Quarterly Investment Report - Aberdeen City Council

For the Period 01 Oct 2021 to 31 Dec 2021

Aberdeen City Council

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Table of Contents

Accounting Summary. 1

Performance Summary. 2

Passive Equity Portfolio 4

Risk Statistics 4

UK ESG Screened Index Equity Sub-Fund 5

9

Important Information 27

Accounting Summary (expressed in GBP)

As of 31 Dec 2021

	Market Value 01 Oct 2021		Contributions	Withdrawals	Change in Market Value	Market Value 31 Dec 2021	
Passive Equity Portfolio	1,065,010,146	68.21%	45,206	0	58,714,312	1,123,769,665	68.35%
UK ESG Screened Index Equity Sub-Fund	535,624,887	34.31%	0	0	19,268,960	554,893,847	33.75%
International (GBP Dynamic Currency Hedged) ESG Screened Index Equity Sub-Fund	529,385,260	33.91%	45,206	0	39,445,352	568,875,818	34.60%
Passive Fixed Income Portfolio	496,334,769	31.79%	0	0	24,088,358	520,423,127	31.65%
MPF UK Index Linked Gilts All Stocks Index Sub-Fund	496,334,769	31.79%	0	0	24,088,358	520,423,127	31.65%
Total	**1,561,344,915**	**100.00%**	**45,206**	**0**	**82,802,670**	**1,644,192,792**	**100.00%**

Performance Summary (expressed in GBP)

As of 31 Dec 2021

	1 Month	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Inception
Passive Equity Portfolio								01 Nov 1999
Total Returns	4.07%	5.51%	19.93%	19.93%	13.99%	9.45%	10.89%	6.62%
FTSE All Share & World ex UK Custom Index	3.69%	5.45%	19.77%	19.77%	13.88%	9.42%	10.83%	6.56%
Difference	**0.38%**	**0.06%**	**0.16%**	**0.16%**	**0.11%**	**0.03%**	**0.06%**	**0.06%**
Total Returns (Net)	4.07%	5.51%	19.89%	19.89%	N/A	N/A	N/A	N/A
FTSE All Share & World ex UK Custom Index	3.69%	5.45%	19.77%	19.77%	N/A	N/A	N/A	N/A
Difference	**0.38%**	**0.06%**	**0.12%**	**0.12%**	**N/A**	**N/A**	**N/A**	**N/A**
UK ESG Screened Index Equity Sub-Fund								01 Nov 1999
Total Returns	4.54%	3.60%	17.17%	17.17%	7.72%	5.10%	7.62%	5.19%
FTSE ALL SHARE EX CONTROVERSIES EX CW INDEX	4.55%	3.58%	17.01%	17.01%	7.63%	5.00%	7.52%	5.10%
Difference	**-0.01%**	**0.02%**	**0.16%**	**0.16%**	**0.09%**	**0.10%**	**0.10%**	**0.09%**
Total Returns (Net)	4.54%	3.60%	17.16%	17.16%	N/A	N/A	N/A	N/A
FTSE ALL SHARE EX CONTROVERSIES EX CW INDEX	4.55%	3.58%	17.01%	17.01%	N/A	N/A	N/A	N/A
Difference	**-0.01%**	**0.02%**	**0.15%**	**0.15%**	**N/A**	**N/A**	**N/A**	**N/A**
International (GBP Dynamic Currency Hedged) ESG Screened Index Equity Sub-Fund								01 Feb 2011
Total Returns	3.62%	7.45%	22.58%	22.58%	20.12%	13.65%	14.06%	12.02%
FTSE CUSTOM WORLD EX UK EX CONT EX CW 50% HEDGED TO GBP NET TAX	2.86%	7.32%	22.54%	22.54%	20.25%	13.83%	14.12%	12.11%
Difference	**0.76%**	**0.13%**	**0.04%**	**0.04%**	**-0.13%**	**-0.18%**	**-0.06%**	**-0.09%**
Total Returns (Net)	3.61%	7.45%	22.51%	22.51%	N/A	N/A	N/A	N/A
FTSE CUSTOM WORLD EX UK EX CONT EX CW 50% HEDGED TO GBP NET TAX	2.86%	7.32%	22.54%	22.54%	N/A	N/A	N/A	N/A
Difference	**0.75%**	**0.13%**	**-0.03%**	**-0.03%**	**N/A**	**N/A**	**N/A**	**N/A**

	1 Month	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	Inception
Passive Fixed Income Portfolio								01 May 2015
Total Returns	-5.61%	4.85%	4.02%	4.02%	7.15%	4.66%	N/A	6.42%
Total Returns (Net)	-5.61%	4.85%	4.01%	4.01%	N/A	N/A	N/A	N/A
MPF UK Index Linked Gilts All Stocks Index Sub-Fund								01 May 2015
Total Returns	-5.61%	4.85%	4.02%	4.02%	7.15%	4.66%	N/A	6.42%
FTSE Actuaries UK Gilts British Government Index Linked All Stocks	-5.53%	4.94%	4.16%	4.16%	7.16%	4.66%	N/A	6.41%
Difference	**-0.08%**	**-0.09%**	**-0.14%**	**-0.14%**	**-0.01%**	**0.00%**	**N/A**	**0.01%**
Total Returns (Net)	-5.61%	4.85%	4.01%	4.01%	N/A	N/A	N/A	N/A
FTSE Actuaries UK Gilts British Government Index Linked All Stocks	-5.53%	4.94%	4.16%	4.16%	N/A	N/A	N/A	N/A
Difference	**-0.08%**	**-0.09%**	**-0.15%**	**-0.15%**	**N/A**	**N/A**	**N/A**	**N/A**

For information regarding performance data, including net performance data, please refer to the section entitled "Important Information" at the end of the report.

Risk Statistics (expressed in GBP)

As of 31 Dec 2021

Passive Equity Portfolio

Benchmark: FTSE All Share & World ex UK Custom Index

	Mandate
Standard Deviation (Annualized 36 Months)	15.19
Beta (Trailing 36 Months)	1.04
Tracking Error (Trailing 36 Months)	1.46
Information Ratio (Trailing 36 Months)	0.08
Sharpe Ratio (Trailing 36 Months)	0.92

Portfolio characteristics beta and standard deviation are calculated using SSGA month end return values. Characteristics are as of the date indicated, are subject to change, and should not be relied upon as current thereafter.

R-Factor™ Summary

As of 31 Dec 2021

UK ESG Screened Index Equity Sub-Fund

Benchmark: FTSE ALL SHARE EX CONTROVERSIES EX CW INDEX

R-Factor Summary	Fund	Benchmark	Difference
R-Factor	70.49	70.50	-0.01
ESG	70.59	70.60	-0.01
Corporate Governance	50.81	50.81	0.00

Source: SSGA. Holdings as of 31 Dec 2021, R-Factor data as of 30 Nov 2021.

What is R-Factor?

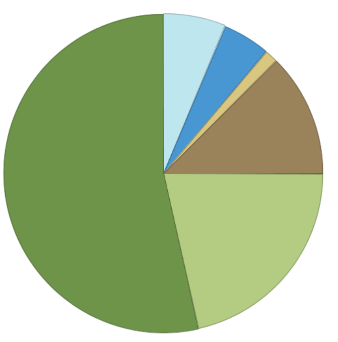
R-Factor™ is built off a transparent scoring methodology that leverages the Sustainability Accounting Standards Board (SASB) Materiality Map, corporate governance codes, and inputs from four best-inclass ESG data providers. R-Factor supports the development of sustainable capital markets by giving investors the ability to invest in solutions that integrate financially material ESG data while incentivizing companies to improve their ESG practices and disclosure in areas that matter.

Fund Coverage	Count	Percent of Total Securities	Percent of Total Market Value
R-Factor Securities Coverage	394	67.93%	93.39%
Total Number of Securities in Portfolio	580		

Source: Factset/SSGA. Holdings as of 31 Dec 2021, R-Factor data as of 30 Nov 2021.

Fund R-Factor Profile	
Not Available	6.61%
Laggard	5.03%
Underperformer	1.41%
Average Performer	13.10%
Outperformer	22.34%
Leader	55.86%

Source: Factset/SSGA. Holdings as of 31 Dec 2021, R-Factor data as of 30 Nov 2021.



