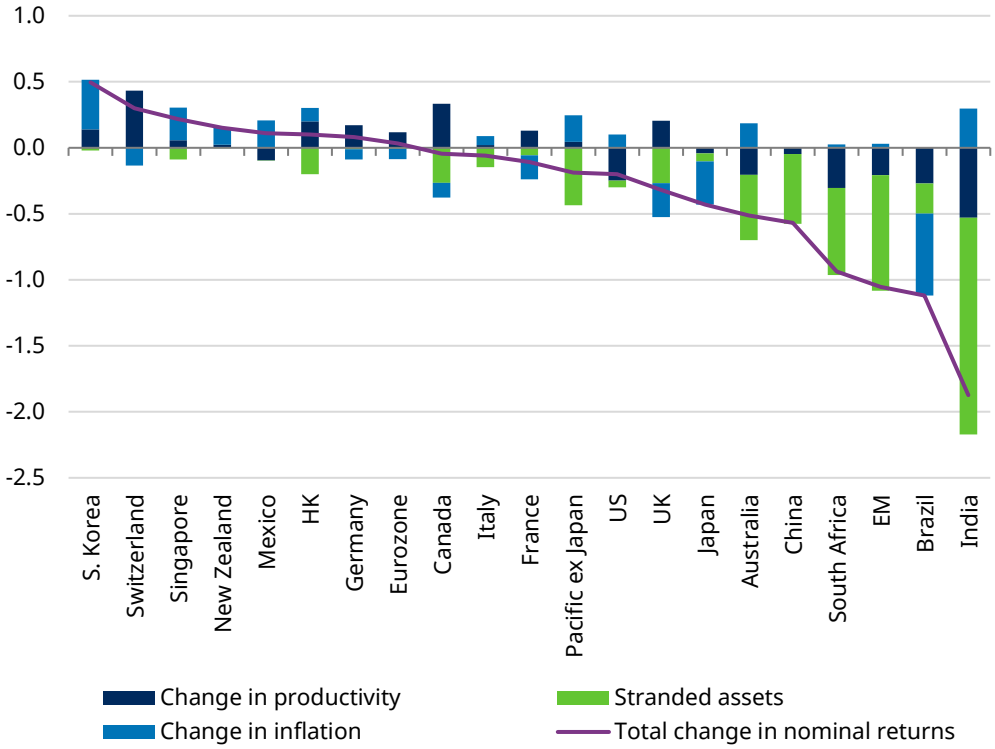
Climate change and equity returns

Climate change matters a lot for equities. As discussed at length in our accompanying paper, the associated higher temperatures and costs of transition, including stranded assets, affect equities either directly or through their effects on productivity growth. In our approach, this productivity impact translates more or less directly into an impact on equity earnings.

Our equity return forecasts are broadly lower with climate change

Once we adjust for stranded assets in our partial mitigation scenario, it is clear that there will be winners and losers as a result of climate change. Chart 5 below shows the total impact of climate change on our equity returns. In particular, European equities will see a productivity boost thanks to a shift to clean technology and see minimal losses in terms of stranded assets. Climate change is bad news for equity investors in emerging markets. The biggest blow comes in India, Brazil, South Africa and China, while Mexico sees a small upgrade driven by higher inflation. The US will also see lower returns in a partial mitigation scenario due to the drag from stranded assets and transition costs.

Chart 5: Climate change impact on equity returns: breakdown of changes in our assumptions compared to no climate change scenario (% p.a. 2021–2050)



Source: Cambridge Econometrics, Schroders Economics Group, January 2021.

