

## EM Local Markets Strategy

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## Global EM Inflation Linkers Monthly

EM linker outperformance versus nominal bonds continues into 4Q22

18-Oct-22

• **EM linkers outperform nominal bonds over the past month as breakeven inflation keeps moving higher.** Since mid-September, 10y EM ex-Turkey breakeven inflation has widened the most in Colombia (+121bp), Mexico (+48p), and Korea (+21bp). By contrast, inflation expectations implied by breakevens have fallen significantly in Chile (-55bp), despite the large divergence of breakeven inflation to realised inflation, and marginally in Israel (-8bp).

• **Betas of EM linkers to nominal bonds have broadly risen above their long-run averages, but are still relatively low.** In periods of broad risk-off, betas of linkers to nominal bonds tend to rise. Accordingly, 6m-rolling betas in South Africa, Israel, Chile, Colombia and Mexico are now at/above their 10y beta (or longest equivalent). While this points to reduced defensive benefits of linkers in the current environment, absolute betas are still low (particularly in high yielders).

• **Linker basket performance.** Our chart of the month shows full performance of our linker baskets, with breakeven inflation +184bp since March 2021. Our \*new\* section "*Linker Strategic Long Basket Performance*" shows detailed performance statistics - over the past month, breakeven inflation on our current basket (Chile, Korea) is 13bp lower. Chile front-end linkers and Israel longer-dated linkers remain attractive; 10y Korea linkers still offer value but the ongoing KTB sell-off makes them relatively less attractive.

### 10y EM linker real yields, EM nominal bond yields and breakeven inflation

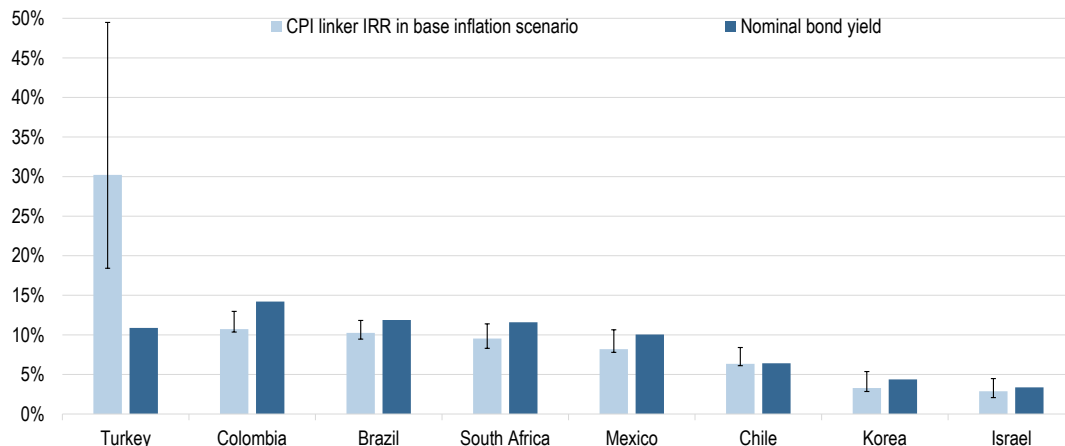
Level (%), 1-month change (bp) and 3-month change (bp)

	Linkers			Nominal bonds			Breakeven inflation		
	Level	Δ1m	Δ3m	Level	Δ1m	Δ3m	Level	Δ1m	Δ3m
South Africa	4.60	27	31	11.58	37	10	6.97	10	-22
Turkey	-2.38	-24	-167	13.16	158	-427	15.54	182	-260
Israel	0.74	33	57	3.36	25	77	2.62	-8	20
Korea	2.03	37	54	4.38	57	99	2.35	21	45
Brazil	5.78	-4	-51	11.85	-7	-168	6.07	-3	-118
Chile	2.60	51	60	6.42	-4	-28	3.82	-55	-88
Colombia	5.95	96	-35	14.40	217	130	8.45	121	165
Mexico	4.47	18	21	10.06	65	81	5.59	48	61
United States	1.54	40	97	4.01	52	114	2.47	12	16

For in-depth analysis on EM inflation-linked bonds, see [EM Spotlight: EM Inflation Linkers in a Reflationary World](#). For the latest EM inflation trends, see the [Global Inflation Monitor](#). The latest monthly JPM inflation forecasts are published [here](#).

### 10y EM CPI linker IRRs versus 10y EM nominal bond yields

Annual nominal yield to maturity, %. Range line shows CPI linker IRRs in the high inflation scenario (upper bound) and low inflation scenario (lower bound)



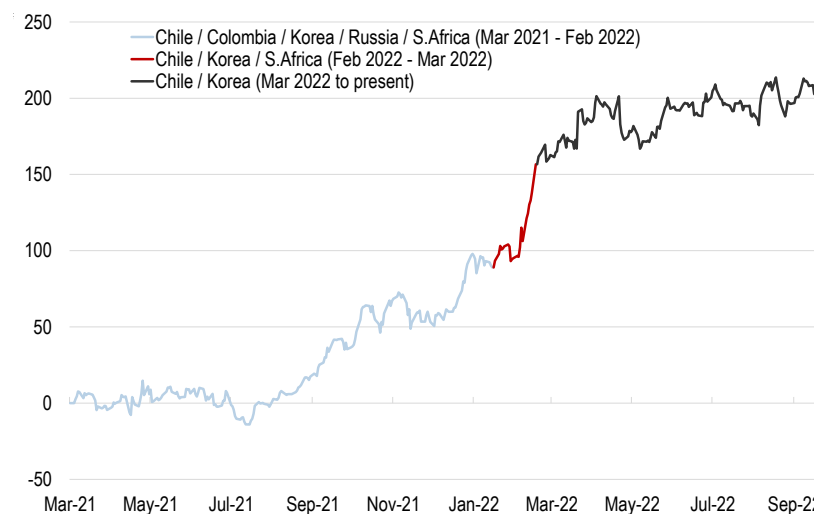
CPI Linker IRR: This is the "all-in" yield of the CPI Linker, which calculates the internal rate of return (IRR) on the projected nominal cashflows of the CPI linked bond.

Note: Sources for all charts, graphs and tables are J.P. Morgan and Bloomberg Finance L.P. Data as of 18-Oct-22, 14:48, London time

Analyst certification and important disclosures, including non-US analyst disclosures, are presented at the end of this report

### Chart of the month: Historical performance of the linker basket

Cumulative changes in breakeven inflation of our strategic long basket since inception (bp). Split according to historical composition. See page 4 for more details.



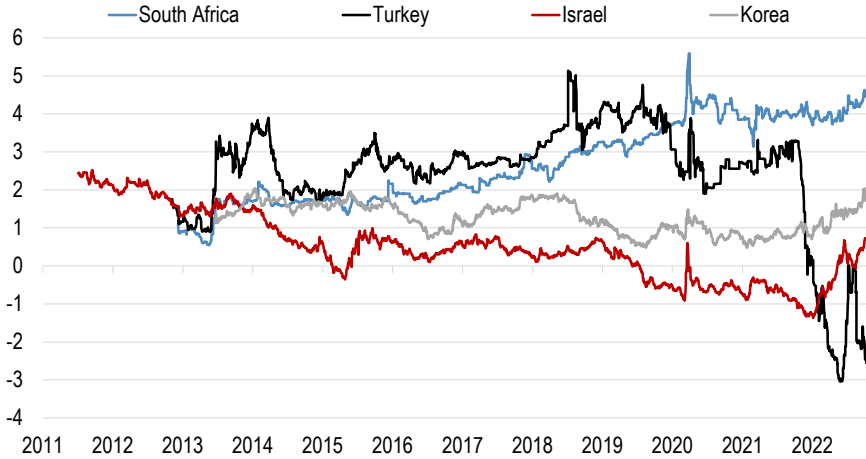
<b>Contents</b>	<b>Page</b>
10y EM linker real yields and 10y EM breakeven inflation	1
10y EM breakeven inflation versus realized inflation	2
Betas: 10y EM linkers to 10y EM nominal bonds	3
Linker Strategic Long Basket Performance	4
Foreign ownership of EM linkers	5
<b>Country pages</b>	
South Africa	6
Turkey	7
Israel	8
Korea	9
Brazil	10
Chile	11
Colombia	12
Mexico	13
J.P. Morgan EM Headline CPI Inflation Forecasts	14
J.P. Morgan EM Headline CPI Inflation Scenarios	15
J.P. Morgan CPI Forecast Revision Indices	16
<b>Appendix</b>	
Inside the Global EM Inflation Linkers Monthly	17
Guide to navigating the country pages	18
Calculating CPI linker IRRs	19
EM linker markets: Key characteristics	20
Calculating reference inflation	21-25
<b>Disclosures</b>	

## 10y EM linker real yields and 10y EM breakeven inflation

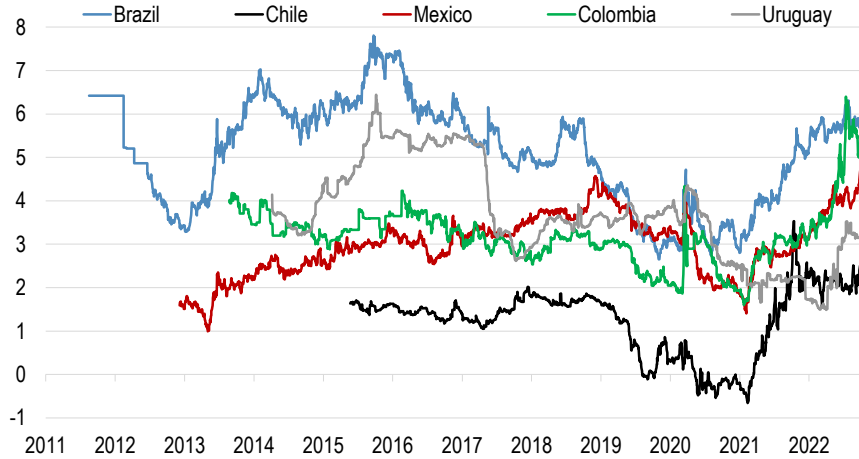
### 10y EM linker real yields

10y EM linker real annual yields, %

#### EMEA EM and EM Asia



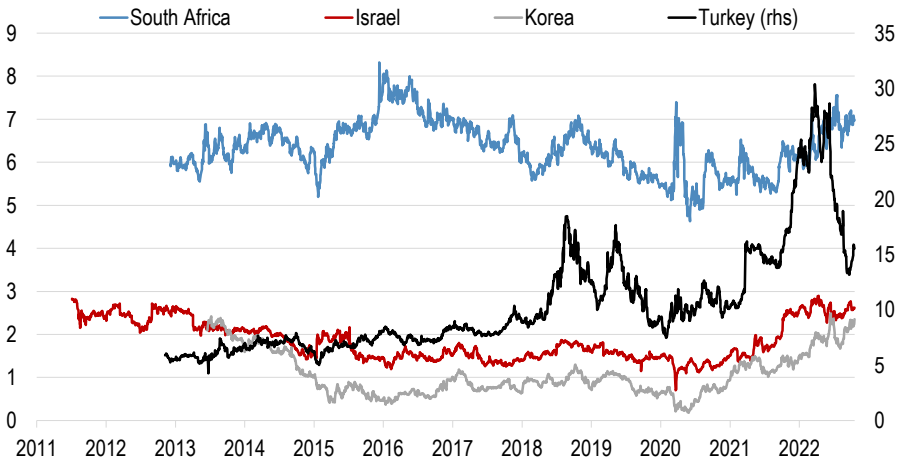
#### Latin America



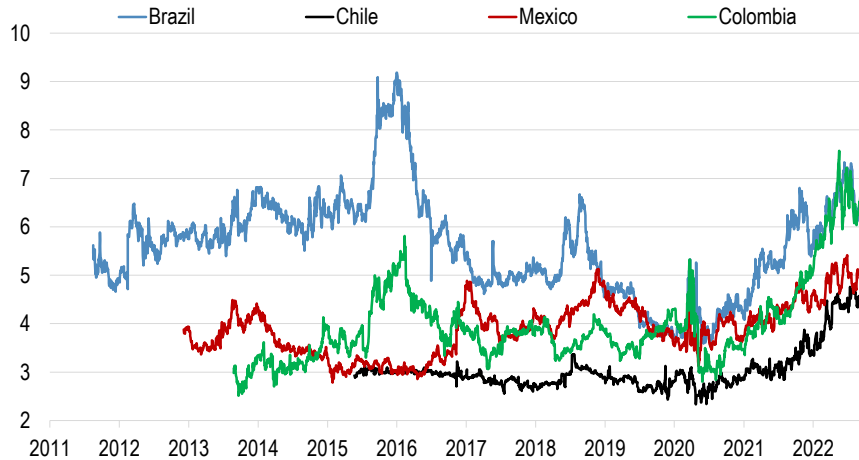
### 10y EM breakeven inflation

10y EM breakeven inflation %yoy, proxied by 10y EM nominal bond annual yield minus 10y EM linker real annual yield

