

Japan Interest Rate Data Package | Japan

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Market Summary

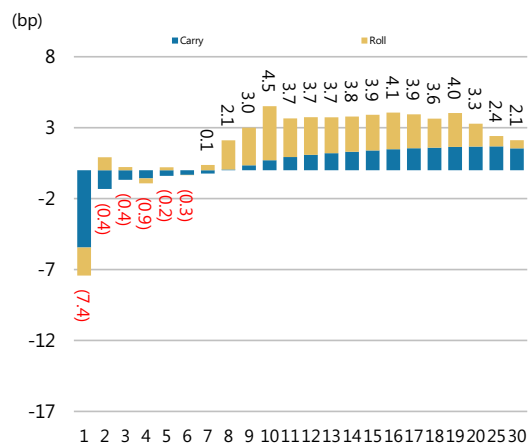
Exhibit 1: Market Summary

JGB Par Rate			Swap Rate			Swap Spread		
Maturity	1/04Close	1D Chg (bp)	Maturity	1/04Close	1D Chg (bp)	Maturity	1/04Close	1D Chg (bp)
1y	-0.21	-3.0	1y	0.00	-0.4	1y	-21.2	-2.6
2y	-0.19	-3.4	2y	0.00	-0.8	2y	-19.3	-2.6
3y	-0.19	-3.6	3y	0.00	-1.0	3y	-18.5	-2.6
4y	-0.19	-3.5	4y	0.00	-1.3	4y	-19.2	-2.3
5y	-0.19	-3.6	5y	0.01	-1.5	5y	-19.7	-2.1
6y	-0.19	-3.6	6y	0.02	-1.9	6y	-21.3	-1.7
7y	-0.18	-3.4	7y	0.05	-2.3	7y	-23.0	-1.1
8y	-0.14	-2.8	8y	0.08	-2.6	8y	-22.0	-0.2
9y	-0.09	-3.5	9y	0.11	-2.9	9y	-20.2	-0.6
10y	-0.02	-3.5	10y	0.15	-3.0	10y	-16.5	-0.5
12y	0.10	-3.8	12y	0.22	-3.6	12y	-12.6	-0.2
15y	0.25	-4.2	15y	0.34	-4.5	15y	-9.0	+0.3
20y	0.47	-4.2	20y	0.49	-5.7	20y	-2.5	+1.6
30y	0.68	-4.5	30y	0.66	-7.0	30y	2.5	+2.5

On-The-Run Issue						JGB Futures / Equity / FX		
	No.	Maturity	Qpn	j-Yield	1D Chg		1/04 Close	1D Chg
2yr	396	2021/1/1	0.1	-0.180	-3.50	JB1	152.84	+0.36
5yr	137	2023/9/20	0.1	-0.190	-3.50	JB2	152.73	+0.41
10yr	352	2028/9/20	0.1	-0.040	-3.50	JJA1	157.71	+1.43
20yr	166	2038/9/20	0.7	0.445	-4.50	ImpVol 1m	1.20%	0.00%
30yr	060	2048/9/20	0.9	0.655	-5.00	Nikkei 225	19561.96	-452.81
40yr	011	2058/3/20	0.8	0.780	-6.00	TOPIX	1471.16	-22.93
CMT	048	2023/5/20	0	103.10	+0.00	USD/JPY	107.97	-2.40
CPI	023	2028/3/10	0.1	103.50	+0.30	EUR/JPY	123.23	-3.27
20y	(Comp Yld)	12/20/2028		-0.020	-3.50			
30y	(Comp Yld)	12/20/2048		0.680	-4.50			

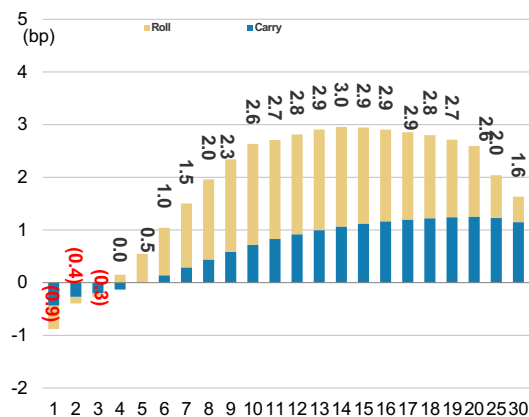
Source: Morgan Stanley Research

Exhibit 2: JGB Cushion(Horizon 6m)



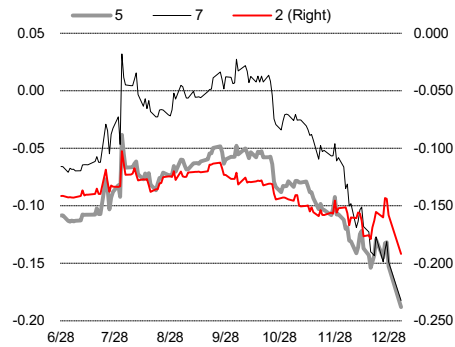
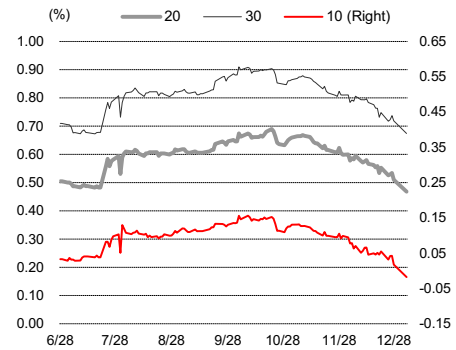
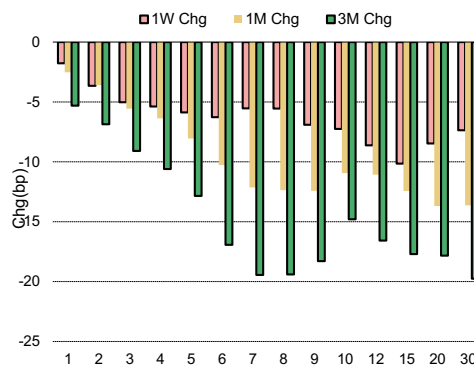
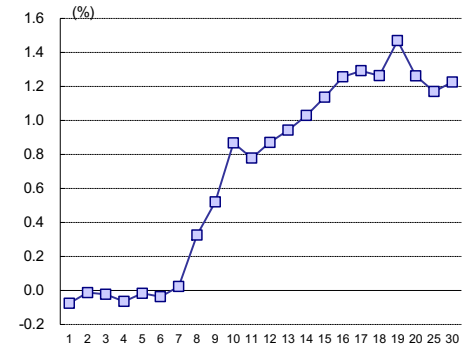
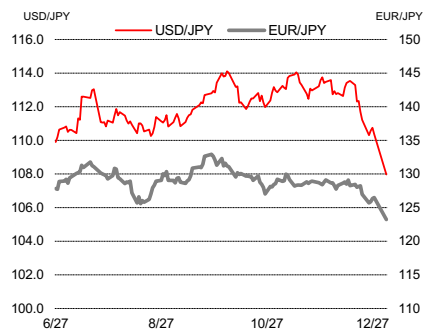
Source: Morgan Stanley Research

Exhibit 3: Swap Cushion(Horizon 6m)