Top 10 Positions	Fund Weight	Benchmark Weight	Difference	R-Factor Rating
AstraZeneca PLC	5.80%	5.81%	0.00%	78.68
Unilever PLC	4.36%	4.36%	0.00%	87.69
Diageo plc	4.00%	4.01%	0.00%	89.12
GlaxoSmithKline plc	3.44%	3.43%	0.01%	88.29
Royal Dutch Shell Plc Class...	2.88%	2.88%	0.01%	72.88
BP p.l.c.	2.78%	2.78%	0.00%	67.03
British American Tobacco p....	2.70%	2.70%	0.01%	76.98
Royal Dutch Shell Plc Class...	2.54%	2.54%	0.00%	72.88
Rio Tinto plc	2.30%	2.30%	0.00%	74.27
RELX PLC	1.94%	1.93%	0.00%	79.91

Source: Factset/SSGA. Holdings as of 31 Dec 2021, R-Factor data as of 30 Nov 2021.

Top 5 R-Factor Ratings				
Diageo plc	4.00%	4.01%	0.00%	89.12
GlaxoSmithKline plc	3.44%	3.43%	0.01%	88.29
Unilever PLC	4.36%	4.36%	0.00%	87.69
Mondi plc	0.38%	0.38%	0.00%	87.05
Legal & General Group Plc	0.77%	0.76%	0.00%	86.76

Source: Factset/SSGA. Holdings as of 31 Dec 2021, R-Factor data as of 30 Nov 2021.

Bottom 5 R-Factor Ratings				
LXI REIT PLC	0.04%	0.04%	0.00%	22.20
Harworth Group PLC	0.01%	0.02%	0.00%	22.72
Aberforth Smaller Companie...	0.06%	0.06%	0.00%	22.98
Palace Capital plc	0.01%	0.01%	0.00%	23.77
Civitas Social Housing Plc	0.03%	0.03%	0.00%	23.79

Source: Factset/SSGA. Holdings as of 31 Dec 2021, R-Factor data as of 30 Nov 2021.

The R-Factor summary reflects certain ESG characteristics only, and does not reflect the portfolio's performance. Certain instruments such as cash & derivatives are excluded. ESG analytics data reported on a one month lag relative to monthly performance reporting period. Please see Important Information section for more information and definitions of the ESG Metrics presented.

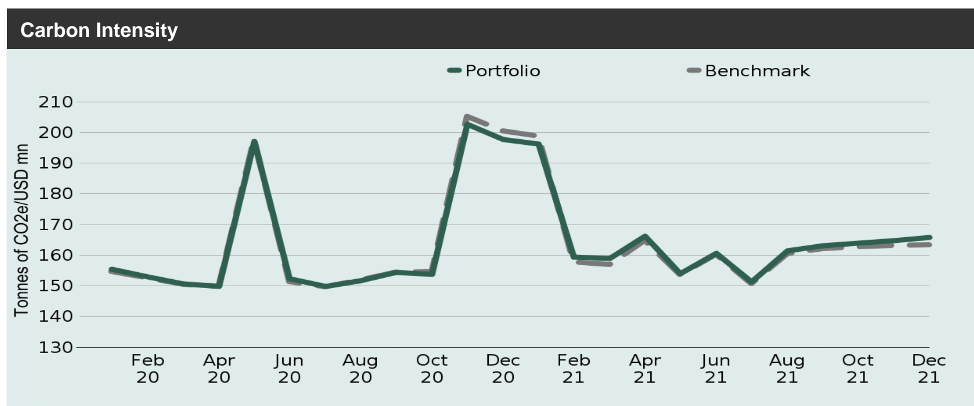
Climate Profile

As of 31 Dec 2021

UK ESG Screened Index Equity Sub-Fund

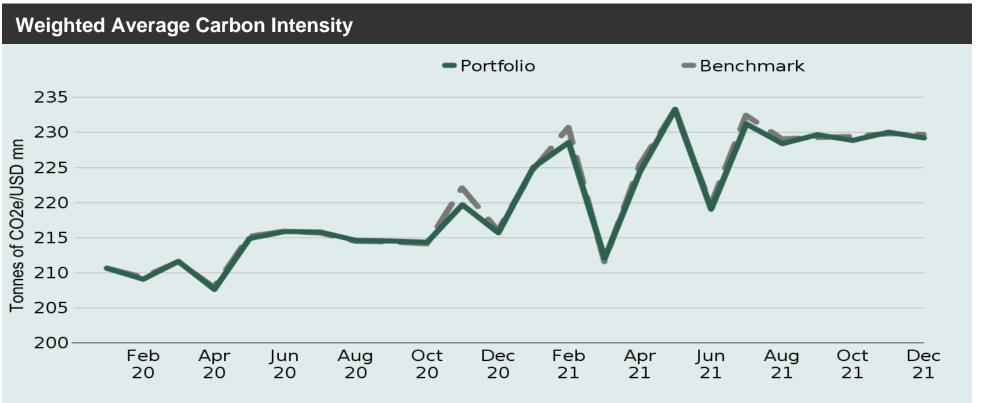
Benchmark: FTSE ALL SHARE EX CONTROVERSIES EX CW INDEX

Carbon Intensity



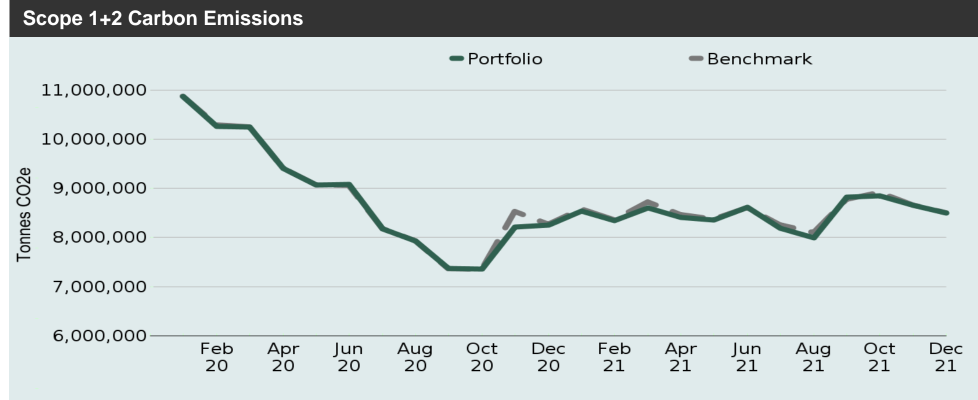
Source: SSGA Holdings as of 31 Dec 2021. Trucost data as of 30 Nov 2021.

Weighted Average Carbon Intensity



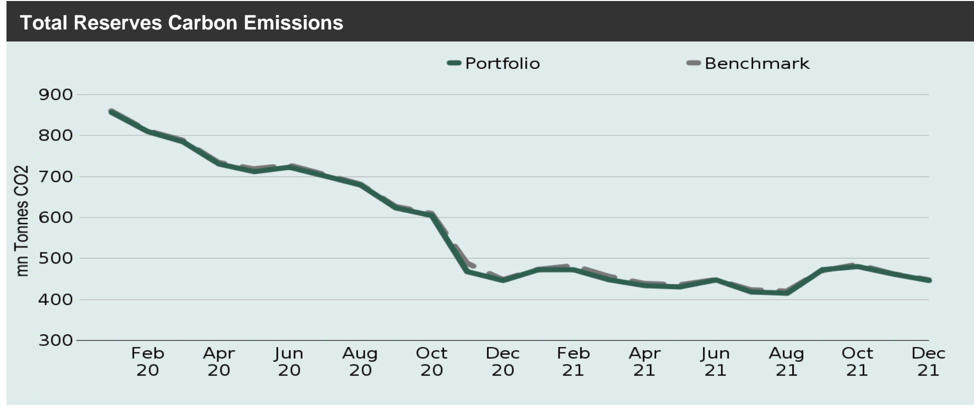
Source: SSGA Holdings as of 31 Dec 2021. Trucost data as of 30 Nov 2021.

Scope 1+2 Carbon Emissions



Source: SSGA Holdings as of 31 Dec 2021. Trucost data as of 30 Nov 2021.

Total Reserves Carbon Emissions



Source: SSGA Holdings as of 31 Dec 2021. Trucost data as of 30 Nov 2021.