EM should outperform most of DM, but UK equities also look attractive

Table 12: Equity forecast returns with and without climate change

% p.a.	Currency	Yield	Capital gain	Nominal return (no climate change)	Climate change impact	Nominal return (climate change)
Equity markets						
US	USD	1.5	4.0	**5.5**	-0.2	**5.3**
US small cap	USD	1.1	5.1	**6.2**	-0.1	**6.1**
UK	GBP	3.5	3.5	**7.1**	-0.3	**6.8**
UK small cap	GBP	2.8	4.8	**7.8**	0.0	**7.7**
Europe ex.UK	EUR	2.1	3.5	**5.7**	0.1	**5.8**
Eurozone	EUR	1.9	3.6	**5.6**	0.0	**5.6**
Japan	JPY	1.9	1.5	**3.5**	-0.4	**3.0**
Canada	CAD	2.8	3.0	**5.9**	0.0	**5.8**
Switzerland	CHF	2.6	3.3	**5.9**	0.3	**6.2**
Singapore	SGD	3.5	6.0	**9.6**	0.2	**9.9**
Pacific ex. Japan	USD	2.6	5.0	**7.7**	-0.2	**7.5**
Emerging markets	Local	2.5	5.4	**8.0**	-1.0	**6.9**

Source: Schroders Economics Group, January 2021. Note: Returns are in local currency.

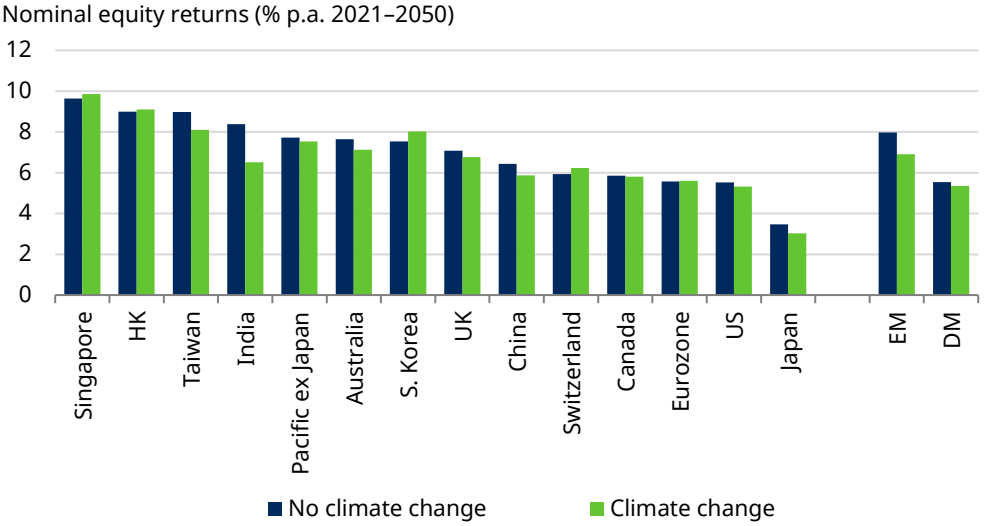
Asian returns are lower led by China

Table 13: Asia – Equity forecast returns with and without climate change

% p.a.	Currency	Yield	Capital gain	Nominal return (no climate change)	Climate change impact	Nominal return (climate change)
Equity markets						
Asia ex. Japan	USD	2.0	5.5	**7.7**	-0.4	**7.2**
Taiwan	TWD	3.7	5.1	**9.0**	-0.8	**8.1**
Korea	KRW	1.4	6.1	**7.5**	0.5	**8.0**
China	CNY	1.6	4.7	**6.4**	-0.5	**5.9**
India	INR	1.2	7.1	**8.4**	-1.7	**6.5**
Hong Kong	HKD	1.7	7.1	**9.0**	0.1	**9.1**
Singapore	SGD	3.5	6.0	**9.6**	0.2	**9.9**

Source: Schroders Economics Group, January 2021. Note: Returns are in local currency.

Chart 6: Nominal equity forecast returns with and without climate change



Source: Cambridge Econometrics, Schroders Economics Group, January 2021.

How do equity returns compare to last year's analysis?

Table 14 compares our equity return forecasts, incorporating climate change, with last year's estimates. This shows that Hong Kong, Singapore, Australia, Korea and Taiwan will now deliver higher returns. By contrast, the UK, Japan, eurozone, Canada and China are expected to experience lower returns over the next 30 years.