#### EMEA EM and EM Asia

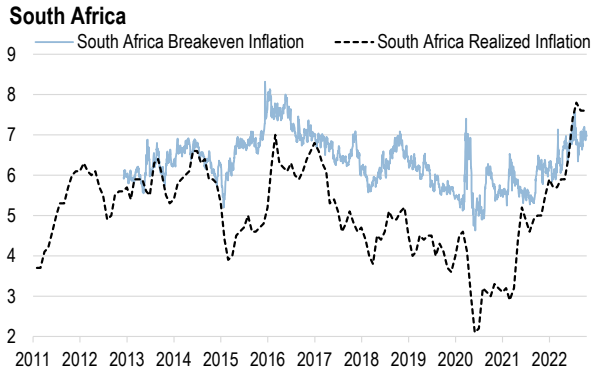


#### Latin America



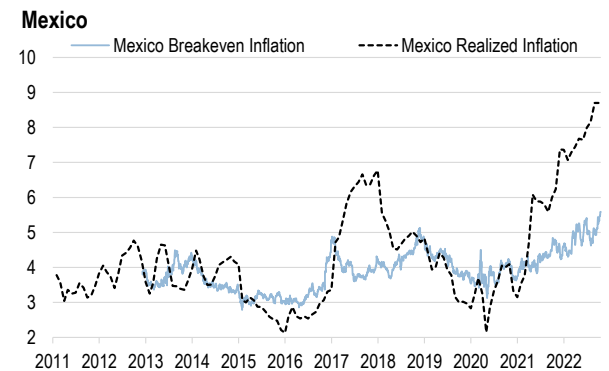
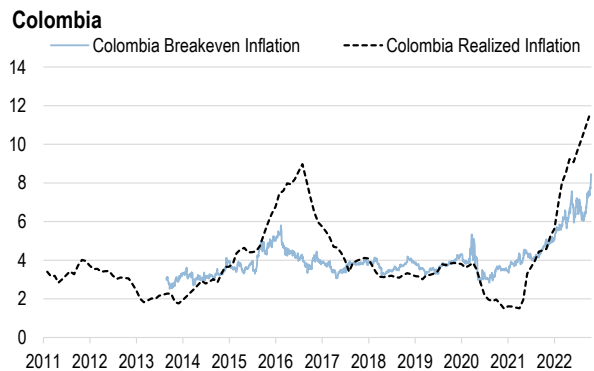
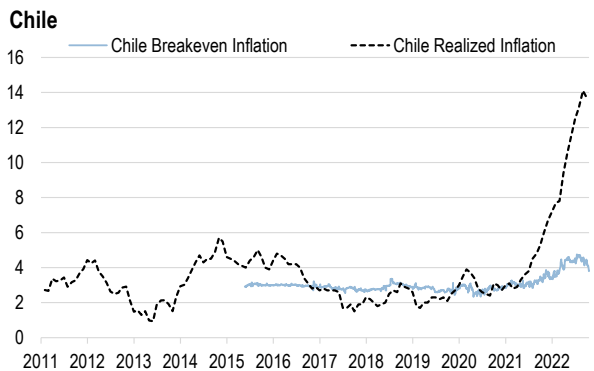
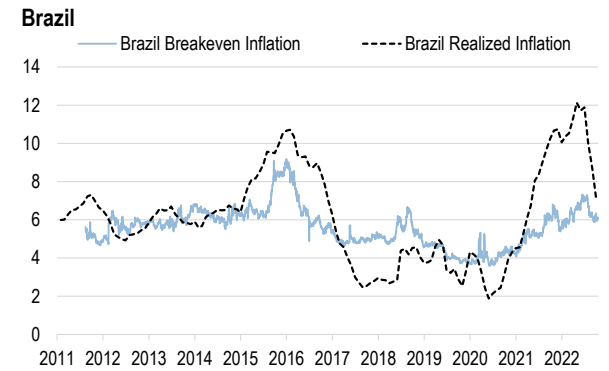
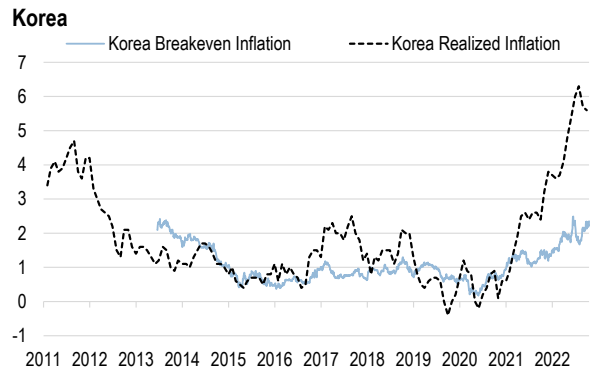
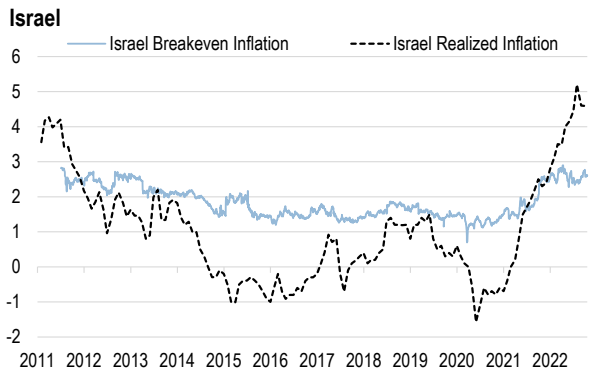
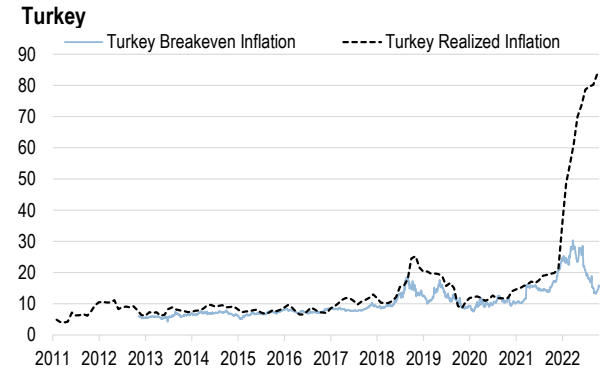
## 10y EM breakeven inflation versus realized inflation (%)

10y EM breakeven inflation %yoy is proxied by 10y EM nominal bond annual yield minus 10y EM linker real annual yield. Realized inflation is headline CPI inflation %yoy



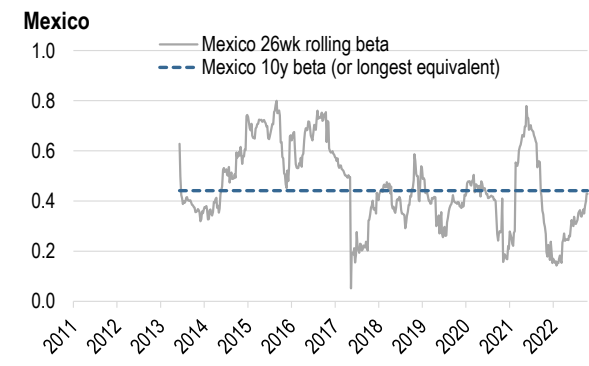
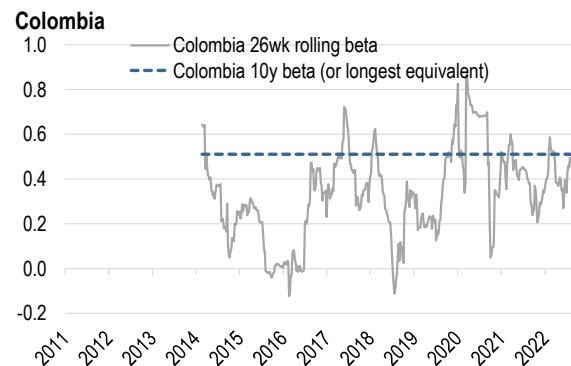
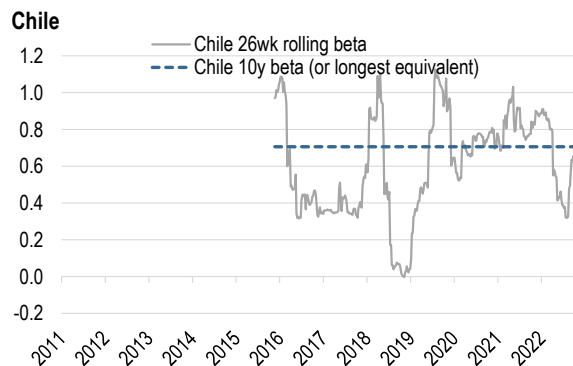
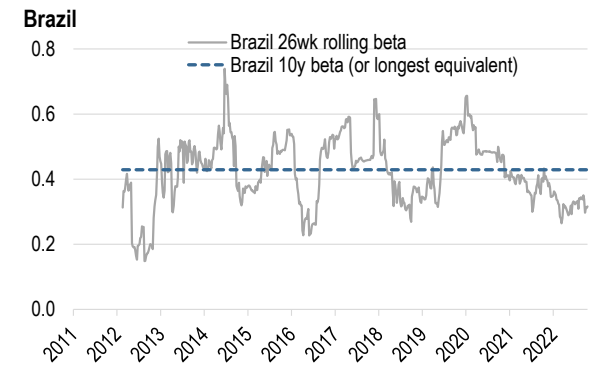
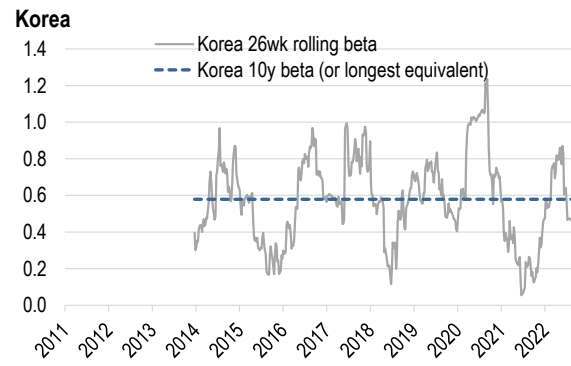
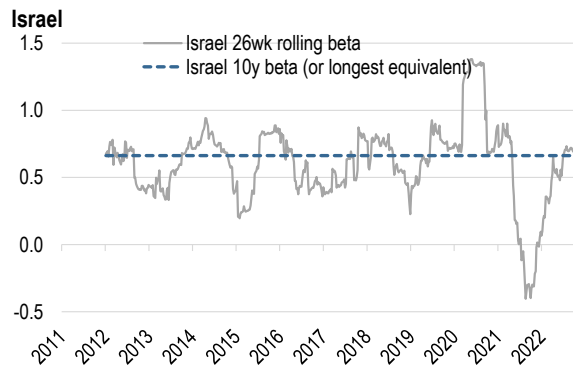
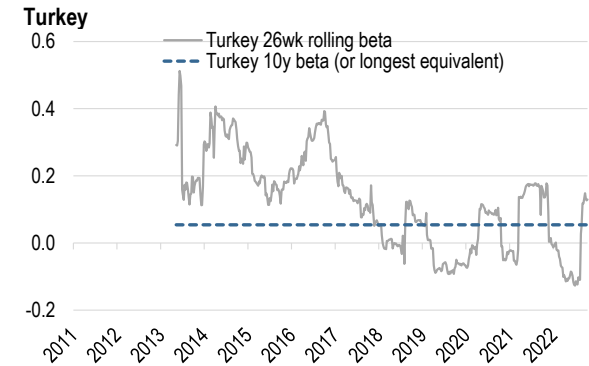
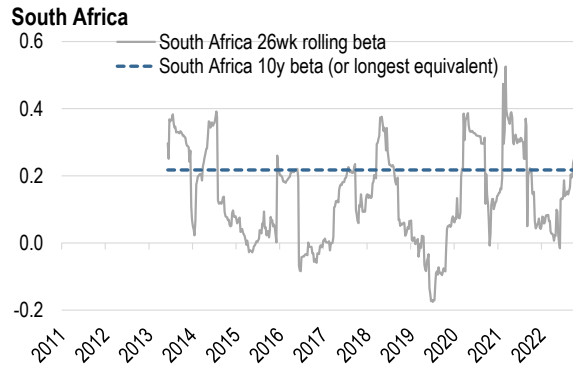
**Russia**

*We have removed Russia linkers from this report, given market disruption.*



## Betas: 10y EM linkers to 10y EM nominal bonds

Beta calculated by regressing weekly changes in 10y linker real yield on weekly changes in 10y nominal bond yield, using J.P. Morgan generic series. Graphs show 10y beta (or longest equivalent), and 6m rolling beta.



# Linker Strategic Long Basket Performance

## Individual Baskets

### Current basket performance

Level (%), 1-month change (bp) and to-date change since current basket inception (bp)

	Linkers			Nominal bonds			Breakeven inflation		
	Level	Δ1m	To-date	Level	Δ1m	To-date	Level	Δ1m	To-date
<b>Basket 3</b>	<b>2.07</b>	<b>32</b>	<b>76</b>	<b>5.36</b>	<b>20</b>	<b>103</b>	<b>3.29</b>	<b>-13</b>	<b>27</b>
Chile	2.46	27	70	6.41	-8	49	3.96	-36	-20
Korea	1.69	37	82	4.31	48	158	2.62	10	75

\*Basket considers average of linker yields. Current basket started in 08-03-22.

\*\*Current Chile linker: CL0002444033. Current Korea linker: KR103503GA66.

### Breakeven inflation performance of closed baskets

Entry and exit levels (%) and total change (bp)

	Entry	Exit	Δ
<b>Basket 2</b>	<b>3.64</b>	<b>4.32</b>	<b>68</b>
Chile	3.51	4.06	55
Korea	1.55	1.82	27
S. Africa	5.87	7.08	121

\*Basket from 03-Feb-22 to 07-Mar-22.

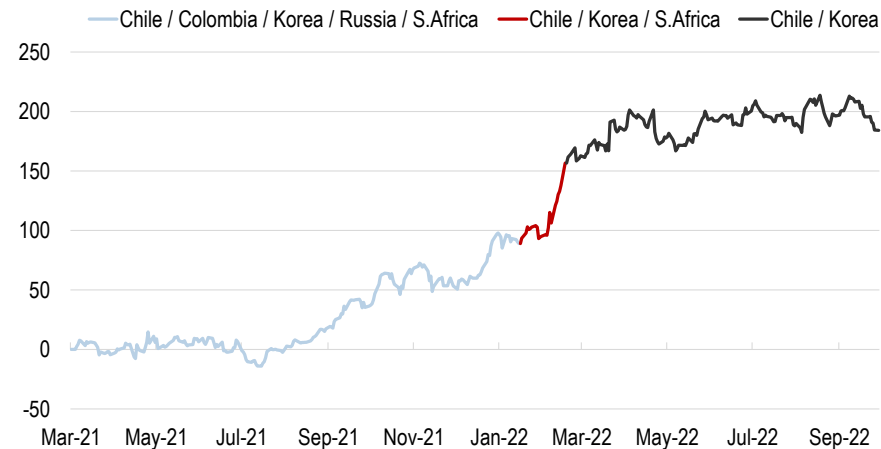
	Entry	Exit	Δ
<b>Basket 1</b>	<b>3.99</b>	<b>4.88</b>	<b>89</b>
Chile	2.99	3.51	52
Colombia	3.30	5.36	206
Korea	1.30	1.54	24
Russia	6.42	8.10	168
S. Africa	5.95	5.90	-6

\*Basket from 19-Mar-21 to 02-Feb-22.

## Historical Baskets

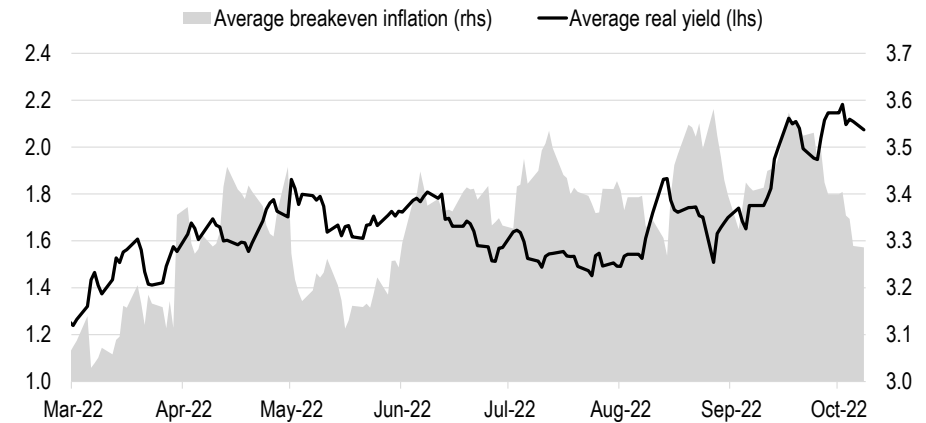
### Cumulative changes in basket breakeven inflation

Cumulative changes in breakeven inflation of our strategic long basket since inception (bp). Split according to historical composition.