Stewardship Profile

As of 31 Dec 2021

UK ESG Screened Index Equity Sub-Fund

Benchmark: FTSE ALL SHARE EX CONTROVERSIES EX CW INDEX

Stewardship Profile	Q3 2021
Number of Meetings Voted	726
Number of Countries	15
Management Proposals	10,882
Votes for	91.82%
Votes Against	8.18%
Shareholder Proposals	31
With Management	93.55%
Against Management	6.45%

Source: SSGA as of 30 Sep 2021

Figures are based on State Street Global Advisors' general approach to voting at the companies held by the Fund at quarter end. This information is not a substitute for a proxy voting report, which can be requested through your relationship manager.

State Street Global Advisors' (SSGA) asset stewardship program is aimed at engaging with our portfolio companies on issues that impact long-term value creation across environmental, social and governance (ESG) considerations. In the recent past, SSGA has issued extensive guidance on key governance matters such as effective, independent board leadership. SSGA's current focus is on helping boards think about the possible impacts of environmental and social issues and incorporating a sustainability lens into boards' oversight of long-term strategy as a sound business practice.

Gender Diversity

Women on Board	Number of Securities
0	12
1	64
2	200
3	169
4	82
5	33
6	13
7	1
8	1
9	0
10	0
10+	0
Not Available	5
Total	**580**

Source: Factset/SSGA. Holdings as of 31 Dec 2021, Factset data as of 30 Nov 2021.

Characteristics and Risk Statistics (expressed in GBP)

As of 31 Dec 2021

UK ESG Screened Index Equity Sub-Fund

Benchmark: FTSE ALL SHARE EX CONTROVERSIES EX CW INDEX

Characteristics	Fund	Benchmark
Annual Dividend Yield (Trailing 12 Months)	3.11	3.10
Estimated 3-5 Year EPS Growth	16.36	16.35
Total Number of Holdings	580	591
Price/Book Ratio	1.83	1.83
Price/Earnings Ratio (Forward 12 Months)	13.30	13.32
Return on Equity (5 Year Average)	17.53	17.53
Weighted Average Market Cap (M)	37,695.87	37,667.56
Median Market Cap (M)	947.15	915.89
Price/Earnings Ratio (Trailing 12 Months)	33.18	33.07
Price/Cash Flow (Weighted Harmonic Average)	9.40	9.42
Return on Equity (Trailing 12 Months)	20.31	20.29
Price/Sales (Weighted Average)	4.61	4.64

Portfolio characteristics are calculated using the month end market value of holdings. Averages reflect the market weight of securities in the portfolio. Market data, prices, and dividend estimates for characteristics calculations provided by FactSet Research Systems, Inc. All other portfolio data provided by SSGA. Characteristics are as of the date indicated, are subject to change, and should not be relied upon as current thereafter.

Risk Statistics	Fund
Standard Deviation (Annualized 36 Months)	15.37
Beta (Trailing 36 Months)	1.00
Tracking Error (Trailing 36 Months)	0.06
Information Ratio (Trailing 36 Months)	1.41
Sharpe Ratio (Trailing 36 Months)	0.51

Portfolio characteristics beta and standard deviation are calculated using SSGA month end return values. Characteristics are as of the date indicated, are subject to change, and should not be relied upon as current thereafter.

Summary of Views

	Short/Medium Term Outlook	Strategic Outlook	Comment
GBP	▲	▬	High inflation and the expectation that omicron will subside quickly led the BOE to begin its rate hiking cycle in December and we expect additional measured 2022 BOE rate hikes. That policy tightening plus the still very cheap level of GBP should keep the currency well supported though a more substantial rally will likely require omicron to fade and inflation to roll over.
JPY	▲	▲	The Yen is substantially below fair value and its yields are competitive vs. other low yield current account surplus countries. But, JPY tends to underperform in a global recovery; is losing its yield advantage vs. pro-cyclical currencies; and is hurt by rising oil prices. Despite these important headwinds we still value long JPY as a hedge to short term equity market volatility with long term upside potential.
NOK	▲	▲	Optimism that omicron will fade quickly as it did in South Africa and our strong oil price outlook should keep Norges bank on its gradual policy tightening path and support further gains in NOK, which remains well below our estimates of long term fair value. However, NOK is highly sensitive to equity market volatility which we expect to be higher this year due to with omicron plus global monetary and fiscal tightening.
SEK	▲	▲	SEK remains among the cheapest G10 currencies but is likely to remain so near term in the face of covid uncertainty across the EU and zero rate policy into 2024. That said the recent sell-off in SEK looks excessive given a solid medium to long term growth outlook. We see room for a recovery, though it may be best to express that vs. other low yielders such as EUR and CHF.
CAD	▲	▬	The Canadian economy is on track to reach full employment by mid-2022, Canada should prove resilient to Covid surges given high vaccination rates, monetary tightening in 2022 is likely, and we have a positive oil price outlook for 2022. For these reasons we see room for further CAD appreciation despite it having been the top performer in G10 during 2021.
NZD	▬	▼	Fast recovering labor markets, steady growth, and rising inflation support tighter monetary policy and NZD gains. But, for now we are cautious as omicron increases risks of future lockdowns, delays reopening to international travel, and dents the Chinese growth outlook. Over the medium term we see the pandemic headwinds gradually waning and NZD resuming an upward trajectory.
AUD	▼	▬	AUD is supported by resilient commodity prices and an impressive positive domestic growth impulse after lockdowns were lifted in October. However, the AUD outlook remains weak due to the massive omicron surge, risks to the Chinese growth outlook, and a very high risk that the central bank remains on hold for the year- compared to market pricing three rate hikes in 2022.
USD	▼	▼	The spike in inflation, strong employment data, and resulting hawkish shift by the FED provide a strong near term environment for USD. Omicron fears only bolster the positive USD case. The problem: USD is almost as expensive as it was at the peak of the covid market crisis in March 2020 and US growth is leading now but will also likely lead reverting to long run averages next year. We see the USD rally running out of steam.
CHF	▼	▼	We are negative CHF due to ultra-low yields, low inflation, SNB intervention to limit further CHF gains, and extreme overvaluation vs long run fair value. Recent volatility in risky asset markets, surging EU covid cases, and the SNB's apparent tolerance for some further appreciation in the face of rapidly rising import costs has created short term upside risk, but we look through that and remain max short the Franc.
EUR	▼	▼	We remain negative EUR due to negative interest rates, elevated long term valuation, surging covid cases, and weak potential growth. We see scope for an out of consensus cyclical bounce in EUR later in 2022, especially vs. USD, but prefer to gain exposure to an EU recovery via higher beta and/or higher yielding currencies with regional EU ties such as the CE3, NOK, and SEK.

Source: SSGA

DSH Performance and Positioning

The British Pound (GBP) based DSH strategy applied to the MSCI World xUK index gained 0.11% in Q4 relative to a benchmark 50% passive hedge. As the surge in Covid cases in Q3 subsided the global growth outlook improved in October and yields rose on tighter expected monetary policy sending GBP higher. That optimism turned to pessimism in November as central banks pushed back on investors aggressive expectations for policy tightening and the new omicron covid-19 variant greatly increased uncertainty, GBP fell back on the month. December brought a Bank of England rate hike and some relief from the omicron scare as the UK avoided widespread lockdowns and the quick reversal of new cases in South Africa suggested that the omicron shock would be short-lived. As a result GBP appreciated materially during December.

The Pound’s returns vs. the US Dollar (USD) are particularly important for the GBP based DSH strategy as we currently recommend maximum hedges of 100% for the expensive USD and the USD tends to be the largest exposure in most global equity portfolios. For Q4 the USD hedge contributed +0.11% of excess return relative to the 50% passive benchmark hedge. Active returns to the maximum 100% hedge on the euro contributed another +0.12% but that was almost entirely offset by a -0.08% loss on the under hedge in the Japanese yen and 0.03% loss in the Swiss franc over hedge. The average total portfolio hedge ratio for a typical MSCI World xUK investor finished the quarter at 92.26% vs. a 50% neutral benchmark hedge ratio.

The strategic views described below (and in the summary table above) are based on our value model which is the core driver of the DSH model. The shorter term (tactical) views are not part of the DSH strategy but provide some insight into the short term expected performance and opportunities which we expect to explain nearby performance for strategic DSH investors, based on our full suite of models. DSH is a long run value-based strategy and GBP remains at historically cheap levels by our estimates. GBP is now 13.79% below fair value against USD suggesting substantial upside for the Pound over coming years. That provides a wonderful strategic opportunity for patient GBP based DSH investors to better control foreign currency downside risks and add value over a simple passive currency hedge.

