

March 15, 2022

Hardware

BrainChip Holdings: Management Call 3/21@ 2pm ET

Analysts

Matt Bryson

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Please join us for a **Wedbush Management Call:****BrainChip Holdings (BCHPY)**

Disrupting The Data Center: AI at the Edge

Date: Monday, March 21, 2022 | 2:00pm – 3:00pm ET**Featuring:** Sean Hehir, CEO of BrainChip Holdings (BCHPY)**Hosted By:** Matt Bryson, Wedbush Hardware Analyst

We believe the timing of this call should be particularly interesting directly ahead of NVDA's GTC conference. Some topics we will look to address in the Q&A session following Brainchip's presentation will include:

How does Brainchip see the edge AI market developing?

- What is the total opportunity, which markets gravitate to AI first; when do particular markets accelerate; and are there any barriers that need to be addressed and/or parallel developments that need to take place before edge AI sees more traction?
- Where are market leaders advantaged and where might their solutions disappoint in edge environments?
- What do Brainchip's licensing deals around Akida with Renesas and Megachips, or Mercedes use of Brainchip's solution in its Vision EQX concept car tell us how AI might be adopted in the automotive segment?

How does Neuromorphic computing compare with other approaches to AI?

- Who are potential competitors (e.g., Intel) and where are they in their development path?
- Can/will Neuromorphic computing progress beyond the edge into core datacenter environments?
- Or, will Neuromorphic solutions, like Brainchip's Akida, live alongside traditional AI approaches with each better suited to specific environments.

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Description:

BrainChip is a global technology company that has developed a revolutionary advanced neural networking processor that brings artificial intelligence to the edge in a way that existing technologies are not capable. The solution is high performance, small, ultra-low power and enables a wide array of edge capabilities that include continuous learning and inference. The company markets an innovative event-based neural network processor that is inspired by the spiking nature of the human brain and implements the network processor in an industry standard digital process. By mimicking brain processing BrainChip has pioneered an event domain neural network processor, called Akida™, which is both scalable and flexible to address the requirements in edge devices. At the edge, sensor inputs are analyzed at the point of acquisition rather than transmission to the cloud or a datacenter. The Akida neural processor is designed to provide a complete ultra-low power Edge AI network processor for vision, audio and smart transducer applications. The reduction in system latency provides faster response and a more power efficient system that can help reduce the large carbon footprint of datacenters.

Host Bio:

Matt Bryson is a Senior Analyst, Hardware Equity Research at Wedbush Securities. Matt has been covering hardware and semiconductor stocks for the last 18 years, with particular focus on the datacenter, PCs, servers, storage, HDDs, and memory. He joins us from ABR where he was a senior VP for the last seven years. Prior to that, he was also a Partner at Avian Securities, where he helped develop their technology hardware practice. Matt also worked at Charles River Associates as an analyst. Matt graduated from Williams College with a BA in Economics and History.