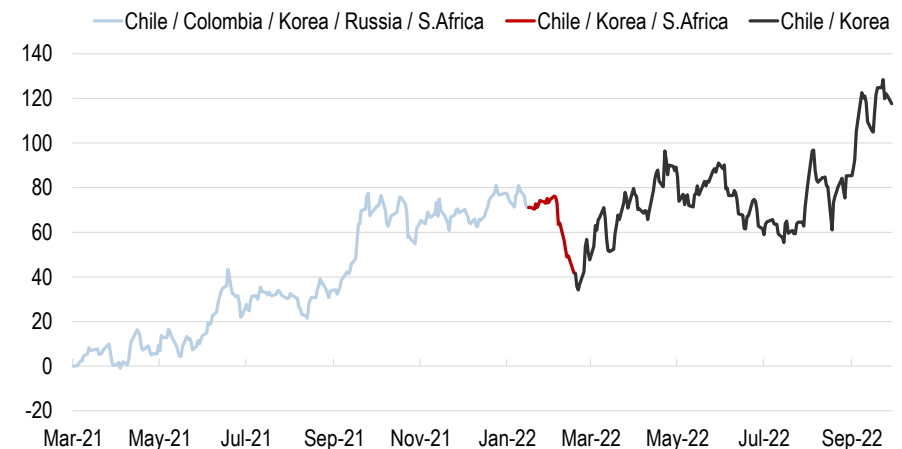
### Current basket breakeven inflation and real yields

Average breakeven inflation (rhs %) and real yield (lhs %) for current basket since inception



### Cumulative changes in basket real yields

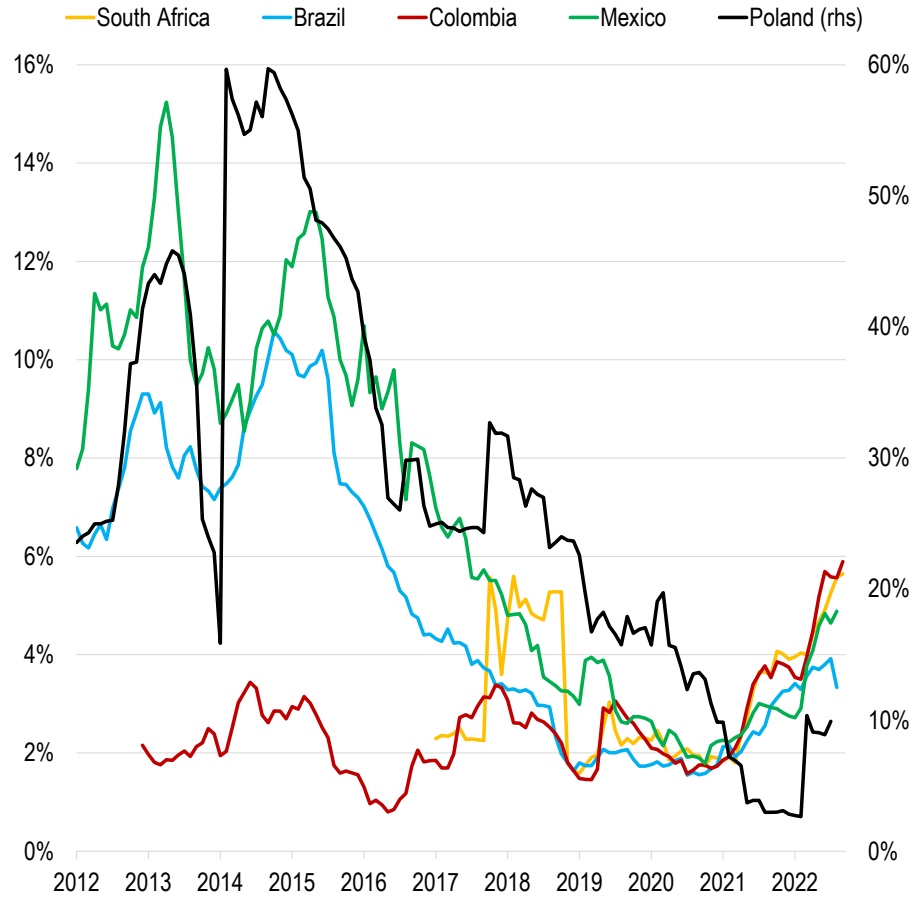
Cumulative changes in breakeven inflation of our strategic long basket since inception (bp). Split according to historical composition.



## Foreign ownership of EM linkers

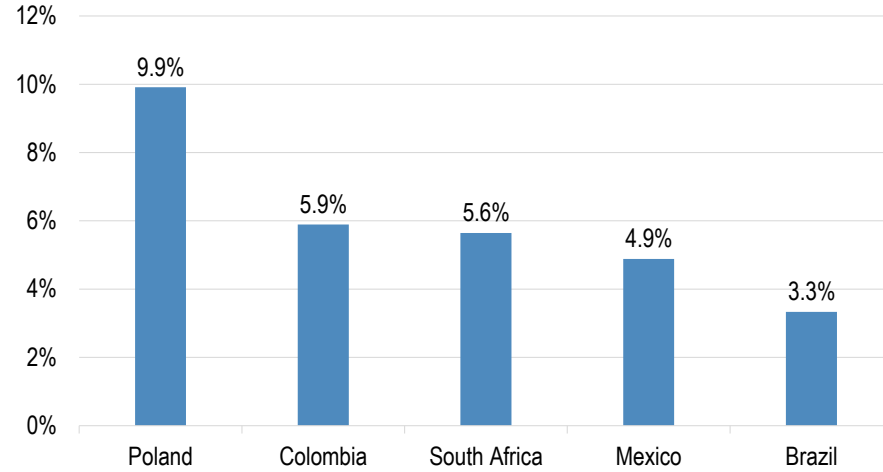
### Foreign ownership of EM linkers - Time Series

% of amount outstanding



### Foreign ownership of EM linkers - Latest

% of amount outstanding



	Current	Δ3m	Δ12m	Low	5y Range	High
South Africa	5.6%	0.7%	2.1%	1.6%	— ◆ —	5.6%
Poland	9.9%	0.8%	6.0%	2.6%	◆ —	32.7%
Brazil	3.3%	-0.4%	0.8%	1.5%	— ◆ —	3.9%
Colombia	5.9%	0.2%	2.4%	1.5%	— ◆ —	5.9%
Mexico	4.9%	0.3%	1.9%	1.8%	— ◆ —	5.7%

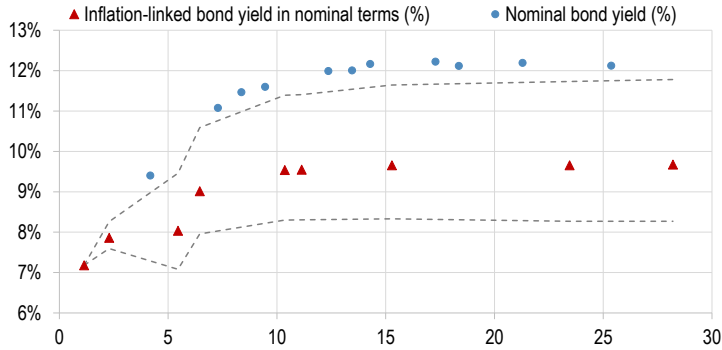
Red diamond refers to current positioning versus 5y range

## South Africa

Settlement Date	21-Oct-22
Reference CPI Inflation	105.23
Day Count Convention	ACT/365
Coupon Frequency	2
Low Inflation Scenario	3.25%
Base Inflation Scenario	4.75%
High Inflation Scenario	7.00%

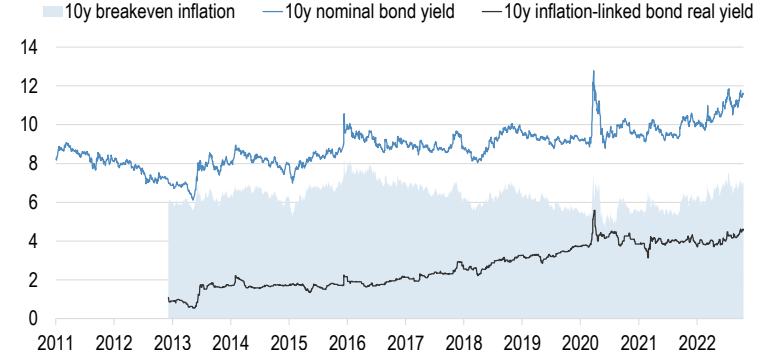
### South Africa CPI linker IRRs vs. nominal bond yields

y-axis: annual nominal yield; x-axis: years to maturity. Red triangles show CPI linker IRR in base inflation scenario. Dotted bands show CPI linker IRR in high inflation (upper band) and low inflation (lower band) scenarios.



### South Africa 10y linker real yield, 10y nominal bond yield, and 10y breakeven inflation

Bond yields in annual terms, %; breakeven inflation (%yoy) proxied by nominal bond yield minus linker real yield. Using historical generic series calculated by J.P. Morgan



	Linker Bond Name	Issue Date	Maturity Date	Maturity (years)	Modified Duration	Settlement Price*	Real Yield (annual, %)	Linker IRRs across different inflation scenarios (%)			Closest maturity nominal bond	Closest maturity nominal bond yield (annual, %)	First full nominal cashflow (%)^A	Second full nominal cashflow (%)^A	First full nominal cashflow: date	Second full nominal cashflow: date
								Low	Base	High						
1	SACPI 5 1/2 12/07/23	30-May-01	07-Dec-23	1.1	0.5	103.54	2.30	7.18	7.18	7.18	-	-	8.80%	8.98%	07-Dec-22	07-Jun-23
2	SACPI 2 01/31/25	04-Jul-12	31-Jan-25	2.3	1.1	97.89	2.98	7.59	7.86	8.26	SAGB 10 1/2 12/21/26	9.40	1.70%	1.74%	31-Jan-23	31-Jul-23
3	SACPI 2.6 03/31/28	27-Sep-07	31-Mar-28	5.5	2.5	97.21	3.18	7.08	8.03	9.46	SAGB 10 1/2 12/21/26	9.40	3.07%	3.13%	31-Mar-23	30-Sep-23
4	SACPI 1 7/8 03/31/29	27-Jul-16	31-Mar-29	6.5	3.0	87.66	4.11	7.96	9.01	10.59	SAGB 8 01/31/30	11.08	1.29%	1.31%	31-Mar-23	30-Sep-23
5	SACPI 1 7/8 02/28/33	15-Jul-15	28-Feb-33	10.4	4.5	78.08	4.60	8.30	9.54	11.39	SAGB 8 1/4 03/31/32	11.60	1.37%	1.39%	28-Feb-23	31-Aug-23
6	SACPI 3.45 12/07/33	20-Aug-03	07-Dec-33	11.1	4.4	90.54	4.59	8.31	9.55	11.40	SAGB 8 7/8 02/28/35	11.99	4.67%	4.77%	07-Dec-22	07-Jun-23
7	SACPI 2 1/4 01/31/38	04-Jul-12	31-Jan-38	15.3	6.1	74.03	4.69	8.33	9.66	11.64	SAGB 8 1/2 01/31/37	12.16	1.92%	1.96%	31-Jan-23	31-Jul-23
8	SACPI 2 1/2 03/31/46	17-Jul-13	31-Mar-46	23.5	8.0	69.48	4.70	8.27	9.65	11.73	SAGB 8 3/4 02/28/48	12.12	2.02%	2.06%	31-Mar-23	30-Sep-23
9	SACPI 2 1/2 12/31/50	11-Jul-12	31-Dec-50	28.2	8.8	66.39	4.70	8.27	9.67	11.78	SAGB 8 3/4 02/28/48	12.12	2.12%	2.17%	31-Dec-22	30-Jun-23
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\*Real clean price, quoted in market

<sup>A</sup>If coupon payments are before 30-Nov-22, nominal cashflows are known with certainty. Else, we use CPI projections to estimate nominal cashflows. Nominal cashflows include coupons and principal repayments

Headline CPI inflation projection (%yoy)	
Jan-22	5.7
Feb-22	5.7
Mar-22	5.9
Apr-22	5.9
May-22	6.5
Jun-22	7.4
Jul-22	7.8
Aug-22	7.6
Sep-22	7.7
Oct-22	7.6
Nov-22	7.6
Dec-22	7.3
Jan-23	7.4
Feb-23	7.2
Mar-23	6.8
Apr-23	6.3
May-23	5.7
Jun-23	5.1
Jul-23	4.5
Aug-23	4.5
Sep-23	4.8
Oct-23	4.8
Nov-23	4.7
Dec-23	4.7

J.P. Morgan forecasts in blue

J.P.Morgan

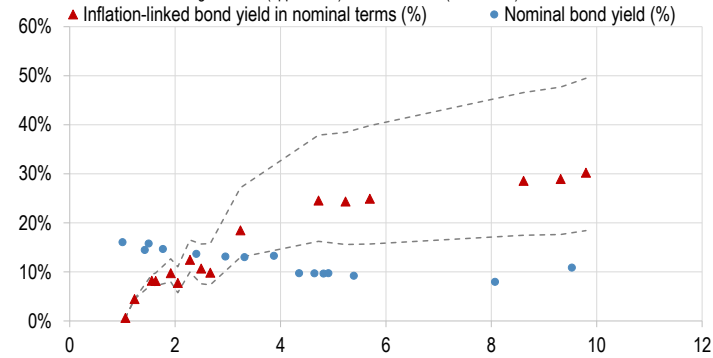


# Turkey

Settlement Date	19-Oct-22
Reference CPI Inflation	1009.52
Day Count Convention	ACT/ACT
Coupon Frequency	2
Low Inflation Scenario	20.00%
Base Inflation Scenario	35.00%
High Inflation Scenario	60.00%

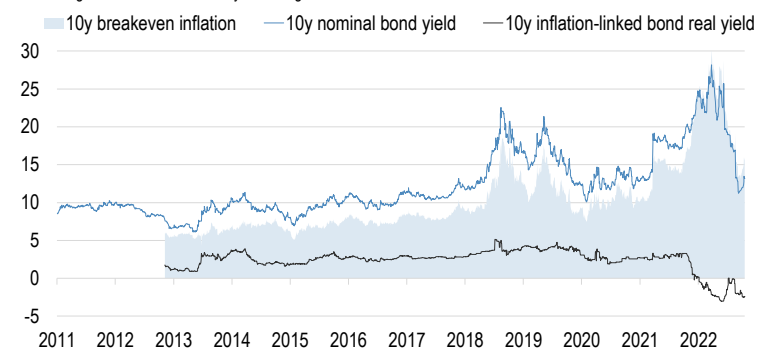
Turkey CPI linker IRRs vs. nominal bond yields

y-axis: annual nominal yield; x-axis: years to maturity. Red triangles show CPI linker IRR in base inflation scenario. Dotted bands show CPI linker IRR in high inflation (upper band) and low inflation (lower band) scenarios.