Macro Environment

The big macro story in October was the repricing of expected central bank policy resulting in a sharp rise in short end yields across the G10. Commodity sensitive currencies such as AUD, CAD, and NZD led the move higher in response to continued upside inflation surprises expected inflation and a near 2.5% gain in the Bloomberg commodity index. Australian two-year yields rose 0.73% on the month while New Zealand's moved 0.84% and Canada jumped 0.56%. In a complete reversal from September's market behavior these higher rates were accompanied by stronger investor risk sentiment and a recovery in equity markets from their September/early October lows.

Overly optimistic monetary policy expectations and strong commodity prices in October gave way in November as central banks pushed back on those market expectations and the combination of the covid surge in the EU, driven by the delta variant, and US release of oil from the strategic petroleum reserve pushed energy prices lower. Between October month end and November 25th, the Norwegian Krone fell nearly 6% vs. USD and the Australian and New Zealand dollars fell more than 4% vs. USD. The euro and Swedish Krona benefit from weaker energy prices but suffered from the EU covid surge and chronically low interest rates, relative to the G10 average EUR lost more than 3% and SEK lost more than 5% vs. USD by the 25th. Risk sensitive currencies fell alongside equity markets and commodities moved sharply lower during the final week of the month following news of the new omicron covid-19 variant sweeping through South Africa while the traditionally defensive USD, JPY, and CHF rallied.

Currencies, rates, equity markets traded sideways during the first few weeks of the December as investors waited for more definitive information regarding the impact of omicron and digested the recent hawkish shift in the US Fed policy outlook. After December 20th omicron optimism overcame high inflation and a continued transition toward tighter monetary policy to push equity markets, oil prices, and cyclically sensitive currencies higher and the more defensive US Dollar and Japanese Yen lower.

During December cases of the omicron Covid-19 variant skyrocketed across the US, UK, and EU late in the month matching or exceeding worst case expectations. In contrast, the expected impact of record case levels was at the better end of expectations leading to some relief and omicron optimism late in the month. Cases in South Africa, the first country hit by omicron, exploded higher but peaked in early December after only a few weeks then fell almost as rapidly as they rose while hospitalization and fatality data indicated that omicron is far less virulent than the delta variant. We are also seeing less severe illness and far fewer hospitalizations from early data in the UK, US, and

EU. If the rest of the world follows the same pattern as South Africa, then lockdown measures are likely to be limited and case rates should fall back sharply by late January-February. In that scenario the negative economic shock will dissipate quickly and do little damage to the 2022 as a whole and the outlook for risky assets will remain well supported.

Inflation continues to print at levels not seen in decades. In response the FED, ECB, and Bank of England announced tightening measures in December though policy settings remain extremely accommodative in absolute terms. Yield curves generally rose across developed markets during the final week of the month. As we've pointed out in a number on monthly notes, higher rates in isolation are equity negative for risky assets. But higher rates alongside sufficiently improving growth expectations are positive. In December the improved omicron outlook was enough to offset the monetary tightening and rise in yields resulting in a broad risk rally.

The balance between growth, inflation, and the monetary response to each will continue to be an outsized source of volatility as we head into Q1, and likely throughout the year. Central banks have an incredibly difficult task of combatting generational highs in inflation without overreacting to temporary pandemic related inflationary pressures and collapsing growth and asset prices. Our base case remains above average '22 growth after a rocky start to the year with both growth and inflation rolling over toward longer run averages later in 2022. This will allow central banks to moderate the pace of tightening and engineer a soft landing.

That said there are substantial and rising risks to this outlook. Omicron may prove more disruptive than anticipated particularly in zero-covid policy countries such as China. Widespread lockdowns in China and partial lockdowns elsewhere may prolong inflationary pressures. The chronic inability of OPEC to meet increased production quotas, weak non-OPEC supply growth, and geopolitical risks could push oil and natural gas prices sharply higher. Thus far wages have lagged inflation in most major economies resulting in lower real wages which represent eroding consumer purchasing power. But it is entirely possible that wages accelerate higher over the next few months and contribute to a wage price spiral. More persistent inflation and lower growth may force central banks to tighten more than they'd like and precipitate a harder landing. Anticipation of these growth, inflation, and policy risks should at very least contribute to greater financial market volatility in 2022.

Faced with this heightened near term uncertainty we are more cautious but still look for opportunities to position for our base case of above average growth for 2022, resilient commodity prices, and increased differentiation in monetary policy. That translates into a bias toward

buying undervalued commodity sensitive currencies with central banks are expected to raise rates in 2022 on dips, the Canadian Dollar, Norwegian Krone, New Zealand Dollar.

US Dollar (USD)

USD gained 0.7% vs. the G10 average in Q4 thanks to strong gains in November following the news of the omicron variant. The quarter began with USD weakness in October despite a 22 basis point increase in US two year yields as strong global risk sentiment improved and USD lost some of the safe haven bid it enjoyed in September. November brought some dollar strength after the RBA, BOE, and other central banks pushed back on overly optimistic rate hike expectations. The gains sharply accelerated after the omicron news late in the month cause a rapid fall in commodity and equity markets. After the November gains, the US Dollar lost 1.2% against the G10 average in December. USD spent most of December trading sideways in a tight range. After the 20th USD trended steadily lower as investors became more optimistic that omicron would be a temporary disruption and both equity and commodity markets surged.

Economic data released in December showed a strong foundation to help the US weather any disruption from the omicron surge. Headline non-farm employment data was soft, +210k jobs compared to +550k expected, but the household employment survey was significantly stronger sending the unemployment rate down to 4.2% vs. 4.5% expected. CPI inflation rose to 6.8% YoY, the highest level since 1982. One negative was a disappointing November retail sales though rising consumer sentiment and the healthy employment data suggest that the consumer is likely to bounce back. The generally positive economic backdrop had little impact on the elevated USD as it had already priced strong growth and omicron risks.

The FED did not disappoint expectations after its hawkish pivot in November. At its December 15th meeting the FED doubled the pace of QE tapering to $30bn per month, removed the word “transitory” in the description of inflation, and increased the projected rate path to three hikes in 2022 from just one in its September forecast. Like the strong economic data this hawkish FED move was mostly anticipated by the market and had little impact on USD which had already rallied after FED Chair Powell’s November comments.

We are negative USD for 2022 but concede that the backdrop remains supportive at least over the next 1-2 months. Continued high inflation should bias US yields higher as investors worry the FED may be forced to tighten faster and further than they’d like. Risk of rapid monetary

tightening plus the potential for further omicron uncertainty will most likely keep equity markets on the volatile side. Volatile equity markets and higher US yields make for a strong USD environment.

Beyond the next couple of months, the outlook is not nearly as positive. The market consensus is for a stronger USD in 2022 and much of that optimism is already priced into the USD which is near its cycle highs. In contrast we expect inflation to begin to roll over after Q1 and relative growth outside the US is likely to improve as omicron passes. Over the next couple of months investors may be biased to worry about a rate hike as soon as March, the start of quantitative tightening, and perhaps a higher terminal rate. But if inflation and growth begin to normalize toward lower long term trends investor worry may quickly shift to focus on risk of a more dovish FED while improving growth outside the US and cheaper valuation in many markets outside the US are likely to entice capital to flow out of USD assets.

The main risk to this view is that inflation remains higher for longer due to some combination of rapid H1 2022 wage increases and longer than expected supply chain disruptions from omicron, and a spike in oil prices. In that case the FED may indeed move faster than expected and the market may begin to price in a higher terminal rate, currently the market is pricing a terminal FED funds rate slightly above 1.5% where the FED expectations suggest 2.5%. If the market begins to expect more restrictive policy, it could move its terminal rate expectation above 2% and drive equities lower. USD would benefit from both higher yields and the flight to quality bid alongside falling equities, much like what we saw in late November. A flat to inverted yield curve would be a strong indication that the market expects the FED to tighten to overly restrictive levels.