Hardware Comp Table

HARDWARE																												
		WEDB						WEDB EPS EST								WEDB REV EST \$M				WEDB P/E				WEDB EV/SALES				
TICKER	COMPANY NAME	RATING	PRICES	WEDB TP\$	UP/DNSIDE %	MKT CAP\$B	EV\$B	2021A	2022E	2023E	2024E	2021A	2022E	2023E	2024E	2021A	2022E	2023E	2024E	2021A	2022E	2023E	2024E	2021A	2022E	2023E	2024E	
2330	Taiwan Semiconductor Manufacturing Co Ltd	O	\$572.00	\$850.00	49%	14,904.2	14474.2	\$23.02	\$30.41	\$33.75	-	\$1,587,400	\$2,018,200	\$2,308,900	-	24.1x	18.3x	16.5x	-	9.1x	7.1x	6.2x	-					
AMD	Advanced Micro Devices Inc	O	\$102.25	\$165.00	61%	166.4	163.1	\$2.80	\$4.05	\$5.03	-	\$16,434	\$21,501	\$24,020	-	35.5x	24.6x	19.8x	-	7.3x	5.6x	5.0x	-					
AXTI	AXT Inc	O	\$6.38	\$13.00	104%	0.3	0.3	\$0.22	0.44	0.69	-	\$137	\$162	\$183	-	26.0x	13.0x	8.3x	-	1.8x	1.5x	1.3x	-					
DBD	Diebold Nixdorf Inc	N	\$7.11	\$10.00	41%	0.6	2.4	\$0.80	1.69	3.03	-	\$3,905	\$4,100	\$4,225	-	38.8x	18.4x	10.3x	-	0.6x	0.6x	0.6x	-					
GFS	Globalfoundries Inc	O	\$58.41	\$77.00	32%	31.1	30.2	(\$0.05)	\$1.95	\$2.50	\$3.78	\$6,585	\$7,899	\$8,543	\$9,196	-	29.1x	22.7x	15.0x	-	4.6x	3.8x	3.5x	3.3x				
INTC	Intel Corp	U	\$44.40	\$45.00	1%	180.8	190.4	\$5.47	\$3.31	-	-	\$74,718	\$73,321	-	-	8.6x	14.1x	-	-	2.5x	2.6x	-	-					
MU	Micron Technology Inc	O	\$69.40	\$120.00	73%	77.7	75.2	\$6.07	\$9.19	\$12.87	-	\$27,706	\$32,671	\$40,328	-	11.1x	7.3x	5.2x	-	2.7x	2.3x	1.9x	-					
NTAP	NetApp Inc	N	\$80.39	\$85.00	6%	17.9	16.3	\$4.06	\$5.12	\$5.83	-	\$5,744	\$6,329	\$6,844	-	18.1x	14.3x	12.6x	-	2.8x	2.6x	2.4x	-					
NVDA	NVIDIA Corp	N	\$213.30	\$300.00	41%	533.3	523.0	\$2.50	\$4.44	\$5.39	\$6.25	\$16,675	\$26,914	\$34,332	\$41,617	83.7x	47.1x	38.8x	33.5x	31.4x	19.4x	15.2x	12.6x					
PSTG	Pure Storage Inc	N	\$30.41	\$34.00	12%	8.8	8.2	\$0.18	\$0.72	\$0.84	\$1.07	\$1,684	\$2,181	\$2,649	\$3,144	156.9x	39.2x	33.6x	26.4x	4.9x	3.8x	3.1x	2.6x					
SIMO	Silicon Motion Technology Corp	O	\$64.92	\$115.00	77%	2.3	1.9	\$6.21	\$8.32	\$10.52	-	\$922	\$1,157	\$1,405	-	8.8x	6.6x	5.2x	-	2.1x	1.7x	1.4x	-					
STX	Seagate Technology Holdings PLC	N	\$86.35	\$95.00	10%	18.9	23.2	\$5.70	\$8.83	\$9.30	-	\$10,681	\$12,058	\$12,343	-	18.6x	12.0x	11.4x	-	2.2x	1.9x	1.9x	-					
2303	United Microelectronics Corp	O	\$52.50	\$74.00	41%	658.6	597.7	\$4.56	\$6.19	\$5.53	-	\$213,000	\$254,600	\$255,700	-	10.5x	7.7x	8.7x	-	2.8x	2.3x	2.3x	-					
WDC	Western Digital Corp	O	\$44.47	\$70.00	57%	13.9	18.7	\$4.55	\$8.02	\$10.14	-	\$16,921	\$19,202	\$21,600	-	13.1x	7.4x	5.9x	-	1.1x	1.0x	0.9x	-					
		MEAN						MEAN EPS EST				MEAN REV EST \$M				MEAN P/E				MEAN EV/SALES								