Turkey 10y linker real yield, 10y nominal bond yield, and 10y breakeven inflation

Bond yields in annual terms, %; breakeven inflation (%/yoy) proxied by nominal bond yield minus linker real yield. Using historical generic series calculated by J.P. Morgan



	Linker Bond Name	Issue Date	Maturity Date	Maturity (years)	Modified Duration	Settlement Price*	Real Yield (annual, %)	Linker IRRs across different inflation scenarios (%)			Closest maturity nominal bond	Closest maturity nominal bond yield (annual, %)	First full nominal cashflow (%)^A	Second full nominal cashflow (%)^A	First full nominal cashflow: date	Second full nominal cashflow: date
								Low	Base	High						
1	TURKGB 2.8 11/08/23	20-Nov-13	08-Nov-23	1.1	0.6	129.15	-19.45	0.60	0.60	0.60	TURKGB 20.1 10/18/23	16.06	6.42%	7.28%	09-Nov-22	10-May-23
2	TURKGB 4.2 01/10/24	16-Jan-19	10-Jan-24	1.2	0.6	132.00	-17.10	4.44	4.44	4.44	TURKGB 10.4 03/20/24	14.47	5.70%	6.34%	11-Jan-23	12-Jul-23
3	TURKGB 2.4 05/08/24	21-May-14	08-May-24	1.6	0.8	130.00	-13.66	7.48	8.21	9.44	TURKGB 20.9 04/17/24	15.78	5.20%	5.90%	09-Nov-22	10-May-23
4	TURKGB 4.1 06/05/24	12-Jun-19	05-Jun-24	1.6	0.8	135.00	-13.69	7.19	8.15	9.79	TURKGB 20.9 04/17/24	15.78	5.32%	5.95%	07-Dec-22	07-Jun-23
5	TURKGB 2 09/18/24	01-Oct-14	18-Sep-24	1.9	1.0	134.01	-12.60	7.97	9.74	12.66	TURKGB 9 07/24/24	14.68	4.68%	5.11%	22-Mar-23	20-Sep-23
6	TURKGB 3.2 11/06/24	13-Nov-19	06-Nov-24	2.1	1.1	145.00	-14.21	5.76	7.76	11.04	TURKGB 9 07/24/24	14.68	3.86%	4.38%	09-Nov-22	10-May-23
7	TURKGB 2.36 01/29/25	05-Feb-20	29-Jan-25	2.3	1.2	137.25	-11.12	9.95	12.46	16.51	TURKGB 8 03/12/25	13.67	2.95%	3.28%	01-Feb-23	02-Aug-23
8	TURKGB 2 04/16/25	29-Apr-15	16-Apr-25	2.5	1.3	147.00	-12.83	7.57	10.67	15.68	TURKGB 8 03/12/25	13.67	4.57%	5.00%	19-Apr-23	18-Oct-23
9	TURKGB 1 1/2 06/18/25	24-Jun-20	18-Jun-25	2.7	1.4	153.00	-13.66	7.35	9.84	15.76	TURKGB 8 03/12/25	13.67	1.76%	1.96%	21-Dec-22	21-Jun-23
10	TURKGB 2.7 01/14/26	27-Jan-16	14-Jan-26	3.2	1.6	141.11	-7.96	12.99	18.46	27.15	TURKGB 10.6 02/11/26	13.02	5.45%	6.06%	18-Jan-23	19-Jul-23
11	TURKGB 2.9 07/07/27	19-Jul-17	07-Jul-27	4.7	2.3	140.01	-4.54	16.22	24.54	37.89	TURKGB 20.2 06/09/27	9.72	5.06%	5.62%	11-Jan-23	12-Jul-23
12	TURKGB 2.9 01/12/28	24-Jan-18	12-Jan-28	5.2	2.5	149.00	-5.06	15.58	24.35	38.44	TURKGB 12.4 03/08/28	9.21	4.86%	5.40%	18-Jan-23	19-Jul-23
13	TURKGB 3.3 06/28/28	11-Jul-18	28-Jun-28	5.7	2.7	154.00	-4.76	15.68	24.92	39.83	TURKGB 12.4 03/08/28	9.21	5.16%	5.74%	04-Jan-23	05-Jul-23
14	TURKGB 3 05/28/31	09-Jun-21	28-May-31	8.6	4.0	158.10	-2.87	17.48	28.55	46.58	TURKGB 11.7 11/13/30	7.98	3.00%	3.36%	07-Dec-22	07-Jun-23
15	TURKGB 0 02/11/32	23-Feb-22	11-Feb-32	9.3	4.7	131.00	-2.86	17.63	28.95	47.68	TURKGB 21 1/2 04/28/32	10.88	2112.33%	-	11-Feb-32	-
16	TURKGB 0 08/04/32	17-Aug-22	04-Aug-32	9.8	4.9	121.29	-1.95	18.42	30.22	49.48	TURKGB 21 1/2 04/28/32	10.88	1703.69%	-	04-Aug-32	-
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Headline CPI inflation projection (%/yoy)	
Jan-22	48.7
Feb-22	54.4
Mar-22	61.1
Apr-22	70.0
May-22	73.5
Jun-22	78.6
Jul-22	79.6
Aug-22	80.2
Sep-22	83.5
Oct-22	84.1
Nov-22	80.6
Dec-22	63.1
Jan-23	50.0
Feb-23	44.6
Mar-23	39.0
Apr-23	32.1
May-23	30.4
Jun-23	26.0
Jul-23	24.8
Aug-23	24.9
Sep-23	24.3
Oct-23	24.1
Nov-23	23.8
Dec-23	22.4

J.P. Morgan forecasts in blue

\*Real clean price, quoted in market

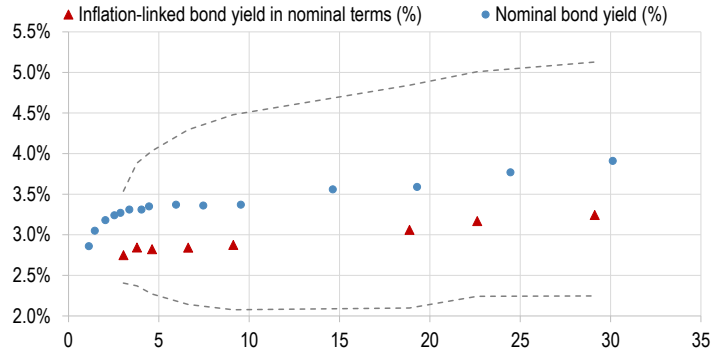
<sup>A</sup>If coupon payments are before 30-Nov-22, nominal cashflows are known with certainty. Else, we use CPI projections to estimate nominal cashflows. Nominal cashflows include coupons and principal repayments

# Israel

Settlement Date	19-Oct-22
Reference CPI Inflation	107.00
Day Count Convention	ACT/365
Coupon Frequency	1
Low Inflation Scenario	1.00%
Base Inflation Scenario	2.00%
High Inflation Scenario	4.00%

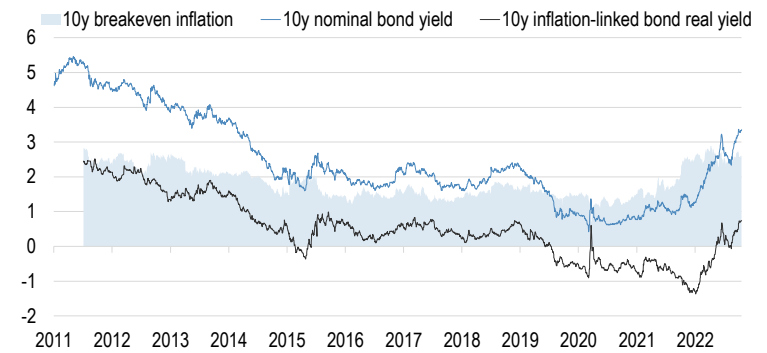
Israel CPI linker IRRs vs. nominal bond yields

y-axis: annual nominal yield; x-axis: years to maturity. Red triangles show CPI linker IRR in base inflation scenario. Dotted bands show CPI linker IRR in high inflation (upper band) and low inflation (lower band) scenarios.



Israel 10y linker real yield, 10y nominal bond yield, and 10y breakeven inflation

Bond yields in annual terms, %; breakeven inflation (%yoy) proxied by nominal bond yield minus linker real yield. Using historical generic series calculated by J.P. Morgan



	Linker Bond Name	Issue Date	Maturity Date	Maturity (years)	Modified Duration	Settlement Price*	Real Yield (annual, %)	Linker IRRs across different inflation scenarios (%)			Closest maturity nominal bond	Closest maturity nominal bond yield (annual, %)	First full nominal cashflow (%)^A	Second full nominal cashflow (%)^A	First full nominal cashflow: date	Second full nominal cashflow: date
								Low	Base	High						
1	ILCPI 0 3/4 10/31/25	07-Jul-15	31-Oct-25	3.0	1.5	100.91	0.45	2.40	2.75	3.54	ILGOV 1 3/4 08/31/25	3.27	0.81%	0.83%	31-Oct-22	31-Oct-23
2	ILCPI 0.1 07/31/26	10-Nov-20	31-Jul-26	3.8	1.9	98.47	0.51	2.37	2.84	3.88	ILGOV 6 1/4 10/30/26	3.31	0.11%	0.11%	31-Jul-23	31-Jul-24
3	ILCPI 0 3/4 05/31/27	09-May-17	31-May-27	4.6	2.3	100.83	0.57	2.27	2.82	4.03	ILGOV 2 03/31/27	3.35	0.83%	0.85%	31-May-23	31-May-24
4	ILCPI 0 1/2 05/31/29	05-Mar-19	31-May-29	6.6	3.2	98.97	0.66	2.14	2.84	4.29	ILGOV 2 1/4 09/28/28	3.37	0.55%	0.56%	31-May-23	31-May-24
5	ILCPI 0.1 11/30/31	09-Feb-21	30-Nov-31	9.1	4.5	94.36	0.74	2.08	2.87	4.48	ILGOV 1.3 04/30/32	3.37	0.11%	0.11%	30-Nov-22	30-Nov-23
6	ILCPI 2 3/4 08/30/41	07-Sep-10	30-Aug-41	18.9	7.7	130.56	0.97	2.10	3.06	4.84	ILGOV 5 1/2 01/31/42	3.59	3.24%	3.31%	31-Aug-23	30-Aug-24
7	ILCPI 1 05/31/45	03-Mar-15	31-May-45	22.6	10.0	98.15	1.09	2.24	3.17	5.01	ILGOV 3 3/4 03/31/47	3.77	1.10%	1.13%	31-May-23	31-May-24
8	ILCPI 0 1/2 11/30/51	08-Sep-20	30-Nov-51	29.1	13.2	83.29	1.18	2.25	3.24	5.13	ILGOV 2.8 11/29/52	3.91	0.54%	0.55%	30-Nov-22	30-Nov-23
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Headline CPI inflation projection (%yoy)	
Jan-22	3.1
Feb-22	3.5
Mar-22	3.5
Apr-22	4.0
May-22	4.2
Jun-22	4.4
Jul-22	5.2
Aug-22	4.6
Sep-22	4.6
Oct-22	5.0
Nov-22	5.1
Dec-22	5.0
Jan-23	4.8
Feb-23	4.3
Mar-23	4.3
Apr-23	4.0
May-23	3.8
Jun-23	3.5
Jul-23	2.5
Aug-23	2.9
Sep-23	2.7
Oct-23	2.6
Nov-23	2.4
Dec-23	2.3

J.P. Morgan forecasts in blue

\*Real clean price. Real dirty prices are quoted in market

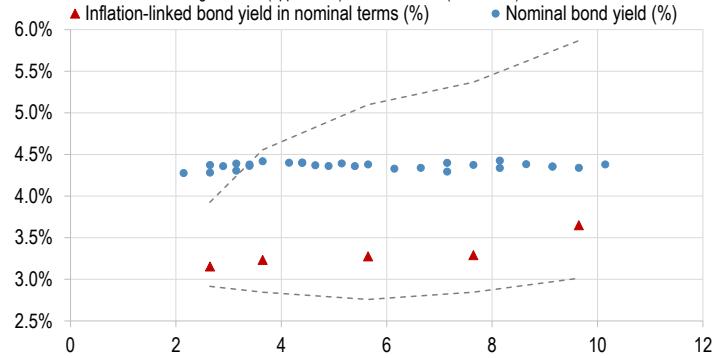
^If coupon payments are before 14-Nov-22, nominal cashflows are known with certainty. Else, we use CPI projections to estimate nominal cashflows. Nominal cashflows include coupons and principal repayments

## Korea

Settlement Date	19-Oct-22
Reference CPI Inflation	108.67
Day Count Convention	ACT/ACT
Coupon Frequency	2
Low Inflation Scenario	0.50%
Base Inflation Scenario	1.25%
High Inflation Scenario	4.00%

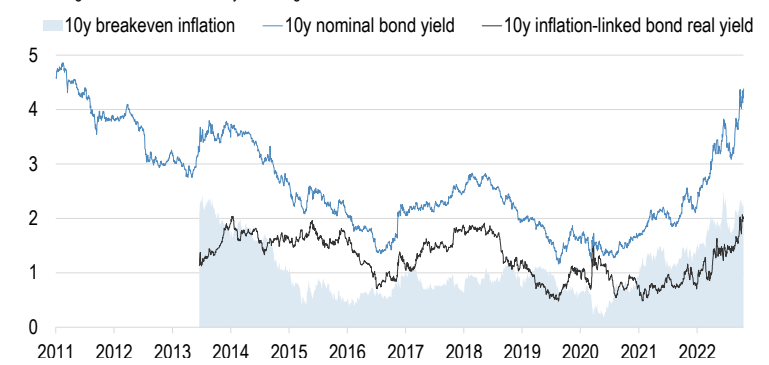
Korea CPI linker IRRs vs. nominal bond yields

y-axis: annual nominal yield; x-axis: years to maturity. Red triangles show CPI linker IRR in base inflation scenario. Dotted bands show CPI linker IRR in high inflation (upper band) and low inflation (lower band) scenarios.