We may be USD negative for 2022, but we expect an historically mild USD bear market. It is hard to deny the pillars of the US exceptionalism thesis. Many factors support a structurally stronger USD over the next several years. The US potential growth and monetary policy/ interest rate outlooks remain attractive relative to much of the world. US demographics are healthier than in most developed countries and the US remains well-positioned to lead in a global economy driven by innovation and the development of intellectual property while we may see some technology enabled re-shoring of manufacturing. We respect these positive long run factors and think that they likely result in the mildest USD bear market since currencies were floated in the early 1970’s. Whereas the USD typically moves 15-20% below fair value at the trough of a bear market we think USD only falls back to and maybe slightly through fair value in this cycle. However, that still implies a broad 12-15% fall in USD from current levels.

Euro (EUR)

EUR lost 1.39% against the G10 average in Q4 thanks to a significant underperformance of 1.8% in October. During October a more positive global growth outlook alongside rising commodity prices and strong increases in short end yields outside of the Eurozone favored EUR weakness. That's not to say eurozone fundamentals were weak, just that they were more attractive in the pro-cyclical higher yielding countries. Weakness continued into November until a sharp short covering rally following news of the omicron variant on November 26th helped push EUR to a 0.6% gain for the month. The euro traded in a range from -0.3% to +0.4% vs. the G10 average for most of the December but fell to the bottom end of that range to finish down 0.2%. EUR fluctuations within its December trading range were mostly driven by global risk sentiment. Daily euro returns were -53% correlated to the daily returns of the S&P 500 equity index. Most notably the sell off in EUR to the bottom of its range after Dec 20th coincided with the strong rally in equity markets and cyclically sensitive currencies.

Local European news had some impact as well. On the 16th we got both an ECB meeting and preliminary Eurozone PMI data for December. The ECB provide a slight positive surprise. Markets had expected a formal announcement of the end of the pandemic emergency purchase program (PEPP) in Q1 2022 offset by an increase in their regular asset purchase program (APP). The end of the PEPP was announced as expected but the APP program was only increased from 20 to 40bn per month which was below expectations. Compared to tightening by many banks across G10 and EM this was a very minor surprise, but it was marginally positive for EUR. December PMI data soften slightly but this was generally seen as positive given the downside risks from the wave of delta variant infections in November and rapid acceleration in omicron cases during December. EUR bounced between the 16th and the 20th following the ECB and PMI news, but even here some of the EUR strength was likely attributed to the sell off in equity markets during that period – a likely byproduct of the potential negative impacts of the FED's decision to double the pace of tapering and raise rates more aggressively in 2022.

Against the broader G10 we remain bearish EUR over both the tactical and strategic horizon. All three of our long-term signals, valuation, interest rate carry, and long-term growth, suggest a short EUR position. EUR is quite expensive compared to GBP, NOK, SEK, CAD, and JPY and only fairly valued vs. USD, AUD, and NZD. The EU is trapped in a negative interest rate regime and hindered by an anemic potential growth outlook which is a function of low productivity growth and poor demographics. That is not a good backdrop for currency strength. One bright spot over recent months was the ongoing recovery as the EU economies reopened, but the recent covid surge and resultant lockdowns will surely dim that recovery over the short term.

While our central case is negative EUR against the G10, we recognize the risk that EUR could defy bearish market expectations and surge vs. the US Dollar at some point later in 2022. Low interest rates relative to tightening FED expectations and increased political risk in Italy and France are a drag on EURUSD for now, but a rising USD on higher rate expectations creates room for the FED to ultimately disappoint given our view that US growth and inflation will begin to normalize lower in H2. We also expect to see to see a steadier rotation toward cheaper cyclical sectors of the equity market. This favors some rotation out of US equities into European equities once omicron fades. Such a rotation would help to push EUR higher vs. USD. We saw this during late 2020 and think it may well resume as we get closer to a sustained post-pandemic recovery. To put a number to it, we could see EURUSD up toward 1.20 or a touch higher at some point in 2022, though in such a case it is still likely to underperform cheaper, more cyclical high yielding currencies.

British Pound (GBP)

The pound gained 1.1% in Q4 entirely due to a 1.2% rally in December. October and November were surprisingly quiet in terms of economic data and GBP volatility, GBP gained 0.03% in October and lost 0.10% in November. The Pound trended higher to finish as the third best performing G10 currency in December, +1.2% vs. the G10 average. Strong labor markets and a near 30 year high in core inflation prompted the Bank of England to raise rates by 15 basis points at its December 16th meeting. The dramatic increase in covid cases during this omicron wave will almost certainly slow the economy, but the UK government has been resolute that they will not return to widespread lockdowns. Indications from South Africa that the peak in omicron may happen quickly suggesting that the economic impact will be temporary. And the higher-than-expected November retail sales, high PMI surveys, and the strong employment situation provide a good base for the UK to weather the impacts of the covid wave. That's not to say everything is perfect. We did see some weakness in October industrial production and October GDP data which were released on December 10th. Still the economic situation was strong enough to justify tighter monetary policy and support GBP.

We retain a long GBP position due to its cheap long run valuation and continued above average growth. Growth has decelerated since its reopening surge earlier this year, but consensus growth estimates remain near 7% for 2021 and 4.8% for 2022, both significantly above long run averages. The above average UK growth along with likely continuation of monetary tightening, and the Pound's significant discount to our estimates of long run fair value are sufficient to justify a long position even if omicron dents near term growth.

For strategic investors/hedgers we encourage long GBP positions and/or higher than average hedge ratios on most foreign currencies. The long-term GBP story is positive in our view. The currency is cheap to fair value there is plenty of upside in terms of growth, inflation, and monetary policy expectations once we more fully merge from the pandemic. In addition, we see the potential for capital flows into the lagging UK equity market may further help to accelerate GBP gains. With a long horizon it is better to ensure that you are in the market with a positive GBP position once the recovery takes hold and GBP reverts to fair value. The pound's gains Q1 2021 were a good example of the need for long term, strategic investors to look through short term uncertainty.

Japanese Yen (JPY)

The Yen fell 2.5% vs. the G10 during Q4 in volatile trade. JPY continues to be driven by external factors such as global yields, growth expectations, and risk sentiment. It fell 3.8% in October alongside improved equity market performance, rising global yields, and rising oil prices. Japanese economic and monetary policy expectations did not keep pace with the improved outlook and rising yields outside Japan. That reversed in November with a 3.78% gain largely in response to the negative market shock of the omicron news. The build up in short JPY positions over the prior several months likely amplified the late November move by triggering stop losses and/or profit taking on Yen shorts. December brought another reversal with the Yen losing 2.6% against the G10 average, the worst performance in the group. Reduced fears of lasting negative impacts from omicron and tighter than expected policy moves by the FED, Bank of England, and ECB contributed to a strong risk rally and higher global yields after December 20th, low holiday liquidity likely helped amplify this move as well.

Aside from JPY being very cheap to long run fair value, generally well supported equity markets and tighter relative monetary policy outside Japan should keep the Yen on the weak side to start 2022. We favor long JPY only due to its diversification properties during adverse shocks. That potential diversification is likely to be more beneficial over coming quarters than it was in 2021 as we expect greater volatility in risky assets during this period of ongoing covid fears and tighter fiscal and monetary policy. However, we may have to wait until we see a peak in FED policy tightening expectations before JPY can sustain a rally. In past cycles that has often happened after the first or second FED rate hike. One interesting thing to watch for, albeit very low probability, would be some rhetorical pushback against JPY weakness from the policy makers. Japan has been trying to generate inflation for decades, but inflation via high import costs is not helpful. Acknowledgement of that fact by government officials may help limit the weaker JPY trend.

Over the longer-term horizon, we have more positive Yen view. The Yen is quite cheap to long run fair value relative to most G10 currencies except for NOK, SEK, and GBP. This suggests that long run forces are tilted toward a stronger JPY. Projecting ahead into late 2022 and 2023 the business cycle is more likely to support gains in JPY. We may be in the early to middle stages of global recovery, but by late-2022 investors will turn their attention to the reversion of global growth back to sub-par long run averages. In fact, depending on the drag from high global debt levels, the potential misallocation of capital due to ultra-easy policy, and the degree to which government's efficiently allocate fiscal spending, global long run potential growth may even be lower than the already weak level prior to the pandemic. That late 2022- early 2023 period of a mature and decelerating expansion is more consistent with outright Yen appreciation given its cheap valuation.