Table 14: Equity forecast returns compared to the previous year with climate change

% p.a.	Currency	Nominal return (previous year)	Nominal return (current year)
Equity markets			
US	USD	5.4	**5.3**
UK	GBP	8.1	**6.8**
Eurozone	EUR	6.8	**5.6**
Japan	JPY	4.6	**3.0**
Switzerland	CHF	6.6	**6.2**

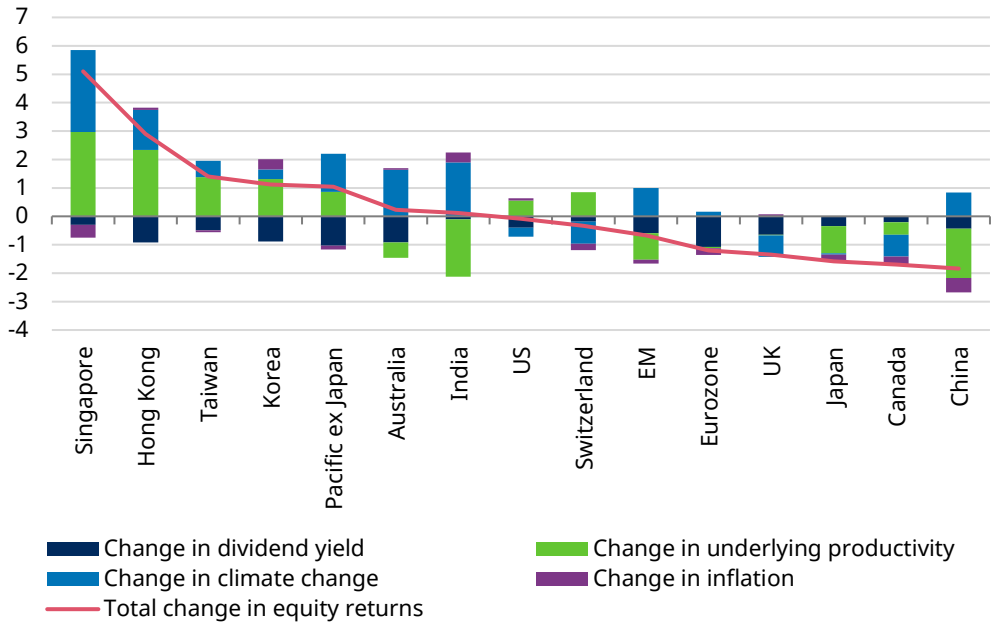
% p.a.	Currency	Nominal return (previous year)	Nominal return (current year)
Canada	CAD	7.5	**5.8**
Australia	AUD	6.9	**7.1**
Hong Kong	HKD	6.2	**9.1**
Singapore	SGD	4.7	**9.9**
Pacific ex. Japan	Local	6.5	**7.5**
Korea	KRW	6.9	**8.0**
Taiwan	TWD	6.7	**8.1**
China	CNY	7.7	**5.9**
India	INR	6.4	**6.5**
Emerging markets	Local	7.5	**6.9**

Source: Schroders Economics Group, January 2021. Note: Returns are in local currency.

While climate change factors are behind the largest portion of the changes in this year's forecasts, updates to our underlying equity assumptions also play a key role. US equity returns are marginally lower than last year's estimates due to the decline in the initial dividend yield assumption. At the same time, climate change is a small drag on US equity returns as the country is a commodity exporter.

Chart 7 shows the changes in our current forecasts compared to last year's estimates. It highlights that some of the changes in our real equity returns are due to a shift to the Cambridge Econometrics model with different underlying assumptions for productivity. These changes are particularly evident for countries like Singapore, Hong Kong, Taiwan and Korea, while more negative climate change impacts for Switzerland and Canada are behind the return downgrades for these markets. Finally, changes to the starting dividend yield assumptions are driving lower equity returns in most of these markets.

Chart 7: Impact on nominal equity returns: breakdown of changes in our assumptions compared to last year's forecasts (% p.a. 2021–2050)



Source: Cambridge Econometrics, Schroders Economics Group, January 2021.

