

## Payments, Processors & IT Services

## ADP/PAYX - running out of steam; downgrade to Underperform from Neutral

**Rating Change** 

### Deceleration could drive multiple compression

We were surprised to see how much PAYX rallied on the F3Q print on 3/29/23, given that the company highlighted that headroom for improvement in both employment and interest rates has become much more limited. PAYX also highlighted that for F24 (starts 6/1/23), benefits from pricing and the Employee Retention Tax Credit (ERTC) will wane. While we do not expect ADP to provide an initial view on F24 during its F3Q call on 4/26, we expect some growth deceleration versus F23. We are not suggesting that there is significant downside risk to ADP/PAYX current stock prices, but with the backdrop of slower top-line growth and waning estimate upside potential, there could be risk to ADP/PAYX's C23 P/E multiples of ~26x, and we downgrade both to Underperform from Neutral.

### ADP/PAYX tend to lag when unemployment starts rising

As seen in Exhibits 3 and 4, our analysis suggests that both ADP and PAYX tend to underperform the S&P 500 during the initial phase of a rising unemployment cycle. BofA Global Research's Economics team forecasts unemployment starting to rise in 3Q23 and peaking in 2Q24 and also forecasts just one more 25bps rate hike before cuts start in 1Q24. As the macro tailwinds of employment and rates abate (and, in some cases, turn into headwinds), we think that these stocks will become less appealing to investors. This is a cyclical call – we believe that ADP's and PAYX's business models remain structurally sound, and if extreme market volatility re-surfaces, these stocks could be viewed as relative "safe havens," especially as key metrics, such as retention, remain robust (but likely have limited room for improvement). On the heels of PAYX's print, the bar for ADP during its F3Q print is likely a little higher, as a similarly modest beat/raise has now become discounted.

### Prefer MA/SQ/V in large-cap Payments

As we downgrade ADP and PAYX, we maintain our Buy ratings on our favorite large-cap Payments stocks (in alpha order), which are MA, SQ, and V. For example, we do not think that it makes sense that V and ADP trade at the same C23 P/E multiple. We continue to see the networks as particularly durable businesses in the payments landscape, with EPS protection in almost any macro scenario. Direct effects of recent bank failures are minimal, and even if they lead to a hard landing, we think that V's and MA's financial profiles will be the sturdiest in the sector. We believe that SQ has oversold on the recent short report and found the company's response on 3/30/23 (see our report) to be robust and re-assuring as relates to operating metrics and compliance processes within the Cash App business.

### ADP/PAYX POs to \$211/\$105 from \$249/\$119

We reduce our POs for ADP/PAYX to \$211/\$105 from \$249/\$119, reflecting 5%/8% downside. Our new POs are based on a 50/50 blend of 2023 P/E multiples and our DCFs. We lower our target multiples to 25x (from 29x) for ADP and to 24x (from 26x prior) for PAYX (our multiple for PAYX remains lower than that for ADP given SMB concentration, as SMBs are facing a greater risk from the recent bank failures). These new target multiples reflect a ~35%/~30% premium for ADP/PAYX versus the S&P 500, a slight discount to their respective 3-year historical averages of 43% and 48%, respectively.

#### 03 April 2023

Equity United States Payments, Processors & IT Services

Jason Kupferberg Research Analyst **BofAS** 

+1 646 855 1961

Mihir Bhatia Research Analyst BofAS +1 415 676 3575

Cassie Chan Research Analyst **BofAS** +1 646 855 1829

Eric Dray, CFA Research Analyst BofAS +1 646 855 5780

Nathaniel Richam-Odoi Research Analyst +1 646 855 1607

Melissa Chen Research Analyst **BofAS** melissa.chen3@bofa.com

Tyler DuPont Research Analyst tyler.dupont@bofa.com

DCF: discounted cash flow

MA: Mastercard

PAYX: Paychex

PO: price objective

SMB: small and medium-sized business

SQ: Block

V: Visa

Bof A Securities does and seeks to do business with issuers covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. Refer to important disclosures on page 10 to 14. Analyst Certification on page 7. Price Objective Basis/Risk on page 5. 12535842