Source: Morgan Stanley Research

History

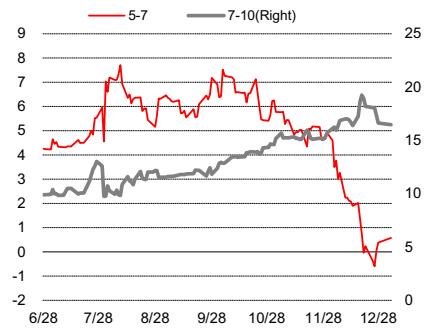
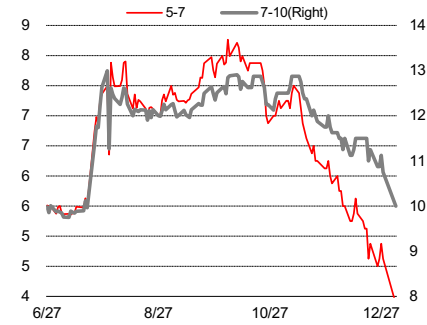
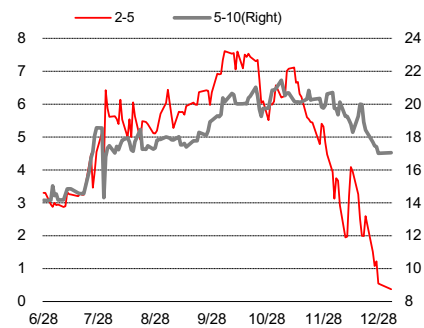
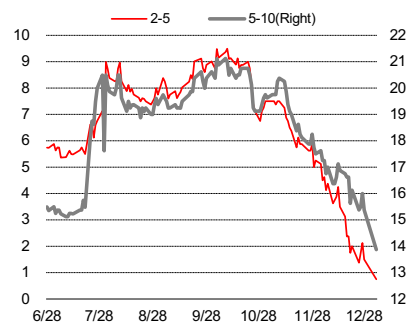
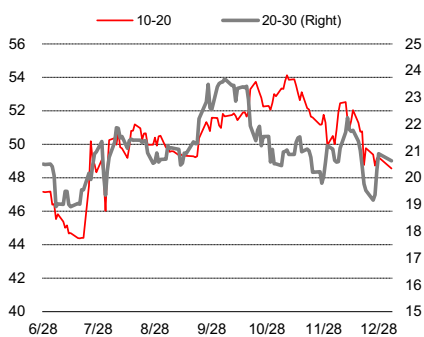
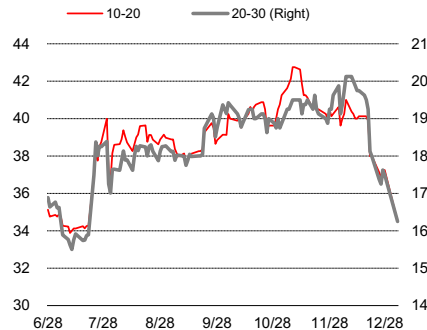
Exhibit 4: JGB Par Rate History(2y,5y,&7y)**Exhibit 5: JGB Par History(10yr,20yr&30yr)****Exhibit 6: Yield Changes****Exhibit 7: JGB Expected Return****Exhibit 8: Foreign Exchange**

Source: Morgan Stanley Research

Exhibit 9: JGB Futures & Nikkei225

Source: Morgan Stanley Research

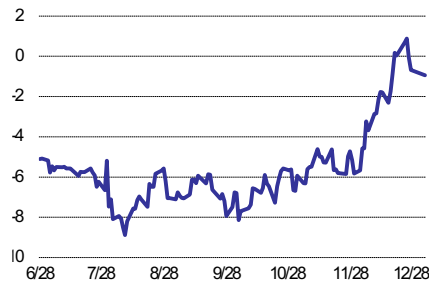
JGB & Swap Curve

Exhibit 10: JGB 5y/7y & 7y/10y**Exhibit 11: Swap 5y/7y & 7y/10y****Exhibit 12: JGB 2y/5y & 5y/10y****Exhibit 13: Swap 2y/5y & 5y/10y****Exhibit 14: JGB 10y/20y & 20y/30y****Exhibit 15: Swap 10y/20y & 20y/30y**

Source: Morgan Stanley Research

Source: Morgan Stanley Research

JGB Butterfly (Proceeds Neutral)

Exhibit 16: JGB 3y/5y/7y

	Notional %	PV01%	Butterfly	
3yr	50.1%	30.0%	Current	-0.9
7yr	49.9%	70.0%	Avg(6m)	-5.6

Exhibit 17: JGB 2y/5y/10y

	Notional %	PV01%	Butterfly	
2yr	62.3%	24.8%	Current	-25.4
10yr	37.7%	75.2%	Avg(6m)	-25.0

Exhibit 18: JGB 5y/7y/10y

	Notional %	PV01%	Butterfly	
5yr	59.4%	42.4%	Current	-18.5
10yr	40.6%	57.6%	Avg(6m)	-10.9

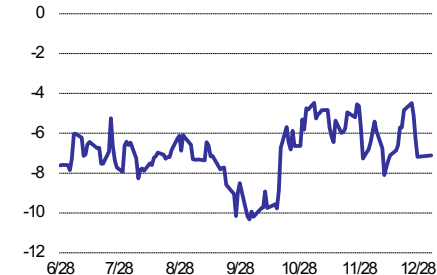
Exhibit 19: JGB 5y/10y/20y

	Notional %	PV01%	Butterfly	
5yr	64.5%	32.4%	Current	-54.6
20yr	35.5%	67.6%	Avg(6m)	-56.0

Exhibit 20: JGB 7y/10y/20y

	Notional %	PV01%	Butterfly	
7yr	75.4%	53.1%	Current	-28.1
20yr	24.6%	46.9%	Avg(6m)	-33.1

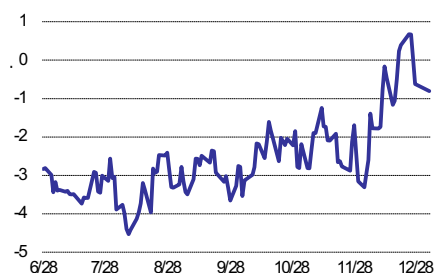
Source: Morgan Stanley Research

Exhibit 21: JGB 10y/20y/30y

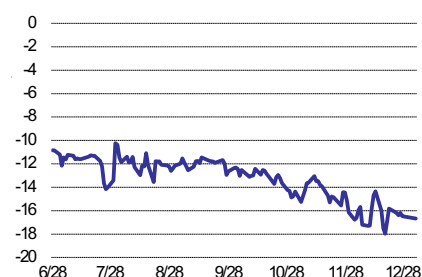
	Notional %	PV01%	Butterfly	
10yr	47.0%	24.7%	Current	-7.1
30yr	53.0%	75.3%	Avg(6m)	-7.0

Source: Morgan Stanley Research

JGB Butterfly (50/50 PV01)

Exhibit 22: JGB 3y/5y/7y

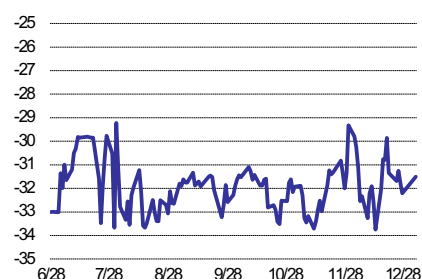
	Notional %	PV01%	Butterfly	
3yr	83.5%	50.0%	Current	-0.8
7yr	35.7%	50.0%	Avg(6m)	-2.6

Exhibit 23: JGB 2y/5y/10y

	Notional %	PV01%	Butterfly	
2yr	125.3%	50.0%	Current	-16.7
10yr	25.1%	50.0%	Avg(6m)	-13.3

Exhibit 24: JGB 5y/7y/10y

	Notional %	PV01%	Butterfly	
5yr	70.1%	50.0%	Current	-15.9
10yr	35.2%	50.0%	Avg(6m)	-8.1

Exhibit 25: JGB 5y/10y/20y

	Notional %	PV01%	Butterfly	
5yr	99.6%	50.0%	Current	-31.5
20yr	26.2%	50.0%	Avg(6m)	-31.9

Exhibit 26: JGB 7y/10y/20y

	Notional %	PV01%	Butterfly	
7yr	71.0%	50.0%	Current	-32.1
20yr	26.2%	50.0%	Avg(6m)	-37.0

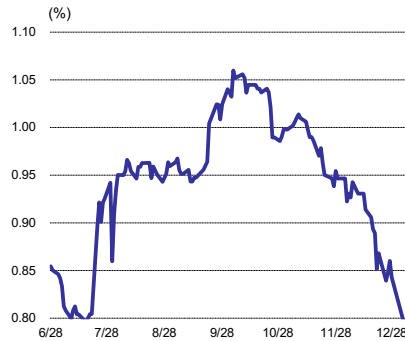
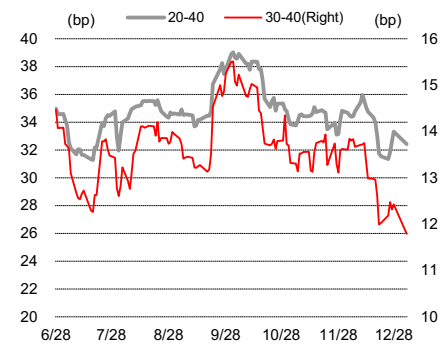
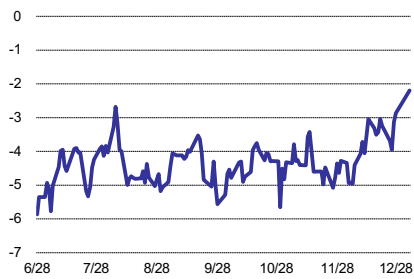
Source: Morgan Stanley Research