TICKER	COMPANY NAME	REC	PRICES	MEAN TP\$	UP/DNSIDE %	MKT CAP\$B	EV\$B	2021A	2022E	2023E	2024E	2021A	2022E	2023E	2024E	2021A	2022E	2023E	2024E	2021A	2022E	2023E	2024E	2021A	2022E	2023E	2024E	
2330	Taiwan Semiconductor Manufacturing Co Ltd	O	\$572.00	\$832.99	46%	14,904.2	14474.2	\$23.09	\$30.40	\$34.88	\$41.40	\$1,585,687	\$2,010,382	\$2,357,110	\$2,757,480	24.1x	18.3x	15.9x	13.4x	9.1x	7.2x	6.1x	5.2x					
AMD	Advanced Micro Devices Inc	N	\$102.25	\$151.54	48%	166.4	163.1	\$2.64	\$4.01	\$4.63	\$5.04	\$16,134	\$25,535	\$28,739	\$30,767	37.7x	24.8x	21.5x	19.7x	7.4x	4.7x	4.2x	3.9x					
AXTI	AXT Inc	O	\$6.38	\$12.50	96%	0.3	0.3	\$0.34	\$0.36	\$0.57	-	\$135	\$163	\$184	-	17.1x	15.8x	10.0x	-	1.8x	1.5x	1.3x	-					
DBD	Diebold Nixdorf Inc	N	\$7.11	\$12.00	69%	0.6	2.4	\$1.23	\$1.68	\$2.26	-	\$3,911	\$4,061	\$4,168	-	25.2x	18.5x	13.8x	-	0.6x	0.6x	0.6x	-					
GFS	Globalfoundries Inc	O	\$58.41	\$78.77	35%	31.1	30.2	(\$0.19)	\$1.84	\$2.75	\$3.58	\$6,551	\$7,793	\$8,557	\$9,335	-294.1x	30.8x	20.6x	15.8x	4.6x	3.9x	3.5x	3.2x					
INTC	Intel Corp	N	\$44.40	\$54.08	22%	180.8	190.4	\$5.28	\$3.53	\$3.72	\$3.84	\$73,515	\$76,144	\$77,822	\$83,185	8.9x	13.2x	12.6x	12.2x	2.6x	2.5x	2.4x	2.3x					
MU	Micron Technology Inc	O	\$69.40	\$111.69	61%	77.7	75.2	\$5.98	\$9.09	\$12.15	\$13.50	\$27,649	\$32,401	\$39,247	\$41,730	11.2x	7.4x	5.5x	5.0x	2.7x	2.3x	1.9x	1.8x					
NTAP	NetApp Inc	N	\$80.39	\$98.47	22%	17.9	16.3	\$4.01	\$5.14	\$5.50	\$6.21	\$5,687	\$6,320	\$6,735	\$7,137	18.3x	14.3x	13.3x	11.8x	2.9x	2.6x	2.4x	2.3x					
NVDA	NVIDIA Corp	O	\$213.30	\$341.17	60%	533.3	523.0	\$2.43	\$4.35	\$5.61	\$6.72	\$16,495	\$26,686	\$34,727	\$40,708	86.0x	48.1x	37.3x	31.1x	31.7x	19.6x	15.1x	12.8x					
PSTG	Pure Storage Inc	O	\$30.41	\$38.18	26%	8.8	8.2	\$0.14	\$0.63	\$0.86	\$1.08	\$1,662	\$2,103	\$2,606	\$3,023	194.9x	45.0x	32.9x	26.2x	4.9x	3.9x	3.1x	2.7x					
SIMO	Silicon Motion Technology Corp	N	\$64.92	\$111.78	72%	2.3	1.9	\$6.06	\$8.02	\$8.97	-	\$920	\$1,147	\$1,296	-	9.0x	6.8x	6.1x	-	2.1x	1.7x	1.5x	-					
STX	Seagate Technology Holdings PLC	N	\$86.35	\$112.45	30%	18.9	23.2	\$5.56	\$8.92	\$9.98	\$10.99	\$10,648	\$12,072	\$12,761	\$13,190	19.1x	11.9x	10.6x	9.7x	2.2x	1.9x	1.8x	1.8x					
2303	United Microelectronics Corp	N	\$52.50	\$72.27	38%	658.6	597.7	\$4.47	\$5.80	\$5.42	\$5.97	\$211,985	\$253,036	\$256,501	\$308,059	10.7x	8.3x	8.8x	8.0x	2.8x	2.4x	2.3x	1.9x					
WDC	Western Digital Corp	N	\$44.47	\$70.96	60%	13.9	18.7	\$3.88	\$7.96	\$9.44	\$8.74	\$16,551	\$18,807	\$20,875	\$21,565	15.4x	7.5x	6.3x	6.8x	1.1x	1.0x	0.9x	0.9x					