Timestamp: 03 April 2023 12:01AM EDT

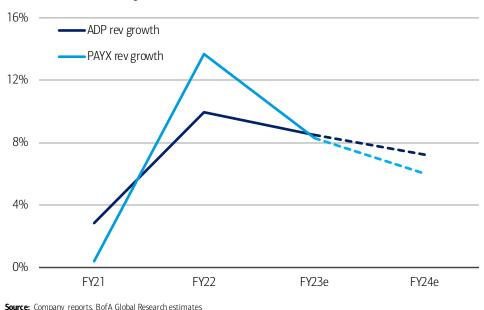
## Downgrading ADP and PAYX to Underperform

We see a potentially difficult setup for ADP and PAYX shares over the next few quarters, due to cyclical rather than structural factors. While we think that the business models remain solid, the macro backdrop of rising unemployment and declining rates could drive multiple compression and inhibit upside to estimates. And at their current ~26x P/E, we do not think that ADP/PAYX are adequately discounting these issues looming on the horizon.

After the initial shock of the pandemic temporarily caused US unemployment to skyrocket to 13% in 2Q20, ADP/PAYX saw significant benefits from sharp improvements in the labor market over the subsequent 2+ years, as evidenced in Exhibit 1. However, we now believe that the phase of outperforming against consensus estimates/guidance is coming to an end, as headroom for improvement in both employment and interest rates has become much more limited.

F22 revenue growth for ADP/PAYX was 9.9%/13.7%, respectively, and for F23 (which ends in May for PAYX, June for ADP), estimates are for 8.5%/8.3% growth, respectively. F24 revenue growth estimates for both companies are currently in the 6%-7% growth range, in line with PAYX's preliminary F24 guide provided last week.

**Exhibit 1: ADP/PAYX saw revenue growth accelerate during COVID recovery; top-line now slowing** ADP/PAYX F21-F24e revenue growth



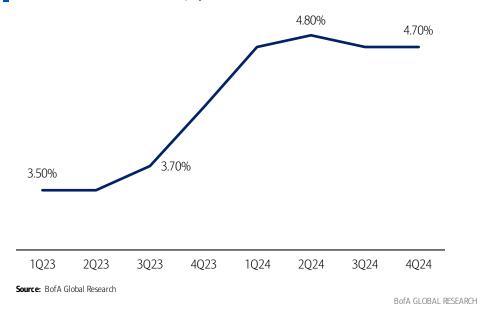
BofA GLOBAL RESEARCH

The latest BofA Global Research Economics team forecasts call for unemployment to increase starting in 3Q23 and peak at 4.8% in 2Q24, as shown in Exhibit 2.



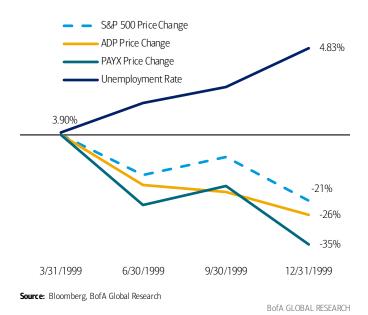
Exhibit 2: Unemployment is expected to rise starting in 3Q23, peaking at 4.8% in 2Q24

BofA Global Research forecasted unemployment rate

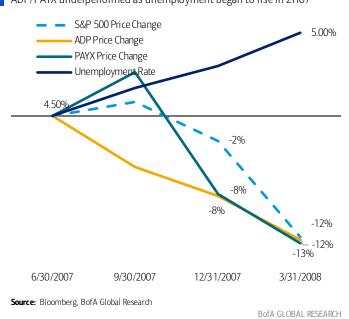


Notably, ADP and PAYX underperformed in the first 2-3 quarters of a rising unemployment cycle during both the tech bubble of 2000-2002 and the Global Financial Crisis of 2007-2009:

Exhibit 3: Unemployment rate versus ADP/PAYX/S&P 500 – 1999 ADP/PAYX underperformed as unemployment began to rise in 1999



**Exhibit 4: Unemployment rate versus ADP/PAYX/S&P 500 – 2Q07-1Q08**ADP/PAYX underperformed as unemployment began to rise in 2H07