Real estate

For private commercial real estate in the UK and Europe, our long-term forecasts are provided by the Schroders Real Estate team. The forecast consists of several components but, in similar fashion to other assets, includes an income and a capital growth component (table 15). Rental growth is based on the long-term inflation outlook where we assume that the price of commercial space will broadly change in line with that for other goods and services in the economy.

For the 2021 forecasts, we have incorporated the impact from climate change through the rental growth component. Overall, compared to our 2020 forecasts, the expected returns for both markets are lower, driven by the fall in rental growth due to climate change.

Table 15: Private commercial real estate forecasts with climate change

Component (% p.a. 2021–50)	UK	Europe
Future income return (initial property yield)	4.9	4.3
Potential income growth already in portfolio	0.25	0.25
Rental growth (inflation)	1.8	1.7
Depreciation	-2.0	-0.75
Refurbishment capital expenditure	-0.7	-1.25
Adjustment for depreciation and modernisation	1.7	1.25
Stamp Duty & Trading Fees	-1.0	-0.75
Nominal total return	**4.8**	**4.7**

Source: Schroders Real Estate, January 2021. Note: Returns are in local currency.

Meanwhile, we have expanded our real estate coverage by including return forecasts for UK and European real estate securities (REITs, real estate investment trusts). We start with the returns on private real estate and then apply a discount or a premium to forecast the REIT return. In UK, we have found that there is no significant difference in the historical returns between the private and public property sectors. So we have assumed that UK REITs perform in line with their private counterparts. In comparison, we expect European REITs to offer a lower return than the unlisted sector based on historical performance.

Table 16: REITs return forecasts with climate change

Component (% p.a. 2021–50)	UK	Europe
Private commercial real estate return	4.8	4.7
Premium/discount	0.0	-0.7
Nominal total return	**4.8**	**3.9**

Source: Schroders Real Estate, Schroders Economics Group January 2021. Note: Returns are in local currency.

Accounting for currency moves

To ease comparison, we also attempt to incorporate the impact of currency on asset returns. To do this, we use uncovered interest parity theory. Here, an interest rate differential implies an offsetting exchange rate movement, such that holding dollars, sterling or euros yields the same return. So if sterling cash yields a lower interest rate versus the dollar, it must be that sterling is expected to appreciate versus the dollar by an amount which makes up the difference. To keep our forecasts internally consistent, we use our cash rate forecasts as our interest rates for this purpose (equivalent to assuming a one-year hedge is put on and rolled each year for 30 years). Applying this to a selection of the assets we forecast returns shown in the table 17.

Investors seeking the highest dollar returns over this time period would be drawn to the UK and Europe in equity, US high yield in credit, European property, and US Treasuries in the bond universe.

Adjusting for currencies reinforces findings for dollar investors

Table 17: Nominal returns with climate change (% p.a. 2021–50)

UIP basis	USD	GBP	EUR
Cash	**1.6**	**1.4**	**1.0**
Government bonds (10-year)			
US Treasury bond	2.7	2.5	2.1
UK Gilt	2.2	2.0	1.6
Eurozone (Germany)	2.4	2.1	1.7
JGB	2.0	1.8	1.4
Inflation-linked (IL)			
Barclays 7–10 year IL Gilts	1.8	1.5	1.1
Barclays 7–10 year TIPS	2.6	2.3	1.9
Credit			
US Investment Grade	3.9	3.6	3.2
US High yield	4.9	4.6	4.2
UK Investment Grade	3.0	2.8	2.4
Euro Investment Grade	2.9	2.6	2.2
Euro High Yield	4.2	4.0	3.6
Real estate			
UK Commercial	5.1	4.8	4.4
EUR Commercial	5.4	5.1	4.7
UK REITs	5.1	4.8	4.4
EUR REITs	4.6	4.3	3.9
Equity markets			
US	5.3	5.0	4.6
US small cap	6.1	5.8	5.4
UK	7.0	6.8	6.4
UK small cap	8.0	7.7	7.3
Europe ex. UK	6.5	6.2	5.8
Eurozone	6.3	6.0	5.6
Japan	4.8	4.5	4.2

Source: Schroders Economics Group, January 2021.