Korea 10y linker real yield, 10y nominal bond yield, and 10y breakeven inflation

Bond yields in annual terms, %; breakeven inflation (%yoy) proxied by nominal bond yield minus linker real yield. Using historical generic series calculated by J.P. Morgan



	Linker Bond Name	Issue Date	Maturity Date	Maturity (years)	Modified Duration	Settlement Price*	Real Yield (annual, %)	Linker IRRs across different inflation scenarios (%)			Closest maturity nominal bond	Closest maturity nominal bond yield (annual, %)	First full nominal cashflow (%)^	Second full nominal cashflow (%)^	First full nominal cashflow: date	Second full nominal cashflow: date
								Low	Base	High						
1	KTBI 1 3/4 06/10/25	16-Jun-15	10-Jun-25	2.6	1.3	102.45	0.81	2.92	3.15	3.93	KTBI 2 1/4 06/10/25	4.37	1.01%	1.03%	10-Dec-22	10-Jun-23
2	KTBI 1 06/10/26	21-Jun-16	10-Jun-26	3.6	1.8	99.37	1.18	2.85	3.23	4.56	KTBI 1 7/8 06/10/26	4.42	0.57%	0.58%	10-Dec-22	10-Jun-23
3	KTBI 1 3/4 06/10/28	15-May-18	10-Jun-28	5.6	2.7	101.45	1.48	2.76	3.28	5.10	KTBI 2 5/8 06/10/28	4.38	0.97%	0.98%	10-Dec-22	10-Jun-23
4	KTBI 1 1/8 06/10/30	19-May-20	10-Jun-30	7.6	3.6	96.40	1.63	2.85	3.29	5.37	KTBI 1 3/8 06/10/30	4.37	0.61%	0.62%	10-Dec-22	10-Jun-23
5	KTBI 1 5/8 06/10/32	16-May-22	10-Jun-32	9.6	4.4	96.31	2.06	3.01	3.65	5.87	KTBI 3 3/8 06/10/32	4.34	0.83%	0.85%	10-Dec-22	10-Jun-23
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\*Real clean price, quoted in market

^If coupon payments are before 30-Nov-22, nominal cashflows are known with certainty. Else, we use CPI projections to estimate nominal cashflows. Nominal cashflows include coupons and principal repayments

Headline CPI inflation projection (%yoy)	
Jan-22	3.6
Feb-22	3.7
Mar-22	4.1
Apr-22	4.8
May-22	5.4
Jun-22	6.0
Jul-22	6.3
Aug-22	5.7
Sep-22	5.6
Oct-22	6.2
Nov-22	5.4
Dec-22	5.6
Jan-23	5.6
Feb-23	5.3
Mar-23	4.7
Apr-23	4.2
May-23	3.6
Jun-23	3.2
Jul-23	2.6
Aug-23	3.1
Sep-23	3.1
Oct-23	2.7
Nov-23	2.5
Dec-23	2.3

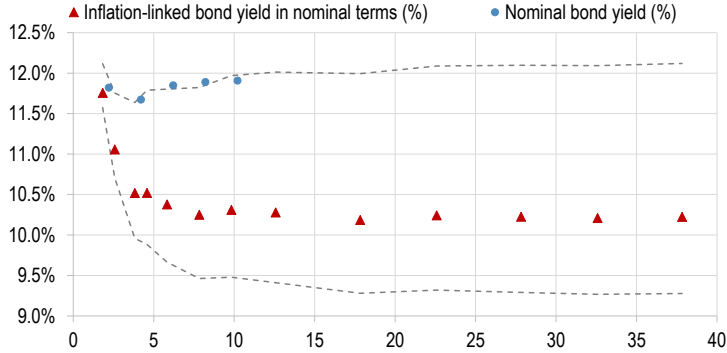
J.P. Morgan forecasts in blue

# Brazil

Settlement Date	19-Oct-22
Reference CPI Inflation	6370.34
Day Count Convention	BUS/252
Coupon Frequency	2
Low Inflation Scenario	3.00%
Base Inflation Scenario	4.00%
High Inflation Scenario	6.00%

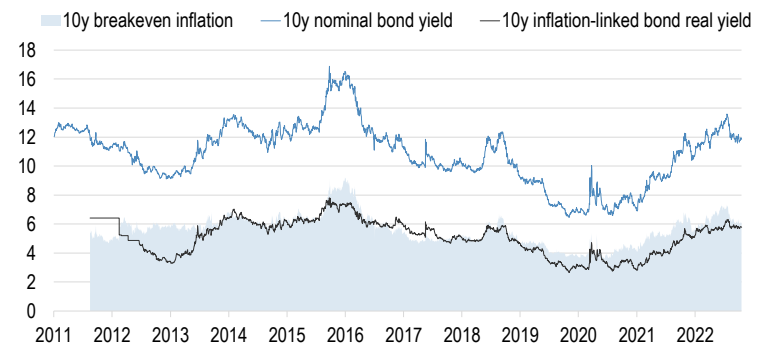
Brazil CPI linker IRRs vs. nominal bond yields

y-axis: annual nominal yield; x-axis: years to maturity. Red triangles show CPI linker IRR in base inflation scenario. Dotted bands show CPI linker IRR in high inflation (upper band) and low inflation (lower band) scenarios.



Brazil 10y linker real yield, 10y nominal bond yield, and 10y breakeven inflation

Bond yields in annual terms, %; breakeven inflation (%yoy) proxied by nominal bond yield minus linker real yield. Using historical generic series calculated by J.P. Morgan



	Linker Bond Name	Issue Date	Maturity Date	Maturity (years)	Modified Duration	Settlement Price*	Real Yield (annual, %)	Linker IRRs across different inflation scenarios (%)			Closest maturity nominal bond	Closest maturity nominal bond yield (annual, %)	First full nominal cashflow (%)^A	Second full nominal cashflow (%)^A	First full nominal cashflow: date	Second full nominal cashflow: date
								Low	Base	High						
1	BNTNB 6 08/15/24	15-Oct-03	15-Aug-24	1.8	1.6	995.21	6.28	11.57	11.76	12.12	BNTNF 10 01/01/25	11.82	11.98%	12.19%	15-Feb-23	15-Aug-23
2	BNTNB 6 05/15/25	08-Jan-20	15-May-25	2.6	2.2	1006.67	5.70	10.71	11.06	11.75	BNTNF 10 01/01/25	11.82	11.75%	12.09%	16-Nov-22	15-May-23
3	BNTNB 6 08/15/26	06-Jan-16	15-Aug-26	3.8	3.3	1012.44	5.61	9.96	10.52	11.64	BNTNF 10 01/01/27	11.67	11.98%	12.19%	15-Feb-23	15-Aug-23
4	BNTNB 6 05/15/27	12-Jan-22	15-May-27	4.6	3.7	1013.66	5.64	9.88	10.52	11.79	BNTNF 10 01/01/27	11.67	11.75%	12.09%	16-Nov-22	15-May-23
5	BNTNB 6 08/15/28	10-Jan-18	15-Aug-28	5.8	4.7	1015.55	5.67	9.66	10.38	11.80	BNTNF 10 01/01/29	11.85	11.98%	12.19%	15-Feb-23	15-Aug-23
6	BNTNB 6 08/15/30	10-Feb-10	15-Aug-30	7.8	6.0	1021.64	5.64	9.46	10.25	11.82	BNTNF 10 01/01/31	11.89	11.98%	12.19%	15-Feb-23	15-Aug-23
7	BNTNB 6 08/15/32	05-Jan-22	15-Aug-32	9.8	7.1	1017.31	5.75	9.48	10.31	11.97	BNTNF 10 01/01/33	11.91	11.98%	12.19%	15-Feb-23	15-Aug-23
8	BNTNB 6 05/15/35	15-Mar-06	15-May-35	12.6	8.4	1020.39	5.76	9.41	10.28	12.01	BNTNF 10 01/01/33	11.91	11.75%	12.09%	16-Nov-22	15-May-23
9	BNTNB 6 08/15/40	10-Feb-10	15-Aug-40	17.8	10.6	1028.67	5.73	9.28	10.18	11.99	-	-	11.98%	12.19%	15-Feb-23	15-Aug-23
10	BNTNB 6 05/15/45	15-Sep-04	15-May-45	22.6	11.8	1022.60	5.81	9.32	10.24	12.09	-	-	11.75%	12.09%	16-Nov-22	15-May-23
11	BNTNB 6 08/15/50	10-Feb-10	15-Aug-50	27.8	13.2	1025.05	5.81	9.29	10.23	12.10	-	-	11.98%	12.19%	15-Feb-23	15-Aug-23
12	BNTNB 6 05/15/55	14-Jan-15	15-May-55	32.6	13.8	1026.66	5.81	9.27	10.21	12.09	-	-	11.75%	12.09%	16-Nov-22	15-May-23
13	BNTNB 6 08/15/60	12-Jan-22	15-Aug-60	37.8	14.7	1025.71	5.82	9.28	10.22	12.12	-	-	11.98%	12.19%	15-Feb-23	15-Aug-23
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Headline CPI inflation projection (%yoy)	
Jan-22	10.4
Feb-22	10.5
Mar-22	11.3
Apr-22	12.1
May-22	11.7
Jun-22	11.9
Jul-22	10.1
Aug-22	8.7
Sep-22	7.2
Oct-22	6.2
Nov-22	5.6
Dec-22	5.6
Jan-23	5.6
Feb-23	5.3
Mar-23	4.0
Apr-23	3.3
May-23	2.9
Jun-23	2.6
Jul-23	3.6
Aug-23	4.2
Sep-23	5.0
Oct-23	5.1
Nov-23	5.1
Dec-23	5.2

J.P. Morgan forecasts in blue

\*Real clean price. Nominal dirty prices are quoted in market

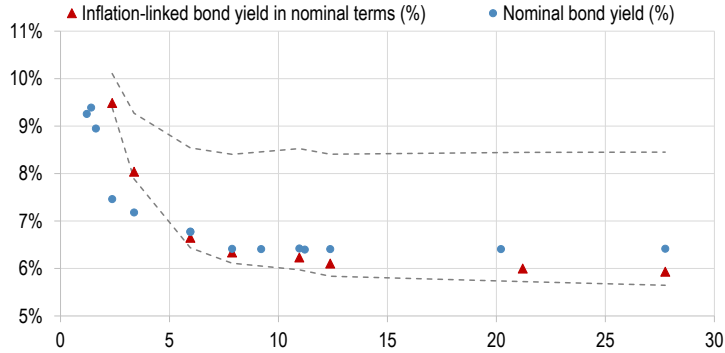
<sup>A</sup>If coupon payments are before 14-Nov-22, nominal cashflows are known with certainty. Else, we use CPI projections to estimate nominal cashflows. Nominal cashflows include coupons and principal repayments

# Chile

Settlement Date	19-Oct-22
Reference inflation-linked accounting unit (CHUF)	34690.47
Day Count Convention	ACT/365
Coupon Frequency	2
Low Inflation Scenario	2.50%
Base Inflation Scenario	3.00%
High Inflation Scenario	6.00%

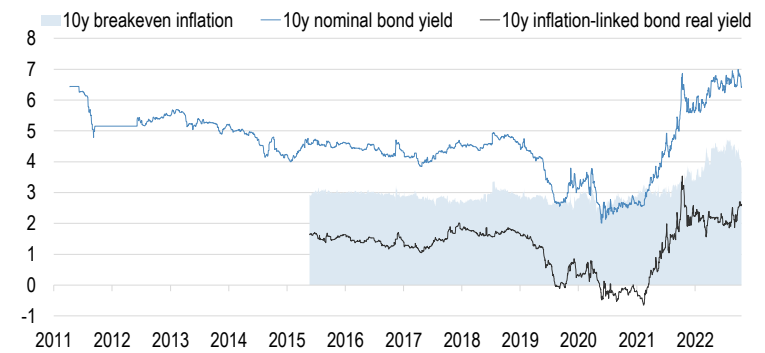
## Chile CPI linker IRRs vs. nominal bond yields

y-axis: annual nominal yield; x-axis: years to maturity. Red triangles show CPI linker IRR in base inflation scenario. Dotted bands show CPI linker IRR in high inflation (upper band) and low inflation (lower band) scenarios.



## Chile 10y linker real yield, 10y nominal bond yield, and 10y breakeven inflation

Bond yields in annual terms, %; breakeven inflation (%yo) proxied by nominal bond yield minus linker real yield. Using historical generic series calculated by J.P. Morgan



	Linker Bond Name	Issue Date	Maturity Date	Maturity (years)	Modified Duration	Settlement Price*	Real Yield (annual, %)	Linker IRRs across different inflation scenarios (%)			Closest maturity nominal bond	Closest maturity nominal bond yield (annual, %)	First full nominal cashflow (%)^A	Second full nominal cashflow (%)^A	First full nominal cashflow: date	Second full nominal cashflow: date
								Low	Base	High						
1	BTUCL 0 03/01/25	09-Apr-20	01-Mar-25	2.4	2.3	91.18	3.98	9.39	9.49	10.11	BTPCL 2 1/2 03/01/25	7.46	136.08%	-	01-Mar-25	-
2	BTUCL 1 1/2 03/01/26	20-May-15	01-Mar-26	3.4	3.2	94.58	3.24	7.89	8.04	9.27	BTPCL 4 1/2 03/01/26	7.18	1.07%	1.10%	01-Mar-23	01-Sep-23
3	BTUCL 0 10/01/28	29-Mar-21	01-Oct-28	6.0	5.1	85.94	2.58	6.44	6.65	8.54	BTPCL 2.3 10/01/28	6.78	147.92%	-	01-Oct-28	-
4	BTUCL 1.9 09/01/30	01-Mar-18	01-Sep-30	7.9	7.1	96.12	2.46	6.11	6.34	8.41	BTPCL 4.7 09/01/30	6.41	1.25%	1.29%	01-Mar-23	01-Sep-23
5	BTUCL 0 10/01/33	29-Mar-21	01-Oct-33	11.0	8.4	75.50	2.60	5.97	6.23	8.52	BTPCL 2.8 10/01/33	6.42	171.77%	-	01-Oct-33	-
6	BTUCL 2 03/01/35	01-Mar-15	01-Mar-35	12.4	10.7	94.88	2.50	5.84	6.10	8.41	BTPCL 5 03/01/35	6.41	1.44%	1.49%	01-Mar-23	01-Sep-23
7	BTUCL 3 01/01/44	14-May-14	01-Jan-44	21.2	15.6	107.86	2.53	5.72	6.00	8.45	BTPCL 6 01/01/43	6.41	2.21%	2.28%	01-Jan-23	01-Jul-23
8	BTUCL 2.1 07/15/50	28-Jan-19	15-Jul-50	27.7	20.2	91.46	2.54	5.65	5.93	8.45	BTPCL 5.1 07/15/50	6.42	1.34%	1.38%	15-Jan-23	15-Jul-23
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\*Real clean price, quoted in market

<sup>A</sup>If coupon payments are before 09-Nov-22, nominal cashflows are known with certainty. Else, we use CPI projections to estimate nominal cashflows. Nominal cashflows include coupons and principal repayments

Headline CPI inflation projection (%yo)	
Jan-22	7.7
Feb-22	7.8
Mar-22	9.4
Apr-22	10.5
May-22	11.5
Jun-22	12.5
Jul-22	13.1
Aug-22	14.1
Sep-22	13.7
Oct-22	13.1
Nov-22	13.3
Dec-22	12.8
Jan-23	11.9
Feb-23	12.0
Mar-23	10.9
Apr-23	9.8
May-23	9.1
Jun-23	8.4
Jul-23	7.5
Aug-23	6.5
Sep-23	6.3
Oct-23	6.0
Nov-23	5.6
Dec-23	5.5

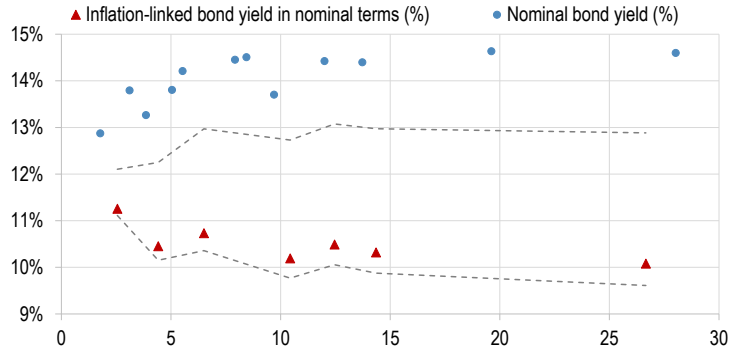
J.P. Morgan forecasts in blue

# Colombia

Settlement Date	18-Oct-22
Reference units of real constant value (UVR)	320.80
Day Count Convention	NL/365
Coupon Frequency	1
Low Inflation Scenario	2.50%
Base Inflation Scenario	3.00%
High Inflation Scenario	6.00%

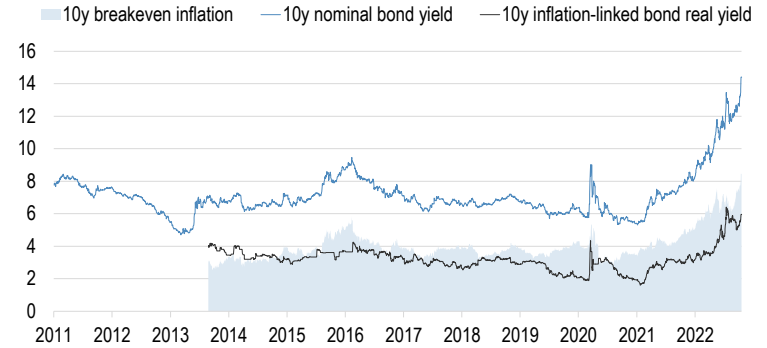
## Colombia CPI linker IRRs vs. nominal bond yields

y-axis: annual nominal yield; x-axis: years to maturity. Red triangles show CPI linker IRR in base inflation scenario. Dotted bands show CPI linker IRR in high inflation (upper band) and low inflation (lower band) scenarios.