Exhibit 27: JGB 10y/20y/30y

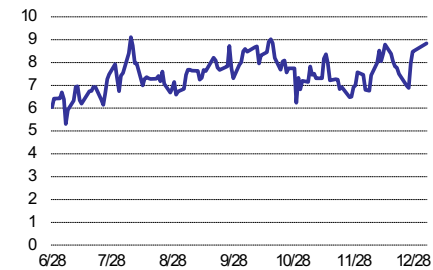
	Notional %	PV01%	Butterfly	
10yr	95.3%	50.0%	Current	27.9
30yr	35.2%	50.0%	Avg(6m)	29.1

Source: Morgan Stanley Research

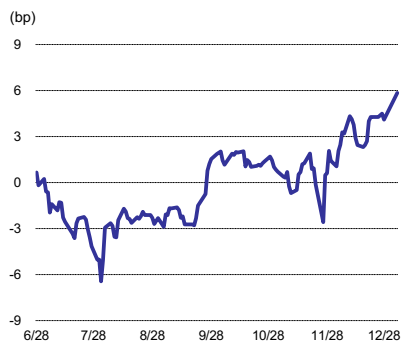
JGB & ASW 40y

Exhibit 28: JGB Par Rate History(40yr)

Exhibit 29: JGB 20s/40s & 30s/40s

Exhibit 30: JGB 20s/30s/40s (Proceeds Neutral)


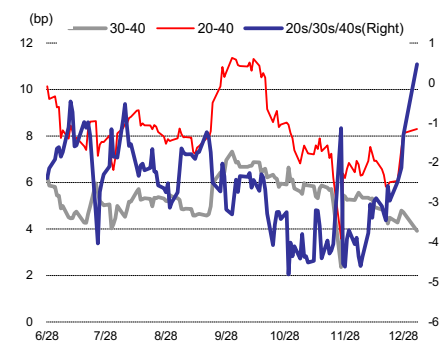
	Notional %	PV01%	Butterfly	
20yr	46.9%	33.0%	Current	-2.2
40yr	53.1%	67.0%	Avg(6m)	-4.3

Exhibit 31: JGB 20s/30s/40s (50/50 PV01)


	Notional %	PV01%	Butterfly	
20yr	71.1%	50.0%	Current	8.8
40yr	39.6%	50.0%	Avg(6m)	7.5

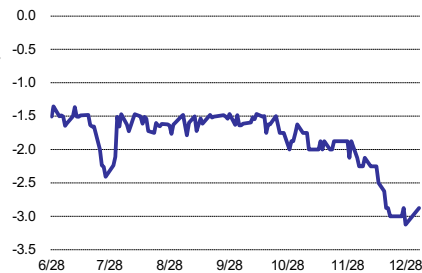
Exhibit 32: ASW History (40yr)


Source: Morgan Stanley Research

Exhibit 33: BOX and ASW Butterfly History


Source: Morgan Stanley Research

Swap Butterfly (50/50 PV01)

Exhibit 34: Swap 3y/5y/7y

	Notional %	PV01%	Butterfly	
3yr	83.3%	50.0%	Current	-2.9
7yr	35.8%	50.0%	Avg(6m)	-1.8

Exhibit 35: Swap 2y/5y/10y

	Notional %	PV01%	Butterfly	
2yr	125.0%	50.0%	Current	-13.1
10yr	25.2%	50.0%	Avg(6m)	-11.8

Exhibit 36: Swap 5y/7y/10y

	Notional %	PV01%	Butterfly	
5yr	69.9%	50.0%	Current	-6.1
10yr	35.2%	50.0%	Avg(6m)	-5.1

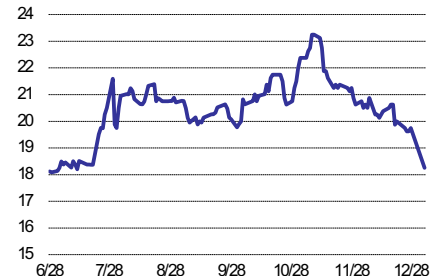
Exhibit 37: Swap 5y/10y/20y

	Notional %	PV01%	Butterfly	
5yr	99.3%	50.0%	Current	-20.6
20yr	26.1%	50.0%	Avg(6m)	-20.3

Exhibit 38: Swap 7y/10y/20y

	Notional %	PV01%	Butterfly	
7yr	71.0%	50.0%	Current	-24.5
20yr	26.1%	50.0%	Avg(6m)	-27.0

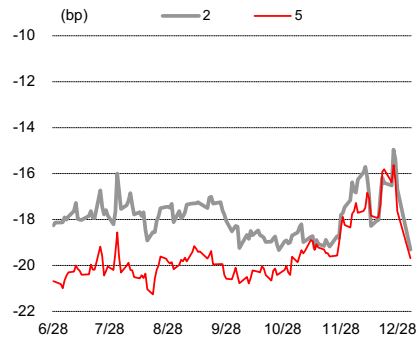
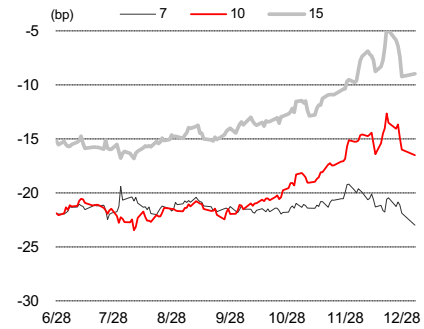
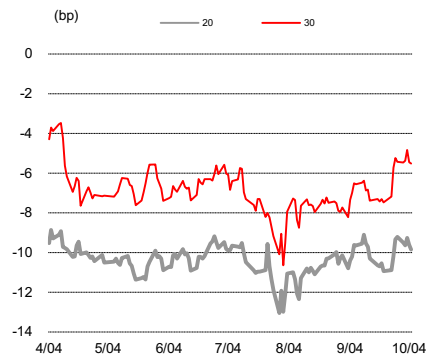
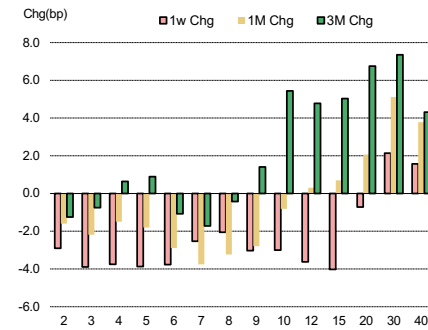
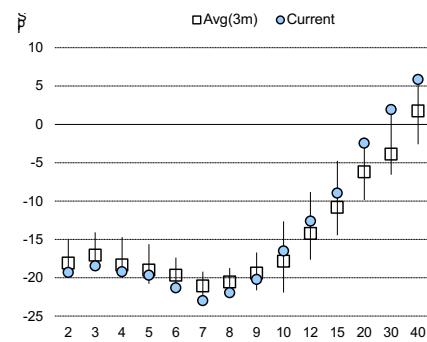
Source: Morgan Stanley Research

Exhibit 39: Swap 10y/20y/30y

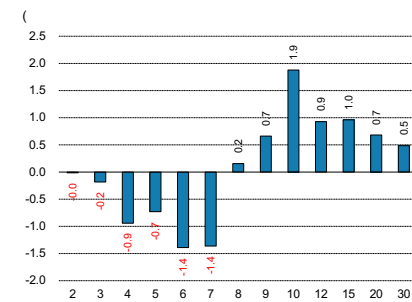
	Notional %	PV01%	Butterfly	
10yr	95.9%	50.0%	Current	18.2
30yr	35.0%	50.0%	Avg(6m)	20.5