Appendix

Asia cash forecast methodology

For our Asia cash forecasts, we base our projections on the US real cash rate, adjusted for working population growth versus the US. In particular, we assume that productivity is higher in those countries with a working population that is growing at a faster pace than the US (table A1).

As a result, some of the forecasts come in below the US cash number, as these economies have a slower working age population growth forecast than the US, particularly in Korea, Singapore and Taiwan. The exceptions are China and India, where the population is set on a more rapid growth trajectory, pushing up the cash rate versus the US.

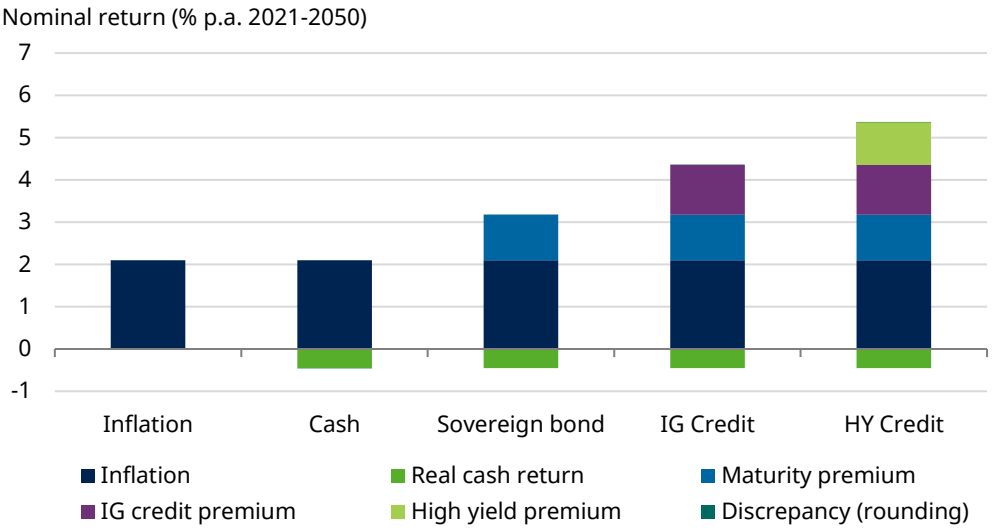
Table A1: Cash return forecasts for Asia with climate change

% p.a.	Currency	Nominal return	Inflation	Real return
Cash				
Taiwan	TWD	**-0.3**	1.2	**-1.4**
Korea	KRW	**1.6**	2.3	**-0.7**
China	CNY	**2.1**	2.3	**-0.2**
India	INR	**4.0**	4.5	**-0.4**
Hong Kong	HKD	**1.6**	2.1	**-0.4**
Singapore	SGD	**1.5**	2.0	**-0.5**
Australia	AUD	**2.3**	2.5	**-0.2**

Source: Schroders Economics Group, January 2021. Note: Returns are in local currency.