## Colombia 10y linker real yield, 10y nominal bond yield, and 10y breakeven inflation

Bond yields in annual terms, %; breakeven inflation (%/yoy) proxied by nominal bond yield minus linker real yield. Using historical generic series calculated by J.P. Morgan



	Linker Bond Name	Issue Date	Maturity Date	Maturity (years)	Modified Duration	Settlement Price*	Real Yield (annual, %)	Linker IRRs across different inflation scenarios (%)			Closest maturity nominal bond	Closest maturity nominal bond yield (annual, %)	First full nominal cashflow (%)^A	Second full nominal cashflow (%)^A	First full nominal cashflow: date	Second full nominal cashflow: date
								Low	Base	High						
1	COLTES 3 1/2 05/07/25	07-May-14	07-May-25	2.6	2.3	97.81	4.41	11.11	11.25	12.10	COLTES 6 1/4 11/26/25	13.79	5.60%	5.93%	07-May-23	07-May-24
2	COLTES 3.3 03/17/27	17-Mar-16	17-Mar-27	4.4	3.9	91.86	5.41	10.15	10.45	12.25	COLTES 7 1/2 08/26/26	13.27	4.68%	4.96%	17-Mar-23	17-Mar-24
3	COLTES 2 1/4 04/18/29	18-Apr-19	18-Apr-29	6.5	5.7	80.09	6.04	10.36	10.73	12.97	COLTES 6 04/28/28	14.21	2.86%	3.03%	18-Apr-23	18-Apr-24
4	COLTES 3 03/25/33	25-Mar-13	25-Mar-33	10.4	8.2	76.61	6.09	9.77	10.19	12.73	COLTES 7 06/30/32	13.70	4.86%	5.16%	25-Mar-23	25-Mar-24
5	COLTES 4 3/4 04/04/35	04-Apr-15	04-Apr-35	12.5	8.6	86.22	6.38	10.06	10.49	13.07	COLTES 7 1/4 10/18/34	14.42	7.26%	7.70%	04-Apr-23	04-Apr-24
6	COLTES 3 3/4 02/25/37	25-Feb-19	25-Feb-37	14.4	9.9	75.05	6.46	9.88	10.32	12.97	COLTES 6 1/4 07/09/36	14.40	4.68%	4.98%	25-Feb-23	25-Feb-24
7	COLTES 3 3/4 06/16/49	16-Jun-17	16-Jun-49	26.7	14.0	67.73	6.27	9.61	10.08	12.88	COLTES 7 1/4 10/26/50	14.60	5.09%	5.38%	16-Jun-23	16-Jun-24
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Headline CPI inflation projection (%/yoy)	
Jan-22	6.9
Feb-22	8.0
Mar-22	8.5
Apr-22	9.2
May-22	9.1
Jun-22	9.7
Jul-22	10.2
Aug-22	10.8
Sep-22	11.4
Oct-22	12.2
Nov-22	12.1
Dec-22	11.8
Jan-23	11.5
Feb-23	11.7
Mar-23	11.3
Apr-23	10.6
May-23	10.1
Jun-23	9.8
Jul-23	9.0
Aug-23	8.1
Sep-23	7.3
Oct-23	6.7
Nov-23	6.4
Dec-23	6.3

J.P. Morgan forecasts in blue

\*Real clean price, quoted in market

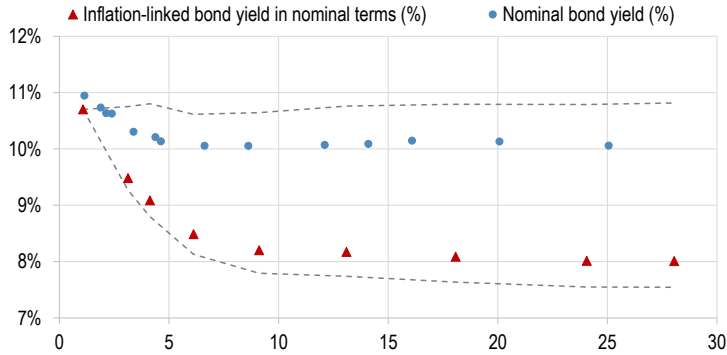
^If coupon payments are before 15-Nov-22, nominal cashflows are known with certainty. Else, we use CPI projections to estimate nominal cashflows. Nominal cashflows include coupons and principal repayments

# Mexico

Settlement Date	20-Oct-22
Reference inflation-linked accounting unit (MXUDI)	7.56
Day Count Convention	ACT/360
Coupon Frequency	2
Low Inflation Scenario	2.50%
Base Inflation Scenario	3.00%
High Inflation Scenario	6.00%

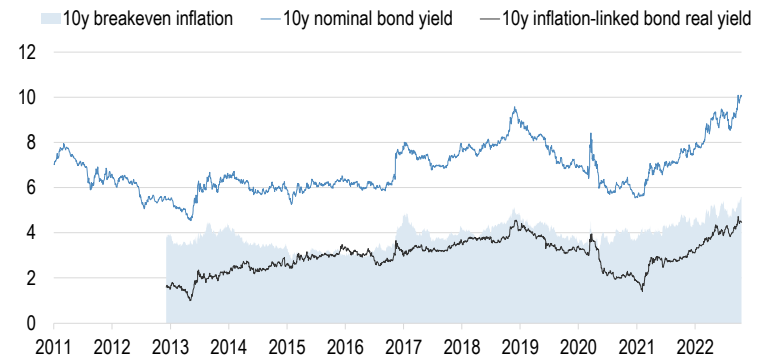
Mexico CPI linker IRRs vs. nominal bond yields

y-axis: annual nominal yield; x-axis: years to maturity. Red triangles show CPI linker IRR in base inflation scenario. Dotted bands show CPI linker IRR in high inflation (upper band) and low inflation (lower band) scenarios.



Mexico 10y linker real yield, 10y nominal bond yield, and 10y breakeven inflation

Bond yields in annual terms, %; breakeven inflation (%yo) proxied by nominal bond yield minus linker real yield. Using historical generic series calculated by J.P. Morgan



	Linker Bond Name	Issue Date	Maturity Date	Maturity (years)	Modified Duration	Settlement Price*	Real Yield (annual, %)	Linker IRRs across different inflation scenarios (%)			Closest maturity nominal bond	Closest maturity nominal bond yield (annual, %)	First full nominal cashflow (%)^A	Second full nominal cashflow (%)^A	First full nominal cashflow: date	Second full nominal cashflow: date
								Low	Base	High						
1	MUDI 3 1/2 11/16/23	17-Jan-20	16-Nov-23	1.1	1.0	98.76	4.74	10.70	10.70	10.70	MBONO 8 12/07/23	10.95	2.07%	2.14%	17-Nov-22	18-May-23
2	MUDI 4 1/2 12/04/25	05-Jan-06	04-Dec-25	3.1	2.9	99.39	4.77	9.27	9.48	10.75	MBONO 5 3/4 03/05/26	10.30	4.73%	4.84%	08-Dec-22	08-Jun-23
3	MUDI 3 12/03/26	01-Apr-22	03-Dec-26	4.1	3.8	93.71	4.75	8.80	9.09	10.80	MBONO 5 1/2 03/04/27	10.21	1.59%	1.62%	08-Dec-22	08-Jun-23
4	MUDI 4 11/30/28	07-Apr-17	30-Nov-28	6.1	5.3	97.58	4.51	8.13	8.49	10.61	MBONO 8 1/2 05/31/29	10.06	2.67%	2.74%	08-Dec-22	08-Jun-23
5	MUDI 2 3/4 11/27/31	05-Feb-21	27-Nov-31	9.1	7.9	87.45	4.50	7.79	8.20	10.64	MBONO 7 3/4 05/29/31	10.05	1.58%	1.62%	08-Dec-22	08-Jun-23
6	MUDI 4 1/2 11/22/35	05-Jan-06	22-Nov-35	13.1	9.7	99.85	4.58	7.74	8.17	10.76	MBONO 10 11/20/36	10.09	4.73%	4.84%	08-Dec-22	08-Jun-23
7	MUDI 4 11/15/40	25-Mar-10	15-Nov-40	18.1	12.5	93.51	4.59	7.64	8.09	10.79	MBONO 8 1/2 11/18/38	10.15	3.45%	3.54%	08-Dec-22	08-Jun-23
8	MUDI 4 11/08/46	06-Jun-14	08-Nov-46	24.1	14.8	92.53	4.57	7.55	8.01	10.79	MBONO 8 11/07/47	10.06	2.99%	3.06%	08-Dec-22	08-Jun-23
9	MUDI 4 11/03/50	09-Aug-19	03-Nov-50	28.0	16.1	91.60	4.59	7.54	8.01	10.82	MBONO 8 07/31/53	10.08	2.44%	2.50%	08-Dec-22	08-Jun-23
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\*Real clean price, quoted in market

<sup>A</sup>If coupon payments are before 25-Oct-22, nominal cashflows are known with certainty. Else, we use CPI projections to estimate nominal cashflows. Nominal cashflows include coupons and principal repayments

Headline CPI inflation projection (%yo)	
Jan-22	7.1
Feb-22	7.3
Mar-22	7.5
Apr-22	7.7
May-22	7.7
Jun-22	8.0
Jul-22	8.2
Aug-22	8.7
Sep-22	8.7
Oct-22	8.6
Nov-22	8.2
Dec-22	8.6
Jan-23	8.7
Feb-23	8.2
Mar-23	7.6
Apr-23	7.3
May-23	6.9
Jun-23	6.3
Jul-23	6.1
Aug-23	5.8
Sep-23	5.6
Oct-23	5.4
Nov-23	5.2
Dec-23	5.1

J.P. Morgan forecasts in blue

## J.P. Morgan EM Headline CPI Inflation Forecasts

%yoy. Shaded areas show J.P. Morgan forecasts

J.P.Morgan

	South Africa	Russia	Turkey	Israel	Poland	Korea	Brazil	Chile	Colombia	Mexico	Uruguay
Jan-22	5.7	8.7	48.7	3.1	9.4	3.6	10.4	7.7	6.9	7.1	8.2
Feb-22	5.7	9.2	54.4	3.5	8.5	3.7	10.5	7.8	8.0	7.3	8.9
Mar-22	5.9	16.7	61.1	3.5	11.0	4.1	11.3	9.4	8.5	7.5	9.4
Apr-22	5.9	17.8	70.0	4.0	12.4	4.8	12.1	10.5	9.2	7.7	9.4
May-22	6.5	17.1	73.5	4.2	13.9	5.4	11.7	11.5	9.1	7.7	9.4
Jun-22	7.4	15.9	78.6	4.4	15.5	6.0	11.9	12.5	9.7	8.0	9.3
Jul-22	7.8	15.1	79.6	5.2	15.6	6.3	10.1	13.1	10.2	8.2	9.6
Aug-22	7.6	14.3	80.2	4.6	16.1	5.7	8.7	14.1	10.8	8.7	9.5
Sep-22	7.7	13.7	83.5	4.6	17.2	5.6	7.2	13.7	11.4	8.7	10.0
Oct-22	7.6	12.9	84.1	5.0	17.2	6.2	6.2	13.1	12.2	8.6	9.4
Nov-22	7.6	12.5	80.6	5.1	16.9	5.4	5.6	13.3	12.1	8.2	9.4
Dec-22	7.3	12.9	63.1	5.0	16.6	5.6	5.6	12.8	11.8	8.6	9.3
Jan-23	7.4	12.6	50.0	4.8	17.7	5.6	5.6	11.9	11.5	8.7	8.7
Feb-23	7.2	11.9	44.6	4.3	18.7	5.3	5.3	12.0	11.7	8.2	7.6
Mar-23	6.8	4.4	39.0	4.3	15.6	4.7	4.0	10.9	11.3	7.6	7.5
Apr-23	6.3	3.4	32.1	4.0	14.1	4.2	3.3	9.8	10.6	7.3	7.5
May-23	5.7	3.7	30.4	3.8	12.6	3.6	2.9	9.1	10.1	6.9	7.6
Jun-23	5.1	4.5	26.0	3.5	11.3	3.2	2.6	8.4	9.8	6.3	7.4
Jul-23	4.5	5.0	24.8	2.5	10.9	2.6	3.6	7.5	9.0	6.1	7.2
Aug-23	4.5	5.4	24.9	2.9	10.1	3.1	4.2	6.5	8.1	5.8	6.7
Sep-23	4.8	5.5	24.3	2.7	8.7	3.1	5.0	6.3	7.3	5.6	6.2
Oct-23	4.8	5.4	24.1	2.6	8.1	2.7	5.1	6.0	6.7	5.4	6.1
Nov-23	4.7	5.4	23.8	2.4	7.6	2.5	5.1	5.6	6.4	5.2	6.2
Dec-23	4.7	4.7	22.4	2.3	7.4	2.3	5.2	5.5	6.3	5.1	6.5
<b>Low Inflation Scenario</b>	3.25	3.00	20.00	1.00	1.50	0.50	3.00	2.50	2.50	2.50	4.00
<b>Base Inflation Scenario</b>	4.75	4.00	35.00	2.00	2.50	1.25	4.00	3.00	3.00	3.00	4.50
<b>High Inflation Scenario</b>	7.00	6.00	60.00	4.00	6.00	4.00	6.00	6.00	6.00	6.00	7.50

In each scenario, we assume the long-run inflation scenario is reached by 2026, and we linearly interpolate from end-23 J.P. Morgan inflation forecasts to reach this.