Source: Morgan Stanley Research

ASW History 1

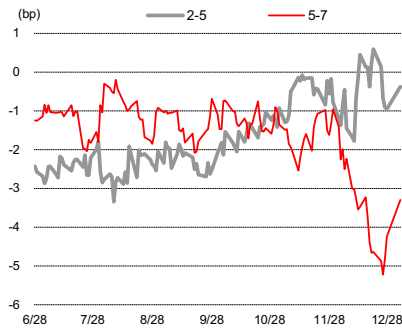
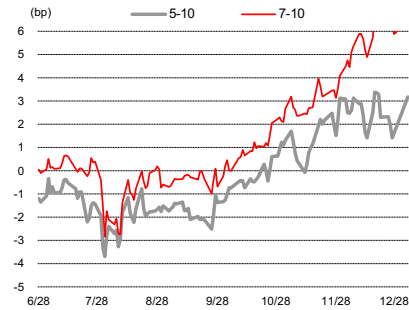
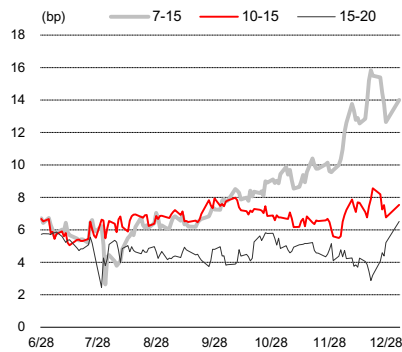
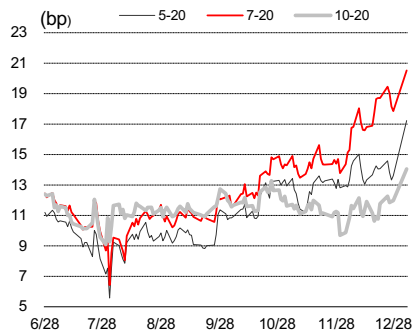
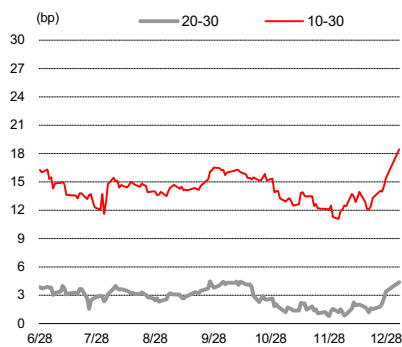
Exhibit 40: ASW History (2yr & 5yr)

Exhibit 41: ASW History (7yr, 10yr & 15yr)

Exhibit 42: ASW History(20yr & 30yr)

Exhibit 43: ASW Changes

Exhibit 44: ASW 3m History


Source: Morgan Stanley Research

Exhibit 45: ASW cushion (Horizon 6m)


Source: Morgan Stanley Research

ASW History 2

Exhibit 46: BOX History (2-5 & 5-7)

Exhibit 47: BOX History (5-10 & 7-10)

Exhibit 48: BOX History(7-15, 10-15 & 15-20)

Exhibit 49: BOX History (5-20, 7-20 & 10-20)

Exhibit 50: BOX History(20-30 & 10-30)


Source: Morgan Stanley Research

Exhibit 51: ASW Butterfly (5s/7s/10s)


Source: Morgan Stanley Research

ASW BOX Matrix

Exhibit 52: Current (3months Average) LongEnd-ShortEnd

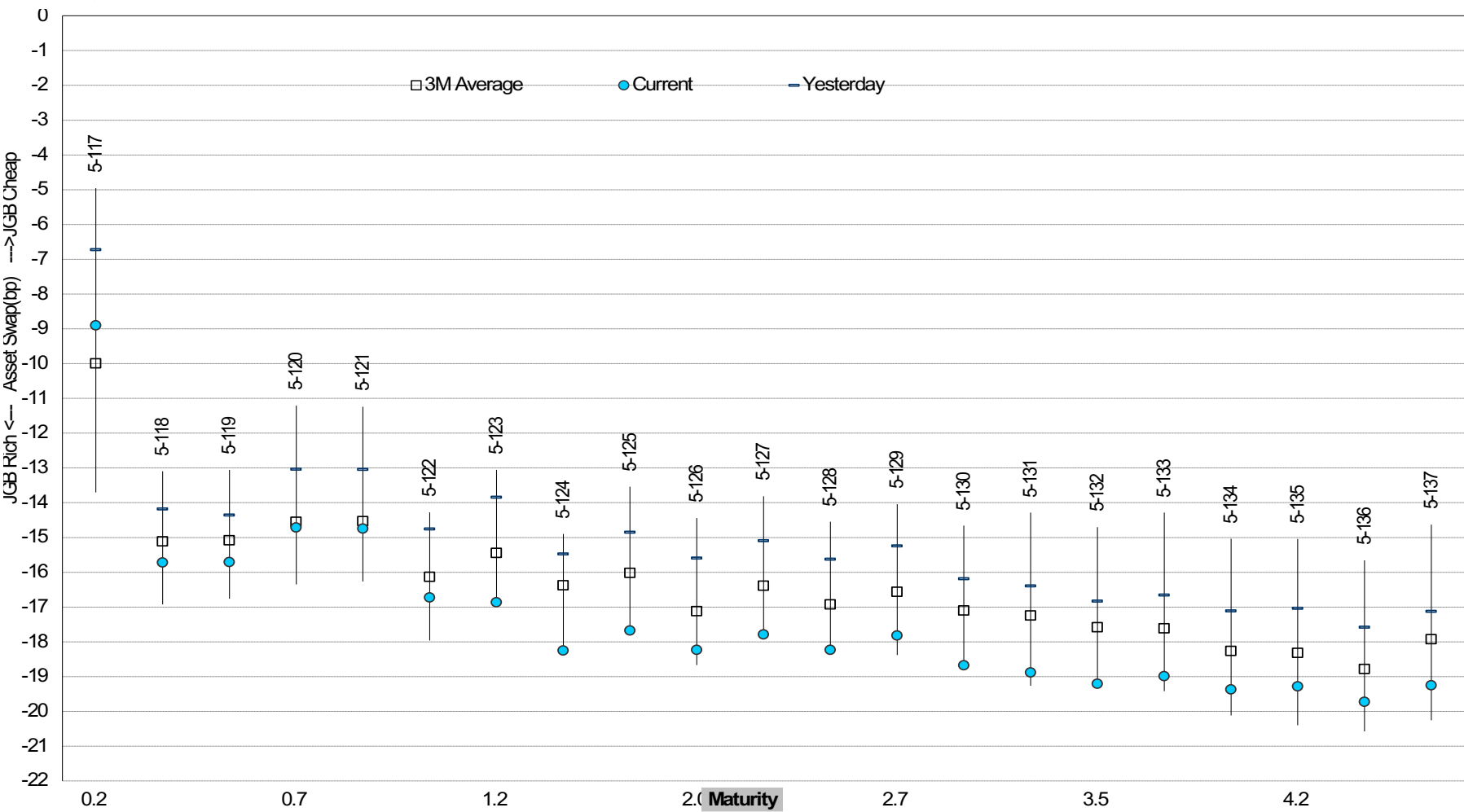
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1y															1y
2y	1.9(1.4)														2y
3y	2.7(2.5)	0.9(1.0)													3y
4y	2.0(1.2)	0.1(-0.3)	-0.8(-1.3)												4y
5y	1.5(0.5)	-0.4(-0.9)	-1.2(-2.0)	-0.5(-0.7)											5y
6y	-0.1(-0.1)	-2.0(-1.6)	-2.9(-2.6)	-2.1(-1.3)	-1.6(-0.6)										6y
7y	-1.8(-1.6)	-3.7(-3.0)	-4.5(-4.0)	-3.8(-2.7)	-3.3(-2.0)	-1.7(-1.4)									7y
8y	-0.8(-1.0)	-2.7(-2.5)	-3.5(-3.5)	-2.7(-2.2)	-2.3(-1.5)	-0.7(-0.9)	1.0(0.5)								8y
9y	1.0(0.1)	-0.9(-1.3)	-1.8(-2.4)	-1.0(-1.1)	-0.5(-0.4)	1.1(0.2)	2.8(1.6)	1.7(1.1)							9y
10y	4.7(1.6)	2.8(0.2)	1.9(-0.8)	2.7(0.5)	3.2(1.1)	4.8(1.8)	6.5(3.2)	5.5(2.7)	3.7(1.5)						10y
12y	8.6(5.2)	6.7(3.8)	5.8(2.8)	6.6(4.1)	7.1(4.8)	8.7(5.4)	10.4(6.8)	9.3(6.3)	7.6(5.2)	3.9(3.6)					12y
15y	12.2(8.7)	10.3(7.2)	9.5(6.2)	10.3(7.5)	10.7(8.2)	12.3(8.8)	14.0(10.2)	13.0(9.7)	11.2(8.6)	7.5(7.0)	3.7(3.4)				15y
20y	18.7(13.3)	16.9(11.8)	16.0(10.8)	16.8(12.1)	17.2(12.8)	18.9(13.4)	20.5(14.8)	19.5(14.3)	17.8(13.2)	14.1(11.7)	10.2(8.0)	6.5(4.6)			20y
30y	23.1(15.6)	21.2(14.2)	20.4(13.2)	21.2(14.5)	21.6(15.1)	23.2(15.8)	24.9(17.2)	23.9(16.7)	22.1(15.5)	18.4(14.0)	14.6(10.4)	10.9(7.0)	4.4(2.4)		30y
	1y	2y	3y	4y	5y	6y	7y	8y	9y	10y	12y	15y	20y	30y	