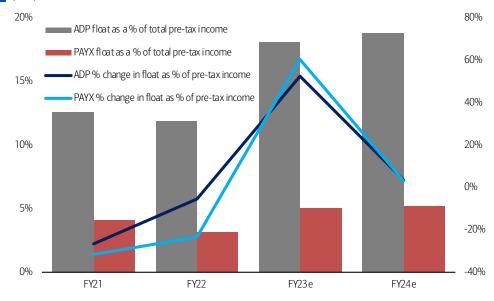
Additionally, as seen in Exhibit 5, over the past year, higher interest rates have been a material contributor to top-line growth and more so to margin expansion/pre-tax income (float income is ~100% margin). Now that the Fed is likely poised to pivot lower (based on forecasts of the BofA Global Research Economics team), a key tailwind is likely to



abate and ultimately become a headwind, assuming that rate cuts materialize as forecasted. That said, ADP's and PAYX's float portfolios are laddered, using fixed-income securities of various maturities (i.e., PAYX disclosed on last week's earnings call that its current duration is ~3.5 years). This laddering blunts some of the effects of changes in short-term interest rates (i.e., Fed funds).

Exhibit 5: Tailwind from float income expected to subside in F24

ADP/PAYX float income as % of total pre-tax income (LHS) and % change in float as % of pre-tax income (RHS)

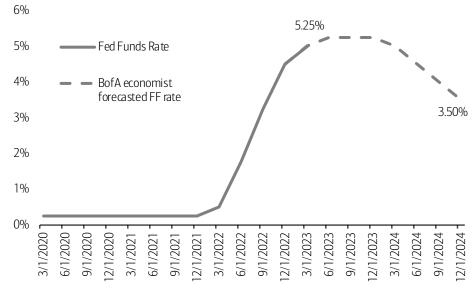


**Source:** Company reports, BofA Global Research

BofA GLOBAL RESEARCH

As seen in Exhibit 6, the BofA Global Research Economics team's current expectations are for one more Fed funds rate hike (of 25bps, to 5.25%) in May 2023 before a series of cuts, starting in 1Q24.

**Exhibit 6: Rates are expected to be near peak levels + to decline in coming quarters**BofA Global Research Economics team's Fed funds forecast



**Source:** Bloomberg, BofA Global Research estimates

BofA GLOBAL RESEARCH

Despite these cyclical challenges, ADP and PAYX currently trade at 41% and 38% premiums to the S&P 500, respectively, not too far from their respective 3-year historical averages of 43% and 48%. Given where employment and rate trends are potentially headed, we think that this premium should be lower.

### PEO/insurance business has become a wild card

The PEO/insurance business for ADP and PAYX (representing 34% and 23% of total revenues, respectively) has struggled over the last few quarters due to weaker healthcare attachment and enrollment rates. While both management teams have suggested that conditions in this segment have likely bottomed and can recover, there is limited visibility on when PEO/insurance can get back to their historical double-digit growth rates. At ADP's November 2021 investor day, management provided medium-term PEO growth guidance of 10%-12%. Since 2019, growth has been closer to 9%; the only year above 10% was F22, and in F23/F24, we are modeling 8.5%/9.5%.

### Increasingly cautious on SMBs

While the SMB market has been resilient to date (with PAYX noting continued strength in March on its recent earnings call), we are becoming more cautious on the potential impact of macro developments on this market. Small businesses are likely to be more impacted by tighter lending standards, which are expected to occur due to the recent bank failures, as SMBs rely heavily on regional bank lending (see the report, The Flow Show: The Perfect Low 16 March 2023).

### **Exhibit 7: Stocks mentioned**

Prices and ratings for stocks mentioned in this report

<b>BofA Ticker</b>	Bloomberg ticker	Company name	Price	Rating
ADP	ADP US	Automatic Data	US\$ 219.49	B-3-7
PAYX	PAYX US	Paychex	US\$ 113.54	B-3-7
MA	MA US	Mastercard Inc	US\$ 359.26	B-1-7
SQ	SQ US	Block Inc	US\$ 68.49	C-1-9
V	VUS	Visa	US\$ 222.36	B-1-7

Source: BofA Global Research

BofA GLOBAL RESEARCH

### **Investment Rationale**

### **ADP**

We rate ADP at Underperform. We view ADP's profitability and solid balance sheet / cash-flow profile favorably, however, we think the risks of rising unemployment and the expectation of lower rates are not properly discounted in the valuation.