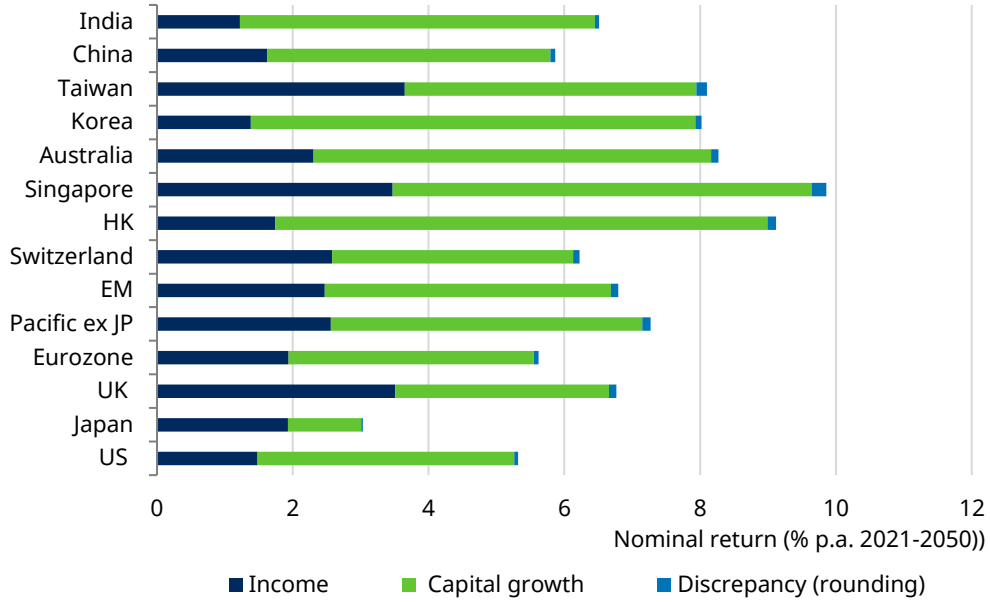
Chart A1 graphically shows the methodology behind the 30-year return forecasts for US fixed income assets.

Chart A1: US nominal fixed income returns – build up approach



Source: Schroders Economics Group, January 2021.

Chart A2: Nominal equity returns breakdown



Source: Schroders Economics Group, January 2021.

Table A2: Long-run return assumptions with climate change (2021–50)

% p.a.	Currency	Yield	Capital gain	Nominal return	Inflation	Real return
Cash						
$ cash	USD	1.6	N/A	**1.6**	2.1	**-0.4**
£ cash	GBP	1.4	N/A	**1.4**	1.8	**-0.4**
€ cash	EUR	1.0	N/A	**1.0**	1.7	**-0.7**
¥ cash	JPY	-0.2	N/A	**-0.2**	0.6	**-0.8**
Canada	CAD	1.9	N/A	**1.9**	1.9	**0.1**
Australia	AUD	2.3	N/A	**2.3**	2.5	**-0.2**
Hong Kong	HKD	1.6	N/A	**1.6**	2.1	**-0.4**
Singapore	SGD	1.5	N/A	**1.5**	2.0	**-0.5**
G4 cash	*Local*	1.0	N/A	**1.0**	1.6	**-0.6**
Government bonds (10y)						
US Treasury bond	USD	2.7	N/A	**2.7**	2.1	**0.6**
UK Gilt	GBP	2.0	N/A	**2.0**	1.8	**0.2**
Eurozone (Germany)	EUR	1.7	N/A	**1.7**	1.7	**0.0**
JGB	JPY	0.2	N/A	**0.2**	0.6	**-0.4**
Canada	CAD	2.8	N/A	**2.8**	1.9	**0.9**
Australia	AUD	2.6	N/A	**2.6**	2.5	**0.1**
Hong Kong	HKD	3.0	N/A	**3.0**	2.1	**0.9**
Singapore	SGD	2.3	N/A	**2.3**	2.0	**0.3**
G4 bond	*Local*	1.8	N/A	**1.8**	1.6	**0.1**
Inflation-linked (IL)						
Barclays 7–10 year IL Gilts	GBP	1.5	N/A	**1.5**	2.1	**-0.5**