Exhibit 53: Z-Score (3months History)

	1y	2y	3y	4y	5y	6y	7y	8y	9y	10y	12y	15y	20y	30y	
1y															1y
2y	0.5														2y
3y	0.2	-0.3													3y
4y	0.6	0.5	1.4												4y
5y	0.7	0.8	1.8	0.8											5y
6y	0.0	-0.7	-0.4	-0.9	-1.3										6y
7y	-0.3	-0.7	-0.5	-0.8	-1.0	-0.4									7y
8y	0.3	-0.2	0.0	-0.4	-0.7	0.4	1.6								8y
9y	0.6	0.4	0.8	0.1	-0.2	1.0	1.1	0.7							9y
10y	1.2	1.4	1.8	1.6	1.5	1.5	1.5	1.3	1.7						10y
12y	1.3	1.6	2.1	1.9	1.8	1.7	1.6	1.4	1.9	0.6					12y
15y	1.4	1.7	2.1	2.1	1.9	1.8	1.6	1.5	1.9	0.8	0.8				15y
20y	2.3	2.9	3.5	3.6	3.5	3.0	2.6	2.6	3.5	3.3	3.2	2.8			20y
30y	4.0	5.4	5.5	5.9	5.6	5.0	4.0	3.8	4.5	2.7	3.0	2.9	1.8		30y
	1y	2y	3y	4y	5y	6y	7y	8y	9y	10y	12y	15y	20y	30y	