Canadian Dollar (CAD)

The Canadian Dollar gained 0.98% vs. the G10 average in Q4 to finish the 2021 as the top performer in the group with a 5.5% gain for the year. Recovering economic growth after an unexpected mid-year slowdown, strong oil prices, the central bank tightening policy by ending its QE program, and the generally positive global risk environment all helped to support CAD in October. CAD was nearly unchanged vs. the G10 average, +0.01% in November. Seems unexciting, but it is very impressive given the near 20% drop in WTI crude prices during the month and the omicron news shock toward the end of the month. Canada is on stable footing thanks to high vaccination rates, a near complete recovery in employment to pre-pandemic levels, and improving growth since the late summer wave of Covid new cases. The currency began to appreciate again in December as oil rebounded from its November low and employment data impressed. Canada generated 153.7k net new jobs compared to 37.5k expected and the unemployment rate fell to 6.0% vs. 6.6% expected. The positive data impulse supporting CAD at the start of December turned negative after the Bank of Canada (BoC) pushed back on market expectations of a Q1 rate hike at its meeting on the 8th. Instead, the BoC indicated a first hike in the middle quarters of 2022. CAD trended lower for more than a week after the announcement before finding a base and popping back into positive territory on December 31st.

From a risk adjusted standpoint long CAD remains a stable and conservative way to position for the continued medium term global recovery from Covid. Omicron is sure to slow growth over the near term but strong employment, manufacturing PMI, and retail sales heading into this latest wave of the pandemic provides a good foundation to withstand that stress. The BoC is very likely to follow through with its projected policy tightening in 2022 which we expect to support CAD along with our projection of higher oil prices. Other cyclically sensitive currencies such as AUD and NOK do not appear as attractive on a risk adjusted basis. Australia is likely to be weighed down by ongoing weakness in

Chinese growth and significant risk that the RBA disappoints markets by keeping the policy rate at 0.1% for the year. Arguably NOK looks more attractive than CAD as the Norges Bank raises rates and oil rises, but it is riskier given its sensitivity to equity market weakness and USD strength as we saw with its near 4% sell off in November.

Longer term, the story is mixed. CAD is slightly expensive vs. the G10 average. However, that average valuation measure masks major differences across currencies. CAD is cheap vs. USD, AUD, and EUR and extremely cheap vs CHF while it is expensive vs JPY, GBP, NOK, and SEK. Therefore, we recommend that Canadian based currency hedgers adopt above-average hedge ratios on USD, AUD, CHF, and EUR and lower than average hedge ratios on JPY, GBP, NOK, and SEK.

Swiss Franc (CHF)

The Franc gained 2.82% vs. the G10 average in Q4, the top performing currency for the quarter. November was the best month of the quarter after the omicron news sent CHF 1.4% higher against the G10 average on November 26th. The positive CHF performance in October and December was much less dramatic than November at +0.39% and +.028% respectively, but those months stand out as CHF managed to rise while the other typically defensive currencies, USD and JPY, fell. It’s even more interesting because aside from positive equity sentiment which tends to be CHF negative, CHF also shrugged off higher global yields. The expected monetary policy divergence with many other central banks tightening policy while the SNB maintains negative rate policy is usually negative for the Franc.

To understand CHF strength during the risk positive months of October and December we must look beyond interest rate policy to the other key component of monetary policy, SNB intervention in the currency market to limit CHF strength. There was little sign of the usual currency intervention in response to the October run up in CHF which invited further gains. High import costs, particularly energy import prices, are politically unpopular and risk an unhealthy spike in local consumer inflation. That creates a plausible incentive for the SNB to sit back and allow greater appreciation as a stronger CHF offsets rising import prices.

We remain negative CHF over both tactical and strategic horizons. That said we see ongoing risk to the tactical view. We may need to see global inflation ease and omicron begin to decline in the EU before CHF begins to weaken toward fair value. Political risks in France and Italy over the next several months also have the potential to delay CHF weakness.

Our strategic negative view is driven almost entirely by the Franc's extreme overvaluation and ultra-low yields. By our estimates, CHF is more than 20% expensive to its long run fair value vs an MSCI World currency basket. In addition to expensive valuation, low inflation, ongoing CHF selling by the SNB, and ultra-low interest rates point to Franc depreciation. As domestic and EU growth recover from the pandemic capital outflows are likely to accelerate as Swiss investors look for higher return opportunities, much like they did during the 2017 EU growth spurt. Such flows are a likely catalyst for sustained Franc weakness, though the EU recovery process has clearly been delayed by ongoing waves of new covid cases and omicron.

Norwegian Krone (NOK)

The Krone lost 0.24% relative to the G10 average in Q4 in volatile trading. The Krone gained 1.6% vs. the G10 average in October thanks to strong oil prices and a market preference for currencies backed by aggressive central banks. The Norges Bank was the first G10 central bank to raise policy rates with its hike in September while also projecting another hike in December followed by three 0.25% hikes in 2022 and two more in 2023-2024. Economic data was also broadly supportive. The one negative for NOK came on the final trading day of the month. Norges bank announced planned purchases of 700mn NOK per day in November down from 1.7bn in October triggering a near 1% drop in NOK. The reduced level of purchases is consistent with reduced fiscal support as the economy recovers from the pandemic and shouldn't have a massive, sustained impact on the currency.

November started on a negative note as markets anticipated a more dovish Norges bank meeting on the 4th. As expected, the policy committee decided to leave the rates unchanged, but commenting suggesting a December hike helped the limit the negative market reaction. Mid-month NOK continued to struggle alongside oil market weakness in response to risks of a US release of supply from its strategic petroleum reserve and worry that the accelerating surge in covid across the EU would dent demand. Another shock hit the currency on the 18th when the Norges bank announced it was suspending NOK purchases for the remainder of the month thanks to stronger than expected oil cashflows. They had previously announced planned purchases of 700mn NOK per day in November down from 1.7bn in October triggering a near 1% drop in NOK. Finally, the omicron news on the 26th sent the Krone down 1.46% on the day.

December brought some relief with NOK up 2.2% vs. the G10 average, a retracement of more than half its 3.8% loss in November. During the month NOK largely followed oil prices. The rapid rebound in oil prices during the first week of December saw NOK rally nearly 2% against

the G10 average. As prices stabilized and corrected lower from the 8th through the 10th, so did NOK. That pullback reversed and oil prices rose alongside equity markets after the 20th to finish the month near their highs. The Krone followed suit closing the month at its highs. Domestic data was also generally supportive. November manufacturing PMI jumped to 63.7 from 58.5 in October, much better than market expectations of 58.0. The regional network survey released on December 7th further highlighted a broad recovery, though noted that supply chain constraints and the worsening pandemic may slow growth over the next quarter. The Norges Bank raised the policy rate to 0.5% as expected on December 17th noting continued recovery in the economy but also noted the near-term headwinds from the recent omicron surge. Most importantly it maintained its projection for a gradual policy tightening cycle through 2022-2023.

We retain a positive view on NOK over both the tactical and strategic horizons justified by cheap valuations, strong growth supported by strong oil prices after we work through the current covid surge, and a continued gradual tightening of monetary policy. As we point out each month a long NOK position is not without interim volatility risk due to its lower liquidity and historically high sensitivity to equity markets. It broke that pattern of high equity sensitivity in September, but certainly reasserted itself with the dramatic sell-off in late November. The Krone’s higher volatility and high beta to global risk sentiment will continue to limit our enthusiasm. Over the strategic horizon, we can look through those short-term volatility risks and focus more on long run valuation. By our estimates NOK is now close to 28% cheap relative to the currency exposures in MSCI World xNOK. We recommend Norwegian based investors set strategic hedge ratios on foreign currency at a high level while most foreign investors leave NOK almost completely unhedged.

Swedish Krona (SEK)

The Krona was the worst performing G10 currency in Q4, down 2.79% vs. the G10 average. The quarter began with a very quiet 0.2% gain in October. SEK was caught between optimism as the EU growth outlook recovered from the summer covid wave but was held back by investor preference for higher yielding currencies. November brought some weakness in response to disappointing industrial orders and household consumption. A reacceleration of covid cases and new lockdown measures in Austria, Germany, and the Netherlands weighed on EU growth expectations and further damaged the SEK outlook. And the omicron shock at the end of the month brought an acceleration of the downtrend that continued into December. Even the improvement in the omicron outlook later in December did little to help SEK as rising global yields offset that better omicron outlook to keep SEK depressed. The Riksbank’s zero rate policy relative to steadily rising rates in the US, UK, Norway, Canada, and Australia has been a significant headwind for SEK through the year.