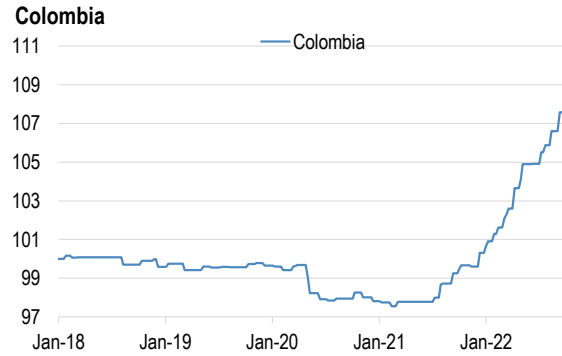
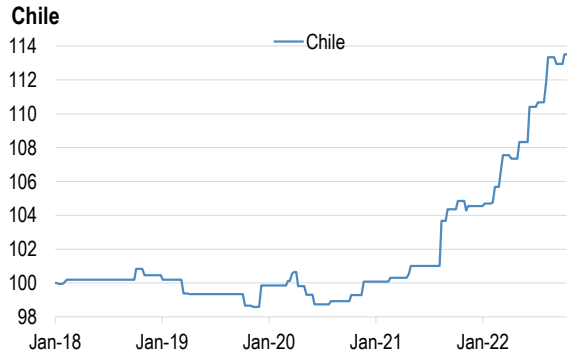
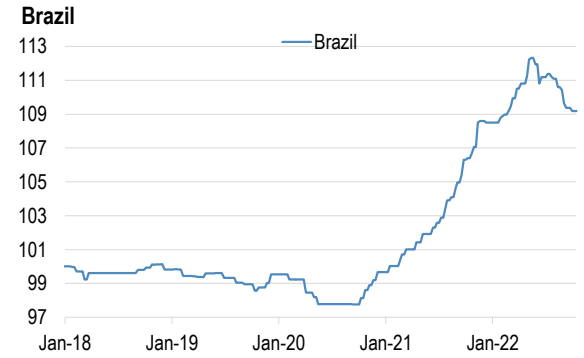
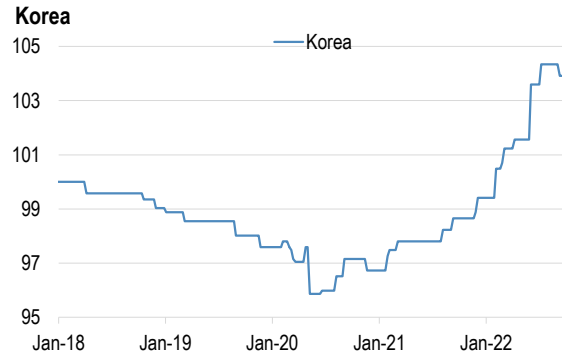
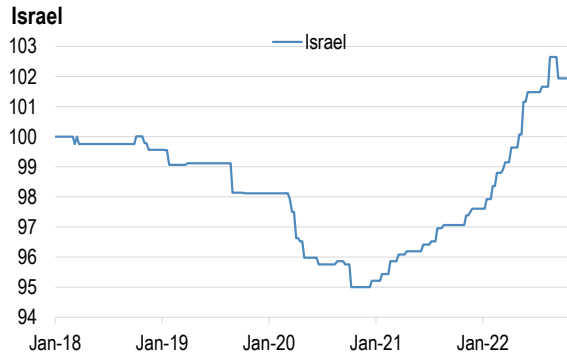
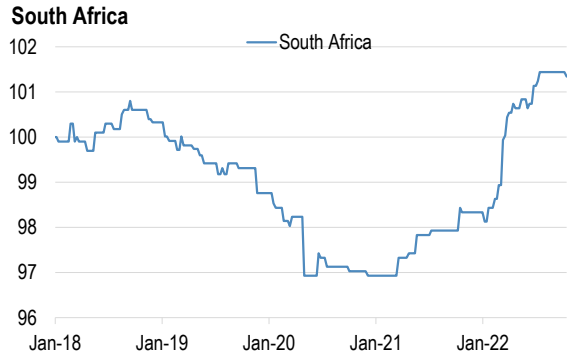
# J.P. Morgan EM Headline CPI Inflation Scenarios

%yoy. In each scenario, we assume the long-run inflation scenario is reached by 2026, and we linearly interpolate from end-23 J.P. Morgan inflation forecasts to reach this



# J.P. Morgan CPI Forecast Revision Indices

Index, 29-Dec-17=100. Cumulative %-pt change in rolling year-ahead %oya headline forecast



**The *Global EM Inflation Linkers Monthly* provides key information on EM linkers markets and valuations, and facilitate comparisons to nominal bond markets.** Our report covers linker markets in South Africa, Turkey, Israel, Korea, Brazil (NTN-B), Chile, Colombia and Mexico. We exclude Russia, Poland and Uruguay country pages given limited liquidity/market disruption, but include details on their respective bond market and reference inflation calculations in this Appendix. The report is structured as follows:

### Overview pages

*Cover page:* The top left box shows highlights from our analytics pack. The top right table shows levels and changes (1m, 3m) in 10y nominal bond yields, linker real yields and breakeven inflation (or closest available maturity). The bottom left chart compares 10y linker IRRs (see *Appendix: CPI linker IRRs* for an in-depth description) to 10y nominal bond yields - the light blue bar shows the linker IRR in the base inflation scenario; the range line shows the linker IRR across the low and high inflation scenarios. The bottom right chart is our chart-of-the-month, showcasing interesting trends.

*10y EM linker real yields and 10y EM breakeven inflation:* EM linker real yields are directly observable in the market - for consistent comparison, we convert all yields into annual yields. Breakeven inflation is proxied by taking the nominal bond yield and subtracting the linker real yield. We calculate historical generic series for the time series graphs.

*10y EM breakeven inflation versus realized inflation (%):* This page compares breakeven inflation priced by the market compared to realized inflation, on a per-country basis.

*Betas: 10y EM linkers to 10y EM nominal bonds.* Betas are calculated by regressing weekly changes in linker real yield on weekly changes in nominal bond yield. This is shown for 10y bonds, or closest maturity where unavailable. We show long-run betas (10y period or longest available sample), and 6m rolling betas. A beta of less than 1 points to the defensive nature of linkers versus nominal bonds, though a beta of greater than 0 still means the absolute return of long linker positions would be negative in a rising rates environment.

*Linker Strategic Long Basket Performance:* This page displays historical performance of our suggested linker baskets. It displays performance for current and closed baskets. The *Historical Baskets* section shows the cumulative changes in breakeven inflation and real yields since the inception of the first basket.

*Foreign ownership of EM linkers:* This page shows current and historical foreign ownership of EM linkers as a percentage of outstanding debt. The bottom right table shows current ownership within the context of its 5 year range.

*J.P. Morgan EM Headline CPI Inflation Forecasts:* This page shows our economists' monthly headline CPI inflation forecasts, which are used in all three of our pricing scenarios. Below this, we show the long-run inflation assumptions in our base, high and low scenarios, which we assume are reached by 2026 - we linearly interpolate from end-2023 forecasts to get to these levels. These are graphed per country on the *J.P. Morgan EM Headline CPI Inflation Scenarios* page.

*J.P. Morgan CPI Forecast Revision Indices:* This page shows the evolution our economists' rolling 1-year ahead headline CPI inflation forecasts, with the FRIs indexed to 100 from end-2017 for consistent comparison.

### Country pages

In the top left-hand corner, we provide key information on the bond market: Settlement date of bonds on the report date; current reference CPI inflation (which is used to calculate the current index ratio for each bond); day count conventions; coupon frequency (payments per year); our long-run inflation scenario assumptions (base, high, low).

The top of the page shows two charts:

- 1) Linker IRRs in our base scenario (red triangles), high scenario (upper dotted band) and low scenario (lower dotted band) and nominal bond yields (blue circles);
- 2) Linker real bond yields, nominal bond yields and breakeven inflation - this is shown for 10y bonds, or closest maturity where unavailable.

The main table in the bottom half of the page shows key information for tradeable linkers. This includes linker bond attributes (linker name, issue date, maturity date, residual maturity in years, modified duration, settlement price i.e. real clean price as quoted in the market, real yield in annual terms), linker IRRs across the base, low and high inflation scenarios, the closest maturity nominal bond attributes (bond name, bond yield) and upcoming linker nominal cashflows (amounts and dates).

The right-hand table shows headline CPI inflation projections (shaded in blue), and realized inflation figures where available.

Key information on the bond market

Used to calculate index ratios for each bond

Coupon payments per year

Used to calculate range of linker IRRs

**South Africa**

Settlement Date: 23-Jun-21  
Reference CPI Inflation: 119.09  
Day Count Convention: ACT/365  
Coupon Frequency: 2  
Low Inflation Scenario: 3.25%  
Base Inflation Scenario: 4.75%  
High Inflation Scenario: 6.50%

Linker IRRs in our base scenario (red triangles), high scenario (upper dotted band) and low scenario (lower dotted band) and nominal bond yields (blue circles)

Linker real bond yields, nominal bond yields and breakeven inflation - this is shown for 10y bonds, or closest maturity where unavailable

Linker Bond Name	Issue Date	Maturity Date	Maturity (years)	Duration	Settlement Price <sup>a</sup>	Real Yield (annual, %)	Linker IRRs across different inflation scenarios (%)			Closest maturity nominal bond	Closest maturity nominal bond yield (annual, %)	First full coupon: nominal cashflow (%) <sup>a</sup>		Second full coupon: nominal cashflow (%) <sup>a</sup>		First full coupon: date		Second full coupon: date		Headline CPI inflation projection (%yo)
							Low	Base	High			nominal	nominal	nominal	nominal	date	date	date	date	
1	SACPI 5 1/2 12/07/23	30-May-01	07-Dec-23	2.5	1.2	110.25	1.25	5.83	6.02	6.25	SAGB 7 3/4 02/28/23	5.21	8.16%	8.35%	07-Dec-21	07-Jun-22	3.2			
2	SACPI 2 01/31/25	04-Jul-12	31-Jan-25	3.6	1.7	99.69	2.10	6.28	6.81	7.43	SAGB 10 1/2 12/21/26	7.44	1.55%	1.58%	31-Jul-21	31-Jan-22	2.9			
3	SACPI 2.6 03/31/28	27-Sep-07	31-Mar-28	8.8	3.1	98.45	2.87	6.64	7.62	8.77	SAGB 10 1/2 12/21/26	7.44	2.77%	2.84%	30-Sep-21	31-Mar-22	3.2			
4	SACPI 1 7/8 03/31/29	27-Jul-16	31-Mar-29	7.8	3.5	92.17	3.03	6.75	7.81	9.04	SAGB 8 01/31/30	9.02	1.16%	1.19%	30-Sep-21	31-Mar-22	4.4			
5	SACPI 1 7/8 02/28/33	15-Jul-15	28-Feb-33	11.7	5.1	81.69	3.87	7.51	8.73	10.15	SAGB 8 1/4 03/31/32	9.68	1.24%	1.27%	31-Aug-21	28-Feb-22	5.2			
6	SACPI 3 45 12/07/33	20-Aug-03	07-Dec-33	12.5	5.0	96.34	3.86	7.55	8.77	10.18	SAGB 8 7/8 02/28/35	10.34	4.33%	4.44%	07-Dec-21	07-Jun-22	4.9			
7	SACPI 2 1/4 01/31/38	04-Jul-12	31-Jan-38	16.6	6.5	78.69	4.06	7.67	8.97	10.48	SAGB 8 1/2 01/31/37	10.58	1.74%	1.78%	31-Jul-21	31-Jan-22	4.7			
8	SACPI 2 1/2 03/31/46	17-Jul-13	31-Mar-46	24.8	8.5	76.27	4.06	7.80	8.96	10.54	SAGB 8 3/4 02/28/48	10.68	1.83%	1.87%	30-Sep-21	31-Mar-22	4.7			
9	SACPI 2 1/2 12/31/50	11-Jul-12	31-Dec-50	29.5	9.6	74.13	4.04	7.59	8.97	10.58	SAGB 8 3/4 02/28/48	10.68	1.92%	1.97%	30-Jun-21	31-Dec-21	4.9			
10																				4.8
11																				5.0
12																				5.1
13																				5.2
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25																				4.3

Linker bond attributes

Linker IRRs across the base, low and high inflation scenario

Closest maturity nominal bond attributes

Upcoming linker nominal cashflows (amounts and dates)

J.P. Morgan headline CPI inflation projections (shaded blue), and realized inflation figures where available

<sup>a</sup>Real clean price, quoted in market  
<sup>b</sup>If coupon payments are before 31-Jul-21, nominal cashflows are known with certainty. Else, we use CPI projections to estimate nominal cashflows.

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4

18

**We calculate CPI linker IRRs (internal rate of return) to consistently compare them to nominal bond yields.** We forecast all the nominal cash flows (fixed coupons and principal repayment at maturity) paid out by a CPI linker using monthly inflation projections. The settlement price of the CPI linker is already known since it is quoted in the market. Armed with the bond price and its forecast nominal cash flows, we can calculate the internal rate of return (yield to maturity) of the CPI linker, in the same way done for a standard nominal bond with fixed coupons. We then adjust for day-count conventions to allow direct comparison to the yield to maturity on nominal fixed-coupon bonds across all markets (all bonds converted to annual yield to maturity).

This method of comparison is intuitive and addresses some weaknesses of using breakeven inflation to assess valuation, since it accounts for the path for inflation when calculating the yield of the linker.

**Linkers are partly an insurance product against unanticipated inflation, so we are interested in valuations across a range of inflation scenarios.** In our analysis, we use our economists' inflation projections over the near-term, and then assume a smooth path towards three long-run inflation scenarios: base, high and low (further details can be seen on the *J.P. Morgan EM Headline CPI Inflation Forecasts* page). These three inflation scenarios provide three different CPI linker IRR curves, giving a range of plausible linker IRRs.

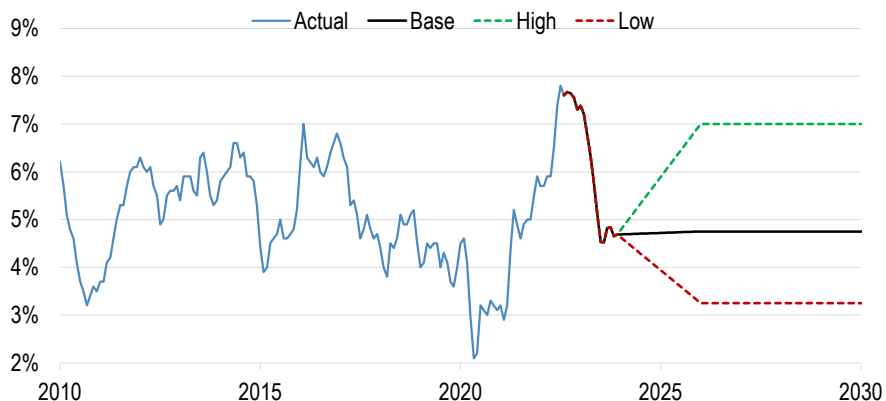
For each country, we plot four series on a chart: the nominal bond yield curve; CPI linker IRRs based on our base-line inflation scenario; and two bands representing CPI linker IRRs under the high and low inflation scenarios. This gives a basis with which to visually compare the attractiveness of linkers against nominal bonds across maturities.