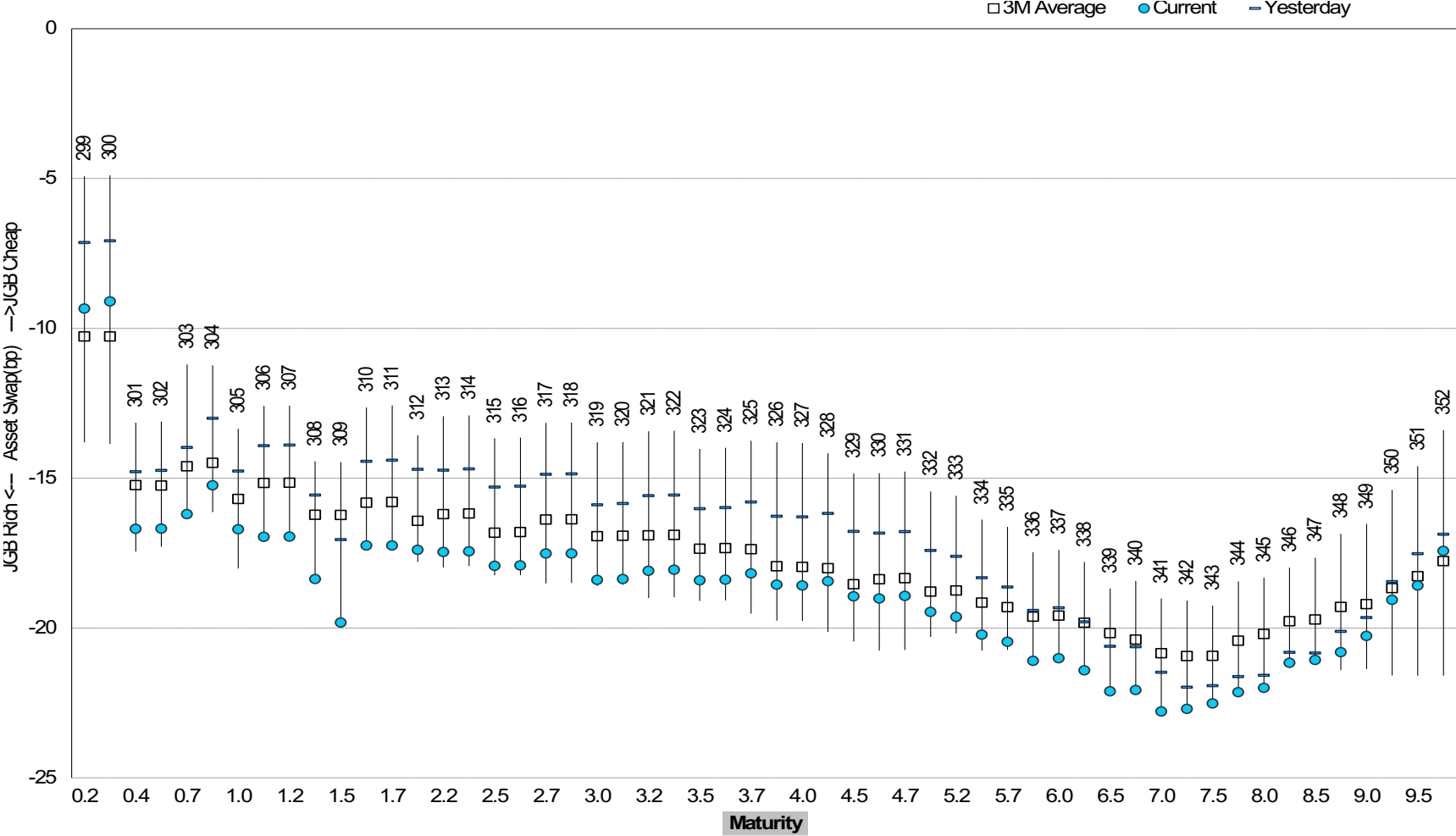
Source: Morgan Stanley Research

Exhibit 54: 5yr JGB Matched Maturity Asset Swap Spreads



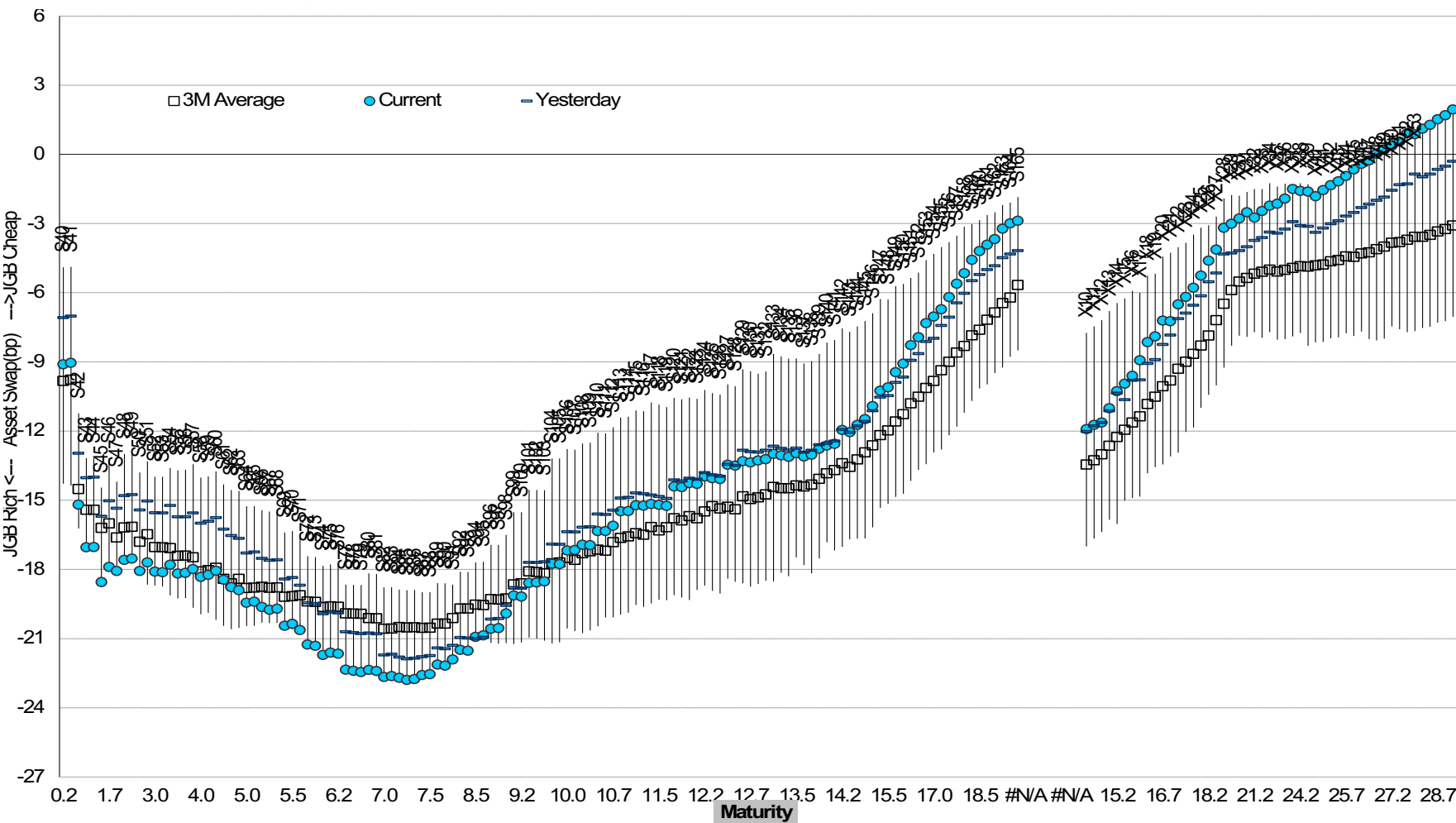
Source: Morgan Stanley research

Exhibit 55: 10yr JGB Matched Maturity Asset Swap Spreads



Source: Morgan Stanley Research

Exhibit 56: 20 & 30yr JGB Matched Maturity Asset Swap Spreads



Source: Morgan Stanley Research

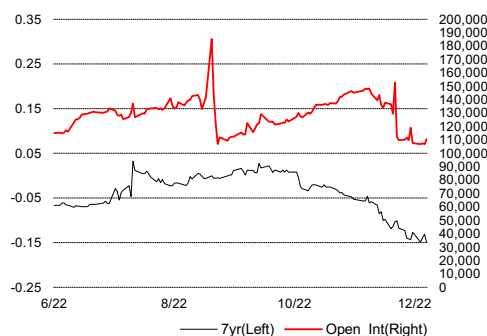
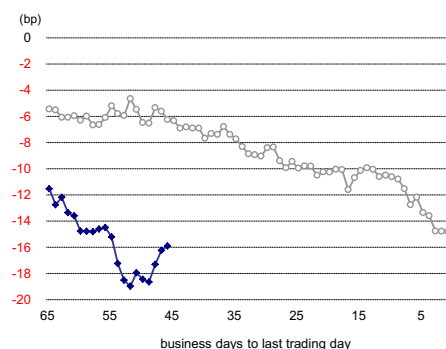
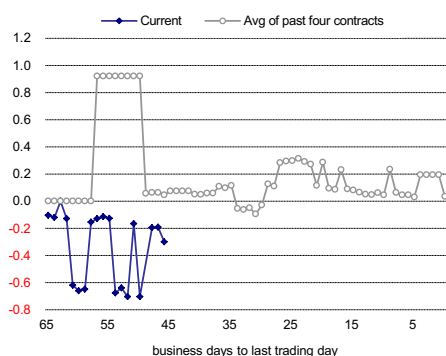
JGB Futures

Exhibit 57: JGB futures

JGB Futures										
	Close	Change	CTD	Open Int	Change					
Mar/19	152.84	0.36	JB342	106,217	-4,372					
Jun/19	152.73	0.41	JB343							

Assumption Repo Rate : 0.10%										
	Mar/19	Coupon	Maturity	Yield	CF	Gross Basis	Net Basis	PV01	PV01/CF	Net Basis/PV01
CTD	JB342	0.1	2026/3/20	-0.177	0.6668	0.095	0.095	7.33	10.99	1.30
	JB343	0.1	2026/6/20	-0.166	0.6572	1.547	1.548	7.58	11.54	20.41
	JB344	0.1	2026/9/20	-0.156	0.6478	2.973	2.972	7.84	12.10	37.92

	Jun/19	Coupon	Maturity	Yield	CF	Gross Basis	Net Basis	PV01	PV01/CF	Net Basis/PV01
CTD	JB343	0.1	2026/6/20	-0.166	0.6668	0.163	0.164	7.58	11.37	2.16
	JB344	0.1	2026/9/20	-0.156	0.6572	1.609	1.609	7.84	11.93	20.53
	JB345	0.1	2026/12/20	-0.146	0.6478	3.0268	3.028	8.088	12.48	37.43

Exhibit 58: 7yr yields vs. Open Int**Exhibit 59: JGB Butterfly 5s/7s/10s****Exhibit 60: ASW box (JB1 CTD ASW - JB2 CTD ASW)**

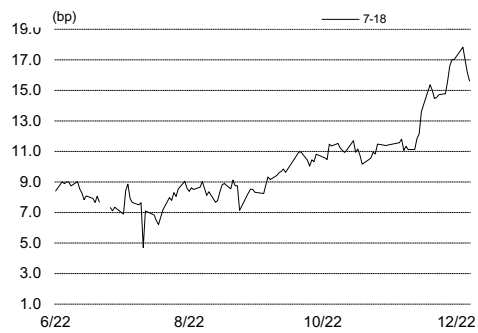
Source: Morgan Stanley Research

SL-JGB futures

Exhibit 61: SL- JGB futures

SL_JGB Futures										
	Close	Change	CTD	Open Int	Change					
Mar/19	157.71	1.43		3	0					
Jun/19	156.64	1.43	JL166							

Assumption Repo Rate : 0.10%										
	Mar/19	Coupon	Maturity	Yield	CF	Gross Basis	Net Basis	PV01	PV01/CF	Net Basis/PV01
#N/A	JL165	0.5	2038/6/20	0.447	0.6364	0.614	2.481	18.72	29.41	13.26
	JL166	#N/A	2038/9/20	0.455	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	#N/A									
	Jun/19	Coupon	Maturity	Yield	CF	Gross Basis	Net Basis	PV01	PV01/CF	Net Basis/PV01
CTD	JL166	0.6	2038/9/20	0.455	0.6510	2.651	7.059	19.46	29.89	36.28

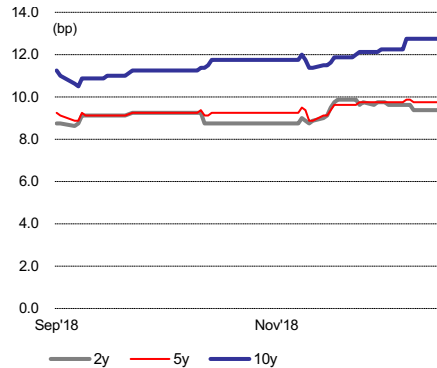
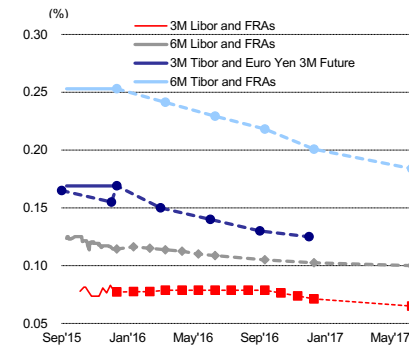
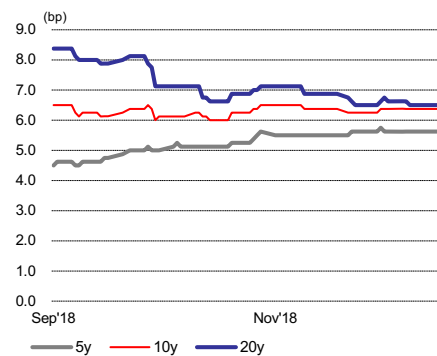
Exhibit 62: ASW BOX History (7s18s)