Growth was more been impressive after the disappointing data releases in October with November retail sales jumping to 0.9% vs. 0.4% the prior month and composite PMI ticking higher to 67.2 from 67 in October. But with unemployment at 7.5% compared to the pre-pandemic level of 6% there appears to be plenty of capacity for further growth without significant inflation pressure. That is evident in November core CPIF inflation which came it at only 1.9% despite strong global inflation and this year's SEK weakness. There is little pressure for monetary tightening in Sweden.

Near term fundamentals are mixed given the lack of a catalyst for monetary tightening and likely drag from broader EU growth due to the current surge in Covid cases. However, recent weakness appears excessive even given those near-term headwinds. After the November-December sell-off SEK our short-term value model suggests room for a modest rebound. Over the medium term we see more room for upside. We expect that the recent covid surge and likely omicron impact will prove to be a temporary setback in the global pandemic recovery. Sweden and its important trading partners in the EU have ample room to grow as covid fades which should help support the Krona, especially vs. low yielding, less cyclically sensitive currencies such as EUR, CHF, JPY, and even USD given our expectation for USD strength to reverse later in 2022.

Over the strategic horizon SEK is extremely cheap to our estimates of long run fair value, nearly 39% cheap relative to an MSCI World xSEK basket of currencies. On this long run basis, we see ample upside potential for strong SEK appreciation and recommend that SEK based investors adopt high hedge ratios on most foreign currencies. Conversely, we suggest foreign investors adopt low hedge ratios on SEK investments.

Australian Dollar (AUD)

The Australian Dollar gained 1.28% against the G10 average in Q4. Like other cyclical and commodity sensitive G10 currencies AUD experienced a volatile quarter. AUD led the G10 in October with a 2.3% gain vs. the average and an impressive 6.1% gain vs. the Yen. Investors sought pro-cyclical, commodity sensitive currencies with rising yields and AUD fit that profile perfectly. A strong surprise in trimmed mean core inflation for Q3, +2.1% QoQ vs. expectations of +1.8%, rightfully cast doubt the RBA's commitment to keep the 3yr yield around 0.1% and refrain from interest rate increases until 2024. Armed with the positive growth and inflation outlook investors tested the RBA's

resolve by pushing 2-3 year yields higher. As those yields rose and the RBA neglected to defend its April 2024 yield peg 2-year rates surged from 0.2% to 0.77% in the final two trading days of the month pushing AUD higher.

October's gains reversed with a 2.2% depreciation vs. the G10 average in November. The loss effectively happened on only three days. On November 2nd the RBA validated the surge in two-year rates during late October by formally dropping its yield curve targeting framework. But RBA Governor Lowe also specifically pushed back on investor expectations of a 2022 rate hike calling it a "complete over-reaction to the latest inflation data". This disappointed the market and sent AUD almost 0.8% lower against the G10 on the day. From there AUD traded sideways until a weaker than expected October employment report, -46.3k new jobs compared to expectations for +50k, precipitated another 0.50% drop in AUD. Finally, the omicron news on November 26th sparked a one-day depreciation of 0.88%. Altogether those three days account for the entire 2.2% fall in AUD for the month.

AUD began December lower as the late November omicron sell off persisted through the first few days of the month. From there the strong rebound in commodity and equity markets lifted cyclical currencies such as AUD over the next week. The Reserve Bank of Australia met on the 7th and maintained QE bond purchases at AUD4bn/week. They also left the policy rate unchanged at its record low of 0.10% and tied the rate outlook more explicitly to wage growth. Wages are picking up after the economy reopened in late Q3 but are still far from the sustained 3-4% growth rate that the RBA would like to see. The market was not surprised by the continued dovish tone on rates. However, RBA Governor Lowe's comments that the omicron variant was unlikely to derail the recovery was taken positively and helped sustain AUD gains. The currency appreciation persisted through mid-month as daily covid case rates remained low and November employment data surprised to the upside. Australia created 366k new jobs in November, 166k above expectations, the unemployment rate fell to 4.6% compared 5.05% at the end of 2019 before the pandemic. As risk sentiment improved through the final week of the month the AUD rally ran out of steam. AUD maintained its month to date gains but moved sideways after the 23rd despite the continued rise in commodity and equity markets. During that final week the seven-day average of new covid cases jumped six-fold which may have caused some hesitation on the part of investors to chase AUD higher given its history of strict lockdowns.

We see significant headwinds to further AUD appreciation. Australia is still enjoying a strong economic recovery from the Q3 covid lockdowns and investors are accordingly pricing in three RBA rate hikes despite the cautious tone from the RBA. That rosy growth and monetary policy outlook appears to be at serious risk. At this point the government appears committed to avoiding further lockdowns, but

unlike the US, UK, and EU Australia has yet to experience dramatic levels of Covid. At the current trajectory we could see omicron cases 40-50x higher than anything Australia experienced in the past. At worst there is a risk that the government blinks and reinstates lockdowns. At best the disruptions from such high levels of cases and the strain on the healthcare system will slow the recovery. The RBA forecast of no rate hikes in 2022 or early 2023 is now more likely to prove true and will disappoint investor expectations of three hikes. AUD is also more sensitive to Chinese growth than other G10 commodity linked currencies. China's zero tolerance covid policy in the face of omicron may lead to widespread lockdowns and greatly complicate their attempts to revive growth via targeted monetary and fiscal stimulus. This also introduces greater downside risk for the AUD.

Our strategic view is mixed. By our estimates, AUD is now 6.6% cheap to fair value relative to an MSCI World xAU basket of currencies, about half of March 2020's 16.9% undervaluation. However, this average measure of valuation differs quite a lot across individual currencies. We recommend that long term Australian investors maintain higher than average hedge ratios on foreign investments against the USD and fully hedge CHF positions. We estimate an AUDUSD long term fair value of 0.8074, 11.05% above current levels; reversion to fair value would result in a substantial drag on unhedged US assets for Australian investors. More broadly we recommend Australian investors leave positions in the cheaper GBP, CAD, JPY, and the Scandinavian currencies mostly unhedged; AUD is rather expensive relative to these currencies.

New Zealand Dollar (NZD)

The New Zealand dollar was nearly flat for Q4 vs. the G10 average following a similar path as AUD until December. Like AUD, CAD, and NOK, NZD fit the profile of the preferred currency in October: procyclical and commodity sensitive with rising yields. The Reserve Bank of New Zealand (RBNZ) became the second G10 central bank to tighten policy with a 0.25% rate increase on October 5th while pointing to further hikes by noting that "further removal of monetary policy stimulus is expected over time".