Source: Thomson Reuters & Wedbush Securities, Inc. estimates; Priced: 03/14/2022

* All numbers for 2330.TW and 2303.TW in NT\$

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VALUATION

2330	We arrive at our target price by applying a PE multiple of ~25X (plus net cash) to our FY2023 EPS estimate.
AMD	We arrive at our target price by applying a PE multiple of ~32X (plus net cash) to our FY2023 EPS estimate and is in-line with where AMD has traded historically.
AXTI	We arrive at our target price by applying a PE multiple of ~18X (plus net cash) to our FY2023 EPS estimate and consistent with where AXTI has traded historically.
DBD	We arrive at our target price by applying a EV/EBITDA multiple of ~4.4X (net debt) to our 2023 estimates consistent with where it has traded historically.
GFS	We arrive at our target price by applying a multiple of ~20X (net debt) to our FY2024 outlook in line with its peer historical average.
INTC	We arrive at our target price by applying a multiple of ~14X (net debt) to our FY2022 outlook.
MU	We arrive at our target price by applying a PE multiple of ~9X (plus net cash) to our FY2023 outlook.
NTAP	We arrive at our target price by applying a PE multiple of ~13X to our FY'23 estimates and adding net cash, consistent with its historical valuation.
NVDA	We arrive at our target price by applying a PE multiple of ~48X (plus net cash) to our FY2024 EPS estimate.
PSTG	We arrive at our target price by applying a PE multiple of ~30X (plus net cash) to our FY'24 estimates, consistent with PSTG's historical valuation.
SIMO	Our price target is based on a target multiple of ~10X (net cash) SIMO's FY2023 EPS.
STX	We arrive at our target price by applying a forward earnings multiple of ~12 (net debt) to our FY'23 EPS.
2303	We arrive at our target price based on a multiple of ~11X PE (net cash) using our FY2023 EPS estimate.
WDC	We arrive at our target price by applying a PE multiple of ~8X (netting out debt) to our FY2023 estimate which is in-line with WDC's historical valuation.

RISKS

2330	Economic deterioration and demand destruction related to the pandemic, changes to US Policy, sovereignty risk to Taiwan, risk to the supply chain, and technology risk.
AMD	AMD fails to close on ann'd XLNX acquisition, misexecutes, customers choose other vendors, competition increases (e.g., pricing, design), TSMC is constrained (production), the economy deteriorates.
AXTI	Upside risks: Cycle elongates; demand for substrate increases; GM% expansion. Downside risks: Tongmei fails to IPO; China/US trade risk; demand for AXTI products fall; market share accretion.
DBD	Upside risks: DN Series gains traction more quickly than anticipated; Services GM% expansion. Downside risks: DBD fails to sustain DN Now initiatives; inability to satisfy debt service; demand for DBD's products fall; market share accretion.
GFS	Economic deterioration and demand destruction related to the pandemic, changes to government policy, risk to the supply chain, and technology risk.
INTC	INTC executes on stated initiatives, competition misexecutes, INTC divests underperforming businesses, tailwinds continue to boost revenues and GM.
MU	MU misexecutes, future acquisitions dilute value, Chinese vendors successfully enter NAND or DRAM markets.
NTAP	Upside risks: Normalized enterprise spending environment, successful product innovation, competitor missteps and accelerated TAM growth; downside risks: Cloud cannibalization, greater than expected impact from Covid-19, increasing competition and misexecution.
NVDA	Upside risks include: DC strength accelerates; crypto related revenues continue to be additive; gaming strength continues its upward trajectory unarrested. Downside risks include: potential acquisitions, misexecution, customers reduce spending, competition gains share.
PSTG	Upside risks: Normalized enterprise spending environment, successful product innovation, competitor missteps and accelerated TAM growth; downside risks: Cloud cannibalization, greater than expected impact from Covid-19, increasing competition and misexecution.
SIMO	SIMO Downside: misexecutes, loses customers, customers shift to vertical integration.
STX	STX Downside: misexecutes, pricing declines, demand decreases; Upside: STX executes on stated initiatives, pricing increases, demand increases.
2303	Economic deterioration and demand destruction related to the pandemic, changes to US Policy, sovereignty risk to Taiwan, risk to the supply chain, and technology risk.
WDC	WDC misexecutes, customers choose other vendors, competition increases (e.g., pricing, design), the economy deteriorates.