Source: Morgan Stanley Research

Short-End Swap

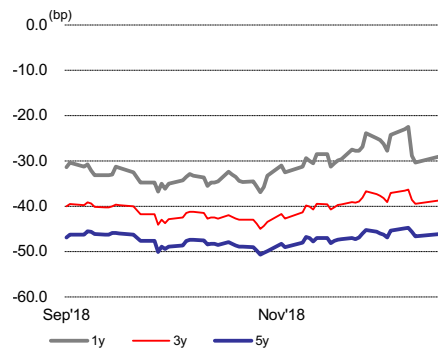
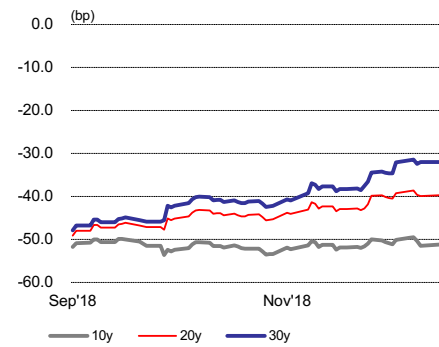
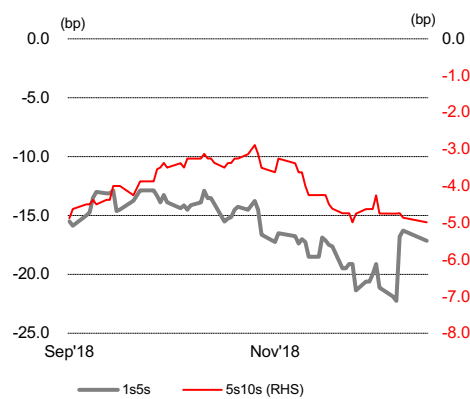
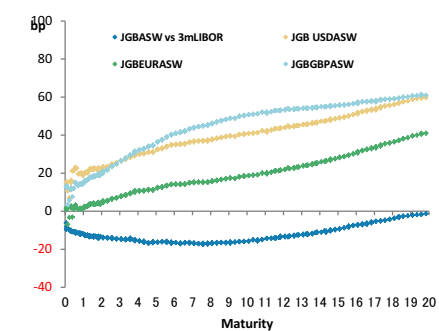
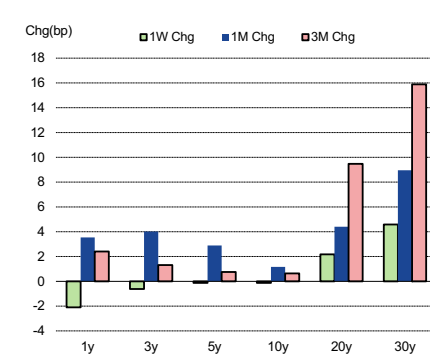
Exhibit 63: Euroyen Futures

Euroyen Futures										
	Contract	Price	Chg 1Day	Implied Rate	3M Roll-down	3M	3M Max	3M Min	Tibor/Libor	Chg
Whites	YE1	YEH9	99.940	+0.005	0.060		0.078	0.100	0.060	-2.000
	YE2	YEM9	99.935	+0.005	0.065	0.005	0.088	0.115	0.065	-1.750
	YE3	YEU9	99.930	+0.005	0.070	0.005	0.097	0.130	0.070	-2.000
	YE4	YEZ9	99.925	+0.000	0.075	0.005	0.106	0.145	0.070	-3.500
Reds	YE5	YEH0	99.925	+0.000	0.075	0.000	0.115	0.150	0.075	
	YE6	YEM0	99.925	+0.010	0.075	0.000	0.123	0.165	0.075	
	YE7	YEU0	99.920	+0.005	0.080	0.005	0.133	0.180	0.080	
	YE8	YEZ0	99.920	+0.010	0.080	0.000	0.144	0.195	0.080	
Greens	YE9	YEH1	99.920	+0.015	0.080	0.000	0.155	0.210	0.080	
	YE10	YEM1	99.920	+0.015	0.080	0.000	0.168	0.000	0.080	
	YE11	YEU1	99.910	+0.015	0.090	0.010	0.181	0.250	0.090	
	YE12	YEZ1	99.905	+0.015	0.085	0.005	92.196	100.000	0.085	

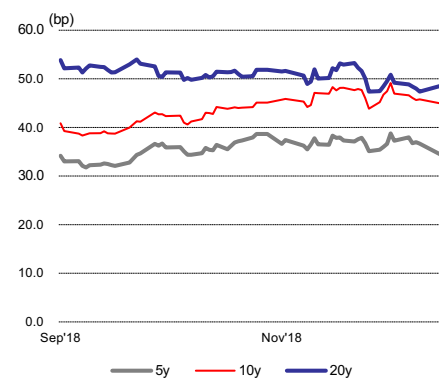
Exhibit 64: Tibor/Libor**Exhibit 65: Tibor, Libor, FRAs and Euro Yen Future****Exhibit 66: 3m/6m Libor Basis**

Source: Morgan Stanley Research

USDJPY Basis Swap

Exhibit 67: USDJPY Basis Swap (<=5yr)**Exhibit 68: USDJPY Basis Swap (>=10yr)****Exhibit 69: USDJPY Basis Spreads (1s5s & 5s10s)****Exhibit 70: JGB Swapped into the other currencies vs 3mLibor****Exhibit 71: Change (Week, 1 month & 3 months)**

Source: Morgan Stanley Research

Exhibit 72: JGB Dollar Asset Swaps

Source: Morgan Stanley Research

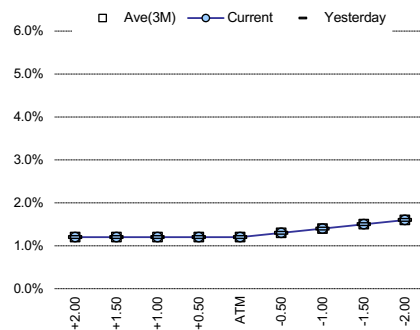
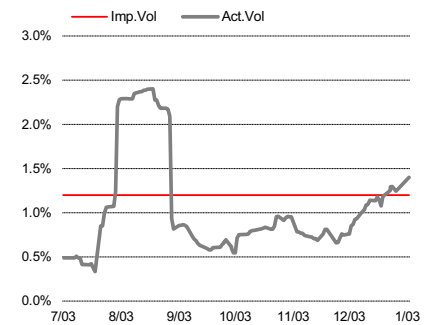
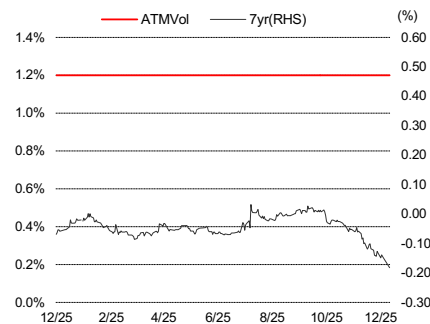
JGB Futures Option Analysis

Exhibit 73: JGB Futures Imp.Vol

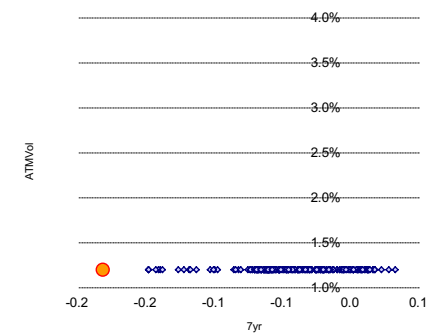
2019/1/4	Price	
	#N/A	
	Imp.Vol	1Day Chg
ATM+2.00	1.20%	0.00%
ATM+1.50	1.20%	0.00%
ATM+1.00	1.20%	0.00%
ATM+0.50	1.20%	0.00%
ATM	1.20%	0.00%
ATM-0.50	1.30%	0.00%
ATM-1.00	1.40%	0.00%
ATM-1.50	1.50%	0.00%
ATM-2.00	1.60%	0.00%

Exhibit 74: JGB Option

Open Int.	Call Side	expiry Strike	2019/1/4		
			Put Side	Open Int.	Imp.Vol
0	0.00	152.00	1.92	0	1.20%
185	0.00	151.50	1.42	0	1.20%
501	0.01	151.00	0.93	0	1.20%
1,022	0.06	150.50	0.48	10	1.20%
1,792	0.24	150.00	0.16	1,202	1.20%
461	0.62	149.50	0.04	1,084	1.30%
10	1.09	149.00	0.01	1,890	1.40%
0	1.58	148.50	0.00	865	1.50%
0	2.08	148.00	0.00	3,773	1.60%

Exhibit 75: JGB Option Skew**Exhibit 76: ImpVol vs. Act. Vol****Exhibit 77: 1m Imp Vol vs. 7yr (1yr-history)**

Source: Morgan Stanley Research

Exhibit 78: 1m Imp Vol vs. 7yr (1yr-history)