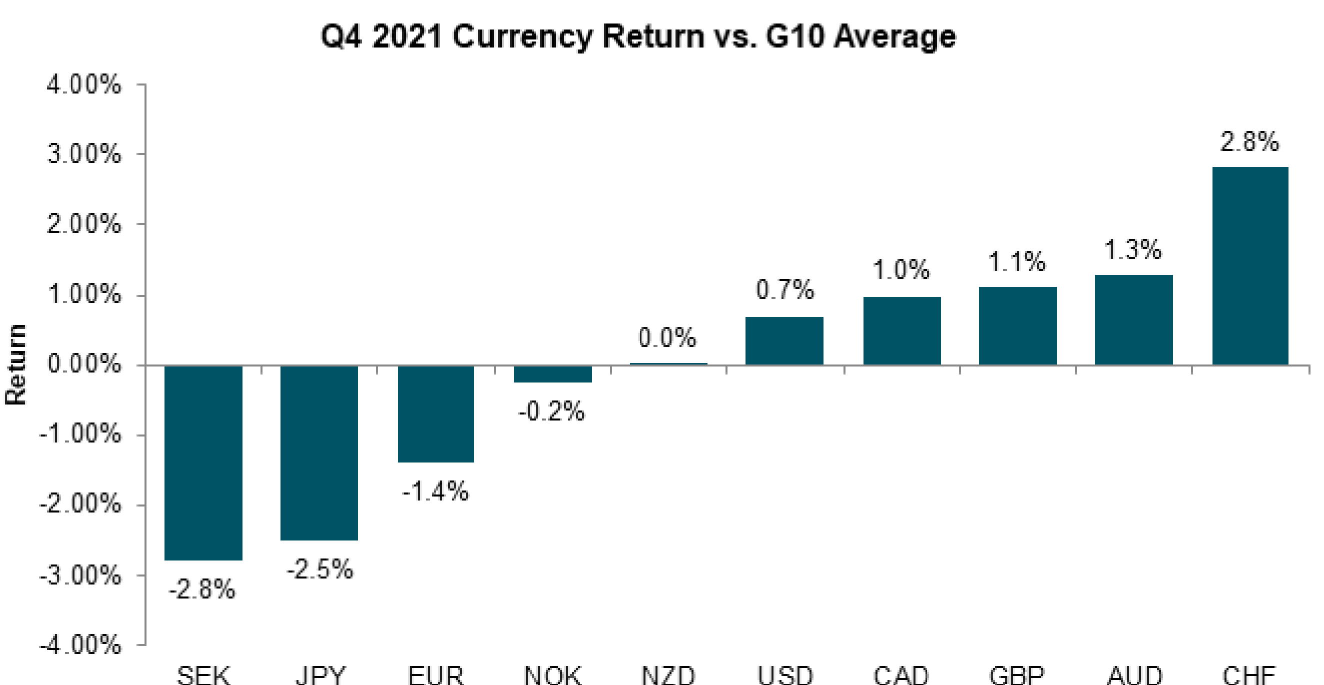
NZD lost 1.7% relative to the G10 average in November. For the first few weeks of the month, it shrugged off shaky commodity markets and the general pullback in other commodity currencies to trade sideways. Strong domestic data bolstered confidence in the RBNZ rate tightening cycle. The unemployment rate for Q3 dropped 0.5% to 3.4%, a level last seen in Q4 2007 and 0.5% below the pre-pandemic level in Q4 2019. BusinessNZ's manufacturing PMI gauge for October rose to 54.3 from 51.4 the prior month. Broad commodity prices were weak

led by energy, but prices in New Zealand more protein-based commodity export basket rose steadily through the month. As investors discounted monetary policy expectations in other pro-cyclical countries such as the UK, Norway, and Australia, they raised expectations for the RBNZ to a 50-basis point increase at the November 24th meeting, up from the usual 25bps. RBNZ did raise rates on the 24th but by only 25bps and further indicated that they would likely limit future increases to 25bps as well. Investors were disappointed sending NZD almost 1% lower vs. the G10 average over the subsequent two days. The omicron news and resultant spike in global risk aversion on the 26th sent the currency another 0.5% lower into month end.

Unlike AUD and other commodity linked currencies NZD lost 0.3% relative to the G10 average in December. The currency trended lower though the first three weeks of the month ultimately losing 1.0% before bouncing back on Dec 21-22 alongside global equities and commodity prices. New Zealand remains near full employment and the RBNZ continues to gradually raise interest rates. However, BusinessNZ manufacturing PMI for November slowed to 50.6 from 54.3 in October showing that the initial re-opening surge from Q3 lockdowns is losing steam. Omicron also complicates the outlook. At a 90%+ vaccination rate the country is well positioned to avoid severe lockdowns and mass fatalities from omicron and cases have yet to surge higher from omicron as they have in neighboring Australia. But, the risk of a massive surge, further delays in reopening borders, and downside risks to Chinese growth may slow New Zealand growth and the expected pace of monetary tightening. We remain neutral NZD as its economy decelerates and faces these new omicron related risks.

For long term strategic hedgers, we suggest a maximum hedge ratio on CHF and slightly higher than average USD hedge ratio. Oppositely, NZD remains quite expensive vs. NOK, SEK, GBP, and JPY based on our estimates of fair value. We recommend New Zealand based currency hedgers maintain very low hedge ratios against NOK, SEK, GBP, and JPY. We are near neutral vs. AUD and EUR.

Currency Performance



Source: Bloomberg/SSGA

Important Information

- R-Factor™ is an ESG scoring system that leverages commonly accepted materiality frameworks to generate a unique ESG score for listed companies. The score is powered by ESG data from four different providers in an effort to improve overall coverage and remove biases inherent in existing scoring methodologies. R-Factor™ is designed to put companies in the driver's seat to help create sustainable markets.

- R-Factor™ Scores are comparable across industries. The ESG and Corporate Governance (CorpGov) scores are designed to be based on issues that are material to a company's industry and regulatory region. A uniform grading scale allows for interpretation of the final company level score to allow for comparison across companies.

- Responsible-Factor (R Factor) scoring is designed by State Street to reflect certain ESG characteristics and does not represent investment performance. Results generated out of the scoring model is based on sustainability and corporate governance dimensions of a scored entity.

- The returns on a portfolio of securities which exclude companies that do not meet the portfolio's specified ESG criteria may trail the returns on a portfolio of securities which include such companies. A portfolio's ESG criteria may result in the portfolio investing in industry sectors or securities which underperform the market as a whole.

- The R-Factor™ scoring process comprises two underlying components. The first component is based on the framework published by the Sustainability Accounting Standards Board ("SASB"), which is used for all ESG aspects of the score other than those relating to corporate governance issues. The SASB framework attempts to identify ESG risks that are financially material to the issuer-based on its industry classification. This component of the R-Factor™ score is determined using only those metrics from the ESG data providers that specifically address ESG risks identified by the SASB framework as being financially material to the issuer-based on its industry classification.

- The second component of the score, the CorpGov score, is generated using region-specific corporate governance codes developed by investors or regulators. The governance codes describe minimum corporate governance expectations of a particular region and typically address topics such as shareholder rights, board independence and executive compensation. This component of the R-Factor™ uses data provided by ISS Governance to assign a governance score to issuers according to these governance codes.

- Within each industry group, issuers are classified into five distinct ESG performance groups based on which percentile their R-Factor™ scores fall into. A company is classified in one of the five ESG performance classes (Laggard - 10% of universe, Underperformer - 20% of universe, Average Performer - 40% of universe, Outperformer - 20% of universe or Leader - 10% of universe) by comparing the company's R-Factor™ score against a band. R-Factor™ scores are normally distributed using normalized ratings on a 0-100 rating scale.

- Discrepancy between the number of holdings in the R-Factor™ Summary versus the number of holdings in the regular reporting package may arise as the R-Factor™ Summary is counted based on number of issuers rather than number of holdings in the portfolio.

- For examples of public language regarding R-Factor see the ELR Registration Statement here: https://www.sec.gov/Archives/edgar/data/1107414/000119312519192334/d774617d497.html

- Carbon Intensity - Measured in Metric tons CO2e/USD millions revenues. The aggregation of operational and first-tier supply chain carbon footprints of index constituents per USD (equal weighted).

- Weighted Average Carbon Intensity - Measured in Metric tons CO2e/USD millions revenues. The weighted average of individual company intensities (operational and first-tier supply chain emissions over

revenues), weighted by the proportion of each constituent in the index.

- Scope 1+2 Carbon Emissions- Measured in Metric Tons of CO2e.The GHG emissions from operations that are owned or controlled by the company, as well as GHG emissions from consumption of purchased electricity, heat or steam, by the company

- Total Reserves CO2 Emissions - Measured in Metric tons of CO2. The carbon footprint that could be generated if the proven and probable fossil fuel reserves owned by index constituents were burned per USD million invested. Unlike carbon intensity and carbon emissions, the S&P Trucost Total Reserves Emissions metric is a very specific indicator that is only applicable to a very selected number of companies in extractive and carbon-intensive industries. Those companies are assigned Total Reserves Emissions numerical results by Trucost, whereas the rest of the holdings in other industries do not have numerical scores and are instead displaying "null", blank values. In order to present a more comprehensive overview of a portfolio's overall weighted average fossil fuel reserves, State Street Global Advisors replaces blank results with "zeros". While that might slightly underestimate the final weighted average volume, it provides a more realistic result, given that most companies in global indices have no ownership of fossil fuel reserves.

- We are currently using FactSet's own "People" dataset to disclose the number of women on the board, for each company in the Fund's portfolio.

- Data and metrics have been sourced as follows from the following contributors as of the date of this report, and are subject to their disclosures below. All other data has been sourced by SSGA.

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