Risks to the Attainment of Our Price Targets and Ratings: Hardware

Shifts in competition, pricing, technology, and macroeconomic conditions.
Changes in hyperscale spending tied to shifts in growth or increased optimization.
Unforeseen events affecting production capacity (power outages, fires, storms, etc.)
Shifts in worldwide trade conditions that lead to macro instability and or close certain markets.
Increased competition from China based manufacturers entering new markets.

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Positive (+): Proprietary data set with correlation to a given historical company-reported metric indicates that the respective current/ mid-quarter company-reported metric trends are better than consensus and/or better than management guidance.

Negative (-): Proprietary data set with correlation to a given historical company-reported metric indicates that the respective current/ mid-quarter company-reported metric trends are below consensus and/or lower than management guidance.

Non-Conclusive/No Call (NC): Proprietary data set does not have a strong enough correlation to be **Positive** or **Negative**.

Analyst Certification

I, Matt Bryson, certifies that the views expressed in this report accurately reflect my personal opinion and that I have not and will not, directly or indirectly, receive compensation or other payments in connection with my specific recommendations or views contained in this report.

Mentioned Companies

Company	Rating	Price	Target
Intel Corp	UNDERPERFORM	\$45.83	\$45.00
Nvidia	NEUTRAL	\$221.00	\$300.00

Investment Rating System:

OUTPERFORM: Expect the total return of the stock to outperform relative to the median total return of the analyst's (or the analyst's team) coverage universe over the next 6-12 months.

NEUTRAL: Expect the total return of the stock to perform in-line with the median total return of the analyst's (or the analyst's team) coverage universe over the next 6-12 months.

UNDERPERFORM: Expect the total return of the stock to underperform relative to the median total return of the analyst's (or the analyst's team) coverage universe of the next 6-12 months.

The Investment Ratings are based on the expected performance of a stock (based on anticipated total return to price target) relative to the other stocks in the analyst's coverage universe (or the analyst's team coverage).*

Rating distribution (as of March 15, 2022)	Investment Banking Relationships (as of March 15, 2022)
OUTPERFORM: 69.00%	OUTPERFORM: 21.09%
NEUTRAL: 28.84%	NEUTRAL: 6.54%
UNDERPERFORM: 2.16%	UNDERPERFORM: 0.00%