**Here's how to interpret our charts comparing linker versus nominal yields across various inflation scenarios:** The left chart below shows the assumed inflation scenarios for South Africa; the right chart below shows the fixed-coupon bond curve in blue dots (SAGBs) and the red triangles represent CPI linker IRRs (SACPIs) under the baseline inflation scenario. The dotted bands represent valuations in the high scenario (the upper band) and low scenario (the lower band). When the blue dots are close to, or above the upper band, it suggests that the nominal bonds have a higher yield than linkers even under a high inflation scenario, and should be preferred.

**Where CPI linker IRRs are above/in-line with nominal bond yields in the baseline inflation scenario, it is worth owning CPI linkers.** This is because either because the CPI linkers have a higher IRR in outright terms, or because there is added insurance value of linkers if inflation is above the baseline scenario. When CPI linker IRRs are below nominal bond yields, nominal bond

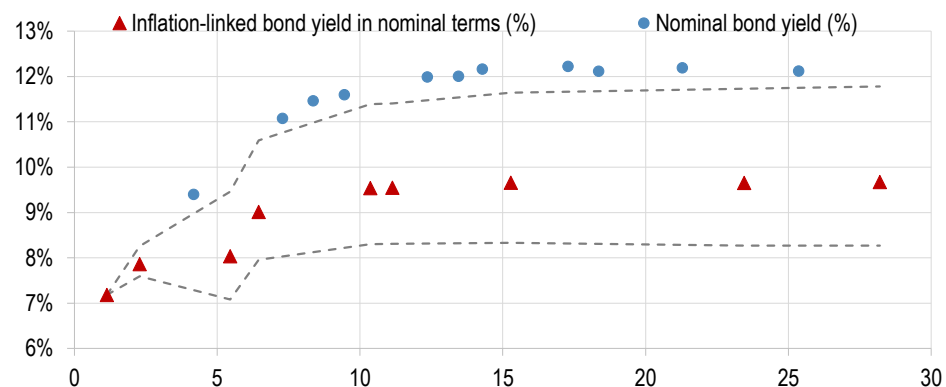
### South Africa inflation scenarios

Headline inflation, %yoy



### South Africa CPI linker IRRs vs. nominal bond yields

y-axis: annual nominal yield; x-axis: years to maturity. Red triangles show CPI linker IRR in base inflation scenario. Dotted bands show CPI linker IRR in high inflation (upper band) and low inflation (lower band) scenarios.



## Appendix: EM linker markets: key characteristics

	Number of linkers	Outstanding (USD billion)	Coupon Frequency	Bloomberg ticker	Auction details	Secondary Market Liquidity***	% of domestic debt stock	Maturity range (years)	Foreign ownership (%)	Deflation floor?
<b>South Africa</b>	9	29	Semi-annual	SACPI	Weekly on Fridays, R1.2bn offered	Trade size: ZAR 25mn; Daily turnover: ZAR 1bn; Bid offer spread: 5bp	16	1 to 28	6	Yes - principal and final coupon
<b>Turkey<sup>^</sup></b>	19	15	Semi-annual	TURKGB, CPI series	Typically issued on a monthly basis	Trade size: TRY 20mn; Daily turnover: TRY 500mn; Bid offer spread: 10bp	33	0 to 10	-	Yes - principal and all coupons
<b>Poland</b>	1	1	Annual	POLGB, CPI series	Last auctioned in Nov 2016	Trade size: PLN 10mn; Daily turnover: Very little (illiquid); Bid offer spread: 50c	1	1	10	Yes - principal only
<b>Israel<sup>*</sup></b>	9	43	Annual	ILCPI	Weekly (typically Monday) of on-the-run linkers (5y, 10y or 30y), variable size	Trade size: 2.5k DV01; Daily turnover: 20k DV01; Bid offer spread: 6bp	23	1 to 29	-	No
<b>Korea</b>	6	5	Semi-annual	KTBI	Even months: competitive auctions worth KRW 100bn; odd months: conversion offers	Trade size: KRW 1bn; Daily market turnover: KRW 30bn; Bid offer spread: 10 bps	1	1 to 10	23	Yes - principal only
<b>Brazil</b>	15	292	Semi-annual	BNTNB	Biweekly	Trade size: 10k DV01; Daily turnover: 0.8-1.0mm DV01; Bid offer spread: 10k DV01 1-2bp; 10-25k 2-3bp; 50k 4-5bp.	29	0 to 38	3	No
<b>Chile<sup>**</sup></b>	8	32	Semi-annual	BTUCL	Biweekly/monthly	Trade size: limited liquidity; Daily turnover: \$50-100mm (includes both BTP and BTU); Bid offer spread: 15-20bp	46	0 to 28	-	No
<b>Colombia</b>	8	33	Annual	COLTES, UVR series	Biweekly	Trade size: 3k DV01; Daily turnover: 40k DV01; Bid offer spread: 6-7bp	34	0 to 27	6	No
<b>Mexico</b>	9	127	Semi-annual	MUDI	Weekly	Trade size: 5k DV01; Daily turnover: 200k DV01; Bid offer spread: 3-5bp	26	1 to 28	5	No
<b>Uruguay</b>	6	7	Semi-annual	URUGUA, blank series	Limited/no predetermined frequency	Trade size: USD 2mn; Daily turnover: USD 5-10mn (includes both fixed-rate and linkers globals); Bid offer spread: 75bp	77	4 to 18	-	No

Source: J.P. Morgan. As of 18-Oct-22. Outstanding values using spot USD/EM FX rates.

\*Refers to ILCPI series issued from 2006 (excludes 'GALIL' bonds); \*\*Number of linkers refers to liquid linkers - there are currently 24 outstanding Chilean linkers. Similarly, maturity range refers to liquid linkers; \*\*\*Indicative

<sup>^</sup>Turkey linkers as a % of TRY-denominated domestic debt stock; excluding private placement bonds

In South Africa, Russia, Turkey, Poland and Korea, reference inflation (*Ref CPI<sub>i</sub>*) follows the “Canadian” model:

$$Ref\ CPI_i = CPI_J + \left(\frac{t-1}{D}\right) * (CPI_{J+1} - CPI_J)$$

Where:

- *Ref CPI<sub>i</sub>* is the reference CPI figure on calendar date *i*
- *CPI<sub>J</sub>* is the CPI figure for the first day of the calendar month *J* months before the calendar date *i*
- *CPI<sub>J+1</sub>* is the CPI figure for the first day of the calendar month *J+1* months before the calendar date *i*
- *t* is the calendar day of the calendar date *i*
- *D* is the number of days in the calendar month of the calendar date *i*

In South Africa and Russia, *J = 4* i.e.

$$Ref\ CPI_i = CPI_{-4} + \left(\frac{t-1}{D}\right) * (CPI_{-3} - CPI_{-4})$$

In Turkey, Poland and Korea, *J = 3* i.e.

$$Ref\ CPI_i = CPI_{-3} + \left(\frac{t-1}{D}\right) * (CPI_{-2} - CPI_{-3})$$

We go through a worked example of South Africa *Ref CPI* as of 17<sup>th</sup> March 2021:

- In South Africa, linkers settle T+3 days, so the calendar date *i* is 23<sup>rd</sup> March 2021 (22<sup>nd</sup> March 2021 is a public holiday in South Africa)
- *CPI<sub>J</sub>* is CPI index 4 months ago i.e. as of November 2020, which is 117.10
- *CPI<sub>J+1</sub>* is CPI index 3 months ago i.e. as of December 2020, which is 117.30
- *t = 23*
- *D = the number of days in March 2021* i.e. 31

$$Ref\ CPI_{17-Mar-21} = 117.10 + \left(\frac{23-1}{31}\right) * (117.30 - 117.10) = 117.24$$

**In Israel, reference inflation is calculated as:**

$$Ref\ CPI_i = \begin{cases} CPI_{-2} & \text{if } t < 15 \\ CPI_{-1} & \text{if } t \geq 15 \end{cases}$$

Where  $t$  is the calendar day of the calendar date  $i$ . For example (remembering that Israel linkers settle T+1 days):

- As of 17<sup>th</sup> March 2021, the calendar date  $i$  is 18<sup>th</sup> March 2021.  $Ref\ CPI_i$  is  $CPI_{-1}$  i.e. CPI index 1 month ago, as of February 2021, which is 100.0.

**In Brazil, for NTN-B linkers, reference inflation is based on IPCA inflation.** On the 15<sup>th</sup> of the month (when all NTN-B linkers mature),  $Ref\ CPI_i$  is simply  $IPCA_{-1}$ . For secondary market trading, inflation is adjusted on a pro-rate basis:

$$Ref\ CPI_i = IPCA_{-1} * IPCA_f^{\frac{bd}{dt}}$$

Where:

- $IPCA_f$  is the forecast IPCA figure from ANBIMA's Macroeconomic Committee, or the final IPCA figure when available
- $bd$  is the number of business days from the 15<sup>th</sup> of the reference month to the settlement date
- $dt$  is the number of business days from the 15<sup>th</sup> of the reference month to the 15<sup>th</sup> of the month after the reference month

**We go through a worked example of Brazil  $Ref\ CPI$  as of 17<sup>th</sup> March 2021:**

- NTN-B linkers settle T+1 days, so the calendar date  $i$  is 18<sup>th</sup> March 2021
- $IPCA_{-1}$  is IPCA index 1 month ago i.e. as of February 2021, which is 5622.43
- $IPCA_f$  is the IPCA inflation assumption from ANBIMA for March 2021, which is 0.88%/m
- $bd$  is the number of business days from 15<sup>th</sup> March 2021 to 18<sup>th</sup> March 2021, which is 3
- $dt$  is the number of business days from 15<sup>th</sup> March 2021 to 15<sup>th</sup> April 2021, which is 22

$$Ref\ CPI_{17-Mar-21} = 5622.43 * (1 + 0.88\%)^{\frac{3}{22}} = 5625.109$$



In Mexico, Chile, Colombia and Uruguay, reference inflation is based on daily inflation-linked indices specific to each market. Specifically:

Market	Daily inflation-linked index	Bloomberg Ticker
Mexico	Unidades de inversión	MXUDI
Chile	Unidad de Fomento	CHUF
Colombia	Unidad de valor real	UVR
Uruguay	Unidad Indexada	URUIURUI

**Mexico**

$$MXUDI_i = \begin{cases} MXUDI_{t-i} * (1 + 1_m^h CPI)^{1/d} & \text{if } t \leq 10 \text{ or } t \geq 26 \\ MXUDI_{t-i} * (1 + 2_m^h CPI)^{1/15} & \text{if } 11 \leq t \leq 25 \end{cases}$$

Where:

- $MXUDI_i$  is the reference index on calendar date  $i$
- $t$  is the calendar day of calendar date  $i$
- $MXUDI_{i-1}$  is the reference index on the calendar day before calendar date  $i$
- $m$  is the reference month; when  $t \leq 10$  or  $t \geq 26$ ,  $m = \text{month}(i - 15 \text{ days})$ , else  $m$  is the previous month
- $1_m^h CPI$  is CPI inflation for the 1<sup>st</sup> half of the reference month
- $2_m^h CPI$  is CPI inflation for the 2<sup>nd</sup> half of the reference month
- $d$ : if  $t \geq 26$ ,  $d$  is the number of days between the 10<sup>th</sup> of the next month and the 25<sup>th</sup> of the current month; if  $t \leq 10$ ,  $d$  is the number of days between the 10<sup>th</sup> of the current month and the 25<sup>th</sup> of the previous month

$$MXUDI_{17-Mar-21} = MXUDI_{16-Mar-21} * (1 + CPI_{Feb\ 2021, 2nd\ half})^{1/15}$$

$$MXUDI_{17-Mar-21} = 6.722903 * (1 + 0.3097\%)^{\frac{1}{15}} = 6.724290$$

**Chile**

$$CHUF_i = CHUF_{i-1} * (1 + CPI_{m-n})^{1/d}$$

Where:

- $CHUF_i$  is the reference index on calendar date  $i$
- $CHUF_{i-1}$  is the reference index on the calendar day before calendar date  $i$
- $CPI_{m-n}$  is CPI  $n$  months ago: if the calendar day of  $i$  is  $\leq 9$ ,  $n = 2$ ; otherwise  $n = 1$
- $d$  is the number of days between the 9<sup>th</sup> of the next calendar month of  $i$  and the 10<sup>th</sup> of the calendar month of  $i$

$$CHUF_{17-Mar-21} = CHUF_{16-Mar-21} * (1 + CPI_{Feb\ 2021})^{1/(9th\ Apr\ 21-10th\ Mar\ 21)}$$

$$CHUF_{17-Mar-21} = 29,366.37 * (1 + 0.20\%)^{\frac{1}{31}} = 29,368.26$$

**Colombia**

$$UVR_i = UVR_{i-1} * (1 + CPI_{m-n})^{1/d}$$

Where:

- $UVR_i$  is the reference index on calendar date  $i$
- $UVR_{i-1}$  is the reference index on the calendar day before calendar date  $i$
- $CPI_{m-n}$  is CPI  $n$  months ago: if the calendar day of  $i$  is  $\leq 15$ ,  $n = 2$ ; otherwise  $n = 1$
- $d$ : if  $t \leq 15$ ,  $d$  is the number of days between the 15<sup>th</sup> of the current month and the 16<sup>th</sup> of the previous month; if  $t \geq 16$ ,  $d$  is the number of days between the 15<sup>th</sup> of the next month and the 16<sup>th</sup> of the current month

$$UVR_{17-Mar-21} = UVR_{16-Mar-21} * (1 + CPI_{Feb\ 2021})^{1/(15th\ Apr\ 21-16th\ Mar\ 21)}$$

Uruguay

$$UI_{d,M} = \begin{cases} UI_{5,M-1} * \left(\frac{CPI_{M-2}}{CPI_{M-3}}\right)^{\frac{d+D_{M-1}-5}{D_{M-1}}} & \text{if } d \leq 5 \\ UI_{5,M} * \left(\frac{CPI_{M-1}}{CPI_{M-2}}\right)^{\frac{d-5}{D_M}} & \text{if } d \geq 6 \end{cases}$$

Where:

- $UI_{d,M}$  is the reference index on day  $d$  of month  $M$
- $d$  is the day in the month
- $D_M$  is the number of days in month  $M$
- $CPI_m$  is the level of inflation in month  $M$

$$UI_{17-Mar-21} = UI_{5-Mar-21} * \left(\frac{CPI_{Feb\ 2021}}{CPI_{Jan\ 2021}}\right)^{\frac{d-5}{D_3}}$$

$$UI_{17-Mar-21} = 4.8541 * \left(\frac{227.55}{225.69}\right)^{\frac{17-5}{31}} = 4.8695$$

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