% p.a.	Currency	Yield	Capital gain	Nominal return	Inflation	Real return
Barclays 7–10 year TIPS	USD	2.6	N/A	**2.6**	2.1	**0.5**
Credit						
US Investment Grade	USD	3.9	N/A	**3.9**	2.1	**1.8**
US High yield	USD	4.9	N/A	**4.9**	2.1	**2.8**
UK Investment Grade	GBP	2.8	N/A	**2.8**	1.8	**1.0**
Euro Investment Grade	EUR	2.2	N/A	**2.2**	1.7	**0.5**
Euro High Yield	EUR	3.6	N/A	**3.6**	1.7	**1.8**
$EMD	USD	5.0	N/A	**5.0**	2.5	**2.4**
Real estate						
UK Commercial	GBP	4.9	-0.1	**4.8**	1.8	**3.0**
EUR Commercial	EUR	4.3	0.4	**4.7**	1.7	**2.9**
UK REITs	GBP	3.8	0.9	**4.8**	1.8	**3.0**
EUR REITs	EUR	4.1	-0.2	**3.9**	1.7	**2.2**
Equity markets						
US	USD	1.5	3.8	**5.3**	2.1	**3.2**
US small cap	USD	1.1	4.9	**6.1**	2.1	**3.9**
UK	GBP	3.5	3.1	**6.8**	1.8	**4.9**
UK small cap	GBP	2.8	4.8	**7.7**	1.8	**5.9**
Europe ex.UK	EUR	2.1	3.6	**5.8**	1.5	**4.3**
Eurozone	EUR	1.9	3.6	**5.6**	1.7	**3.8**
Japan	JPY	1.9	1.1	**3.0**	0.6	**2.4**
Canada	CAD	2.8	3.0	**5.8**	1.9	**3.9**
Switzerland	CHF	2.6	3.6	**6.2**	1.0	**5.2**
Singapore	SGD	3.5	6.2	**9.9**	2.0	**7.7**
Pacific ex.Japan	Local	2.6	4.9	**7.5**	2.4	**5.0**
Emerging markets	Local	2.5	4.3	**6.9**	2.5	**4.3**
Developed markets (MSCI World)	Local	1.8	3.5	**5.4**	1.9	**3.4**
Global (AC) Equity	Local	1.8	3.6	**5.6**	2.0	**3.5**
Global (AC) Equity Risk Premium		v. G4 bonds		**3.8**		**3.4**
		v. G4 cash		**4.5**		**4.2**

Source: Thomson Datastream, Schroders Economics Group. January 2021. Note: UK Index-linked returns use RPI inflation for the nominal return. Returns are in local currency.

Table A3: Long-run return assumptions for Asia with climate change (2021–50)

% p.a.	Currency	Yield	Capital gain	Nominal return	Inflation	Real return
Equity markets						
Asia ex. Japan	USD	2.0	5.1	**7.2**	2.3	**4.8**
Taiwan	TWD	3.7	4.3	**8.1**	1.2	**6.9**
Korea	KRW	1.4	6.6	**8.0**	2.3	**5.6**
China	CNY	1.6	4.2	**5.9**	2.3	**3.5**
India	INR	1.2	5.2	**6.5**	4.5	**1.9**
Hong Kong	HKD	1.7	7.2	**9.1**	2.1	**6.9**
Singapore	SGD	3.5	6.2	**9.9**	2.0	**7.7**
Australia	AUD	2.3	4.7	**7.1**	2.5	**4.5**
Cash						
TWD	TWD	-0.3	N/A	**-0.3**	1.2	**-1.4**
KRW	KRW	1.6	N/A	**1.6**	2.3	**-0.7**
CNY	CNY	2.1	N/A	**2.1**	2.3	**-0.2**
INR	INR	4.0	N/A	**4.0**	4.5	**-0.4**
HKD	HKD	1.6	N/A	**1.6**	2.1	**-0.4**
SGD	SGD	1.5	N/A	**1.5**	2.0	**-0.5**
AUD	AUD	2.3	N/A	**2.3**	2.5	**-0.2**
Government bonds (10y)						
Hong Kong	HKD	3.0	N/A	**3.0**	2.1	**0.9**
Singapore	SGD	2.3	N/A	**2.3**	2.0	**0.3**
Australia	AUD	2.6	N/A	**2.6**	2.5	**0.1**
Asian Govt.	USD	3.3	N/A	**3.3**	3.0	**0.3**
Credit						
Asian Credit (JACI Index)	USD	4.4	N/A	**4.4**	2.3	**2.1**
Asian Local Currency Bonds	USD	3.7	N/A	**3.7**	3.0	**0.7**

Source: Thomson Datastream, Schroders Economics Group, January 2021. Note: Returns are in local currency.

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