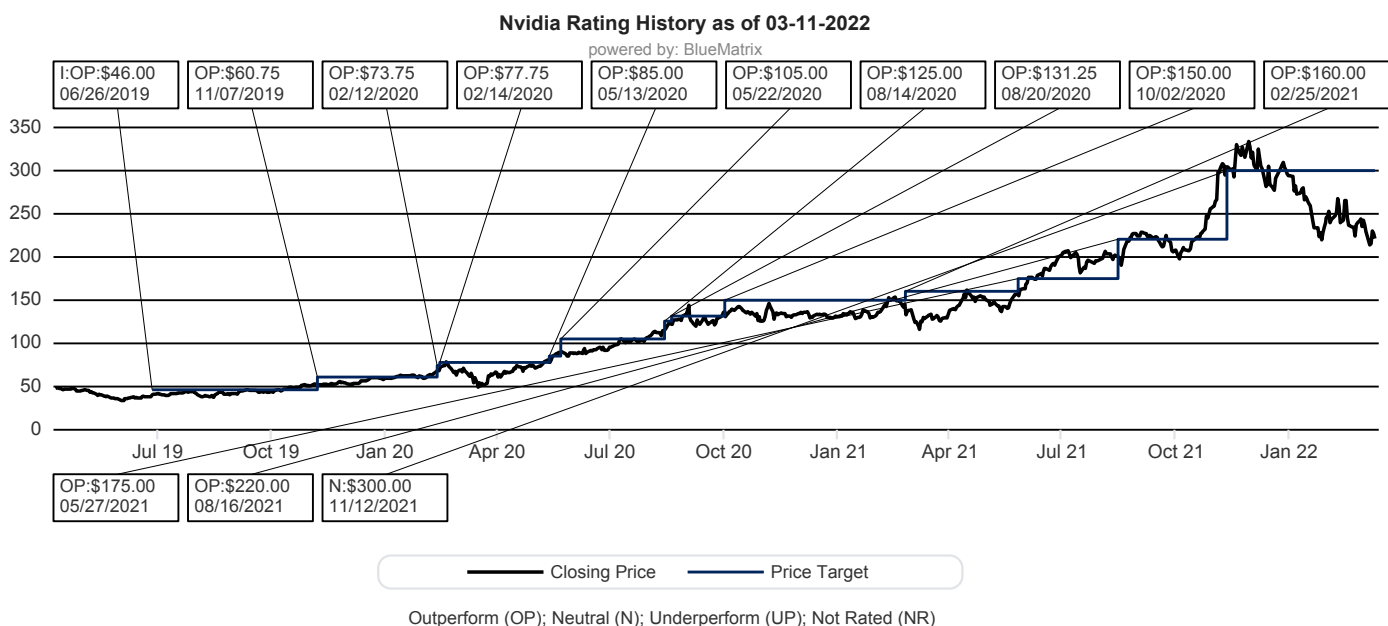
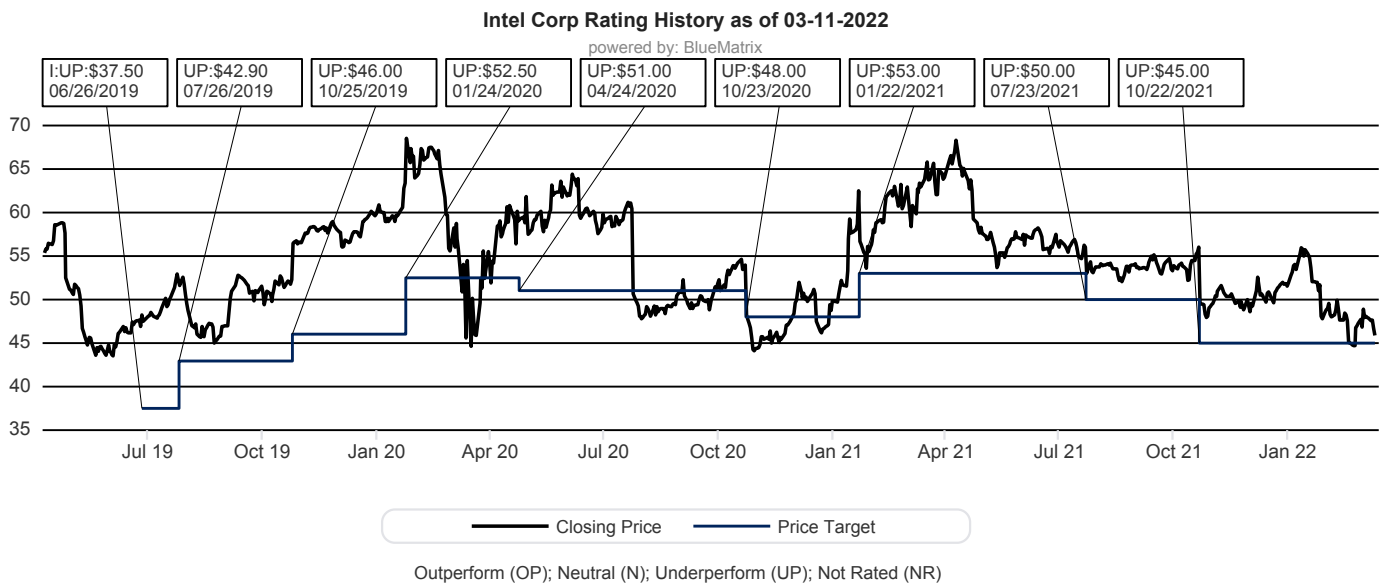
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Company Specific Disclosures

1. WS makes a market in the securities of Intel Corp and Nvidia.

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Disclosure information regarding historical ratings and price targets is available: [Research Disclosures](#)

*WS changed its rating system from (Strong Buy/ Buy/ Hold/ Sell) to (Outperform/ Neutral/ Underperform) on July 14, 2009.

Applicable disclosure information is also available upon request by contacting the Research Department at (212) 833-1375, by email to leslie.lippai@wedbush.com. You may also submit a written request to the following: Wedbush Securities, Attn: Research Department, 142 W 57th Street, New York, NY 10019.

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