Source: Morgan Stanley Research

JGB OTC Option Analysis

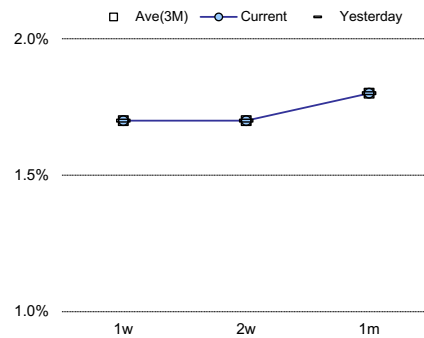
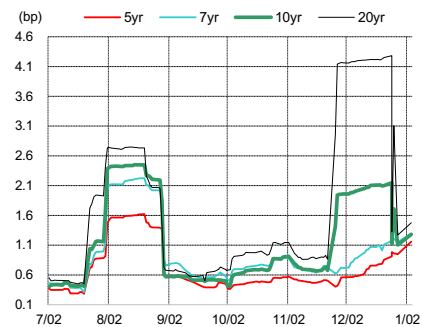
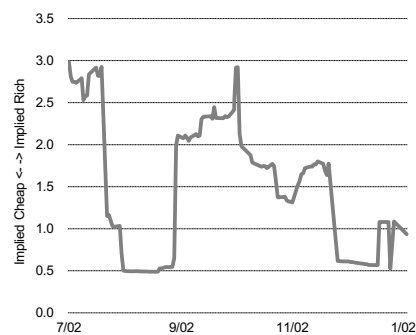
Exhibit 79: JGB OTC Option Analysis

JGB Option Implied Price Vol (Annualized)

	5y		7y		10y		20y	
1w	0.6%	+0.0%	1.2%	+0.0%	1.7%	+0.0%	3.3%	+0.0%
2w	0.6%	+0.0%	1.2%	+0.0%	1.7%	+0.0%	3.3%	+0.0%
1m	0.7%	+0.0%	1.3%	+0.0%	1.8%	+0.0%	3.6%	+0.0%

JGB Option Implied Yield Vol (Daily)

	5y		7y		10y		20y	
1w	0.8bp	+0.00bp	1.1bp	+0.00bp	1.1bp	+0.00bp	1.2bp	+0.00bp
2w	0.8bp	+0.00bp	1.1bp	+0.00bp	1.2bp	+0.00bp	1.2bp	+0.00bp
1m	0.8bp	+0.00bp	1.2bp	+0.00bp	1.2bp	+0.00bp	1.3bp	+0.00bp

Exhibit 80: 10yr Imp Price Vol Term Structure**Exhibit 81:** Actual Yield Daily Vol (1m Rolling Daily Chg)**Exhibit 82:** Imp Vol / Act.Vol (10yr)

Source: Morgan Stanley Research

15yr CMT Closes

Exhibit 83: 15yr CMT closes

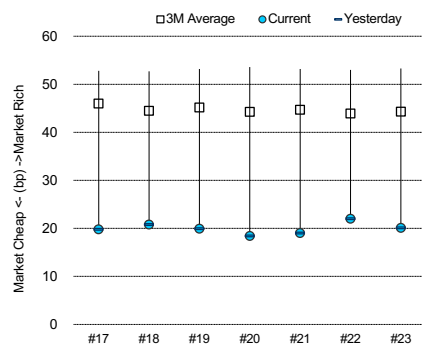
Description				Alpha		Price		Imp PV	
Issue	Maturity	Ref. 10yr	Current Coupon	Coupon Alpha	Mkt Alpha	BB Price	1Day Change	Prin	Cpn
#26	2019/1/20	0.00	0.00	75	823.1	100.25	0.00	100.00	0.25
#27	2019/3/20	0.00	0.00	83	207.7	100.25	0.00	100.02	0.23
#28	2019/5/20	0.00	0.00	95	163.0	100.25	0.00	100.05	0.20
#29	2019/7/20	0.00	0.00	97	143.8	100.25	0.00	100.10	0.15
#30	2019/9/20	0.00	0.00	98	133.6	100.25	0.00	100.14	0.11
#31	2019/11/20	0.00	0.00	101	135.5	100.30	0.00	100.18	0.12
#32	2020/1/20	0.00	0.00	101	129.9	100.30	0.00	100.21	0.09
#33	2020/3/20	0.00	0.00	100	124.9	100.30	0.00	100.25	0.05
#34	2020/5/20	0.00	0.00	101	122.9	100.30	0.00	100.28	0.02
#35	2020/7/20	0.00	0.00	95	114.5	100.30	0.00	100.31	-0.01
#36	2020/9/20	0.00	0.00	95	112.6	100.30	0.00	100.34	-0.04
#37	2020/11/20	0.00	0.00	75	96.3	100.40	0.00	100.36	0.04
#38	2021/1/20	0.00	0.00	65	87.0	100.45	0.00	100.39	0.06
#39	2021/3/20	0.00	0.00	45	87.8	100.95	0.00	100.42	0.53
#40	2021/5/20	0.00	0.00	40	81.8	101.00	0.00	100.45	0.55
#41	2021/7/20	0.00	0.00	45	86.0	101.05	0.00	100.48	0.57
#42	2021/9/20	0.00	0.00	50	83.0	100.90	0.00	100.51	0.39
#43	2021/11/20	0.00	0.00	50	84.5	101.00	0.00	100.54	0.46
#44	2022/2/20	0.00	0.00	45	84.6	101.25	0.00	100.58	0.67
#45	2022/5/20	0.00	0.00	45	83.1	101.30	0.00	100.63	0.67
#46	2022/8/20	0.00	0.00	40	83.5	101.60	0.00	100.69	0.91
#47	2022/11/20	0.00	0.00	45	84.5	101.55	0.00	100.74	0.81
#48	2023/5/20	0.00	0.00	20	88.9	103.10	0.00	100.84	2.26

Source: Morgan Stanley Research

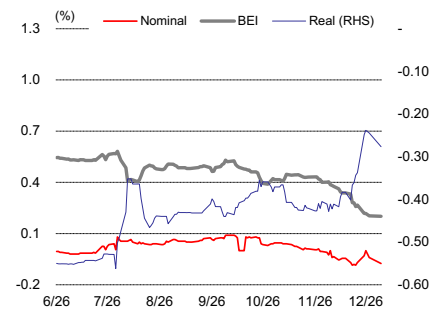
Inflation - Indexed JGBs

Exhibit 84: JGB Linker closing

	Coupon	Maturity	Ref. 10y	Price	chg	RealYield	chg	BEI	chg
JB17	0.1	2023/09/10	330	102.300	0.150	-0.387	-3.2	19.80	-0.4
JB18	0.1	2024/03/10	333	102.600	0.200	-0.397	-3.8	20.80	0.3
JB19	0.1	2024/09/10	335	102.800	0.200	-0.387	-3.5	19.90	-0.1
JB20	0.1	2025/03/10	338	102.950	0.100	-0.372	-1.6	18.40	-1.9
JB21	0.1	2026/03/10	342	103.400	0.100	-0.367	-1.4	19.00	-1.6
JB22	0.1	2027/03/10	346	103.750	0.250	-0.351	-3.0	22.00	-0.0
JB23	0.1	2028/03/10	350	103.500	0.300	-0.276	-3.2	20.10	-0.3

Exhibit 85: BEI History

Source: Morgan Stanley Research

Exhibit 86: Nominal vs. Real yield & BEI for On-The-Run JBI

Source: Morgan Stanley Research

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(as of December 31, 2018)

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STOCK RATING CATEGORY	COVERAGE UNIVERSE		INVESTMENT BANKING CLIENTS (IBC)			OTHER MATERIAL INVESTMENT SERVICES CLIENTS (MISC)	
	COUNT	% OF TOTAL	COUNT	% OF TOTAL IBC	% OF RATING CATEGORY	COUNT	% OF TOTAL OTHER MISC
Overweight/Buy	1143	36%	282	40%	25%	540	38%
Equal-weight/Hold	1428	45%	336	47%	24%	651	46%
Not-Rated/Hold	46	1%	6	1%	13%	6	0%
Underweight/Sell	566	18%	86	12%	15%	232	16%
TOTAL	3,183		710			1429	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

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Overweight (O). The stock's total return is expected to exceed the average total return of the analyst's industry (or industry team's) coverage universe, on a

risk-adjusted basis, over the next 12-18 months.

Equal-weight (E). The stock's total return is expected to be in line with the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Not-Rated (NR). Currently the analyst does not have adequate conviction about the stock's total return relative to the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

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Unless otherwise specified, the time frame for price targets included in Morgan Stanley Research is 12 to 18 months.

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Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.

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