### **Paychex**

We rate PAYX Underperform. We view PAYX's robust profitability and solid balance sheet / cash-flow profile favorably, however, we think the risk of rising unemployment, higher rates, and weakness for SMBs are not properly reflected in current valuation.

### Price objective basis & risk

ADP (ADP)



Our \$211 PO is based on a combination of a 25x PE multiple to CY23 EPS and our DCF model. A 25x PE multiple represents an approximate 35% premium to the S&P 500, a slight discount to the 10 year average of about 45%. We think this reflects both the momentum ADP is experiencing in sales and retention, as well as the elevated risks of rising unemployment and lower rates. Our DCF uses a 3% terminal rate and a 9% WACC.

Upside risks to our price objective are: 1) stronger than forecast economic / employment backdrop - ADP's business model is tied to cyclical swings in US private sector employment. 2) better than expected margin / new bookings performance and 3) ADP is perceived as a high-quality company than can comfortably endure the unprecedented pressures from the pandemic.

Downside risks to our price objective are: 1) while ADP has a defensive business model, its shares have been tied to cyclical swings in US private sector employment, 2) potential for new competitive entrants or disintermediation through technical innovation, and 3) potential regulatory changes.

### Block Inc (SQ)

Our price objective of \$96 is based on a blend of 8x C23E EV/adjusted gross profit (which we use as a proxy for adjusted net revenue) and our DCF (15% WACC, 4% terminal growth). Our target multiple is in-line with the comp group.

Upside risks to our price objective are 1) better-than-expected overall macro conditions for small / medium sized businesses, 2) better-than-expected accretion from pending Afterpay acquisition, 3) re-acceleration of Cash App gross profit growth, 4) market perception of SQ as a terminal value stock.

Downside risks to our price objective are 1) increased competition from a wider group of companies as SQ moves upmarket and international, and intensifying competition in Cash App, 2) overall macro conditions for small/medium-sized businesses, and 3) lack of diversification for Cash App revenue/gross profit streams.

### Mastercard Inc (MA)

We utilize a 50/50 blend of 34x '23E GAAP EPS and our DCF model to calculate our 12-month price objective of \$438. Our multiple is a premium vs. the S&P500 given MA's above average earnings growth in a normalized environment, competitive positioning, secular tailwinds, and recession resilience. Our multiple is also slightly higher than its closest peer given MA grows faster, albeit off of a smaller base. Our discounted cash flow (DCF) analysis assumes a weighted average cost of capital of around 9% and a terminal growth rate of 4%.

Downside risks to our price objective are 1) weak consumer spending in the event of a macroeconomic downturn, 2) increased customer concentration and consolidation, 3) legislative and regulatory changes, 4) potential litigation settlements, which could include monetary damages, and/or result in changes in business practices, 5) loss of customer contracts due to increased competition or new entrants, including local/global payment networks, new start-ups and existing large and small technology companies, and 6) large fluctuations in the value of currencies/foreign exchange rates.

### Paychex (PAYX)

Our \$105 PO is based on a 50/50 combination of a 24x PE multiple to our CY23E EPS and our discounted cash flow (DCF) model. A 24x PE multiple is an approximate 30% premium to the S&P 500, which is slightly below PAYX's 10-yr average premium of about 50%. We think this correctly reflects PAYX's operating momentum, coupled with elevated risks of rising unemployment, higher rates, and weakness in the SMB market. Our DCF uses a 3% terminal rate and a 9% WACC.



Downside risks to our price objective are 1) slower new business formation, 2) declines in US employment, and 3) greater competition from payroll software firms, which puts pressure on pricing.

Upside risks to our price objective are 1) faster new business formation and 2) strong US employment growth.

#### Visa Inc. (V)

We use a 50/50 blend of 31x C'23E EPS (GAAP) and our discounted cash flow (DCF) model to calculate our 12-month price objective of \$270. Our multiple is a slight premium to V's historical average, which we view the multiple as justified given Visa's growth profile, execution track record, and large addressable market opportunity. The key assumptions in our DCF model include a terminal growth rate of 3.5% and a weighted average cost of capital (WACC) of around 10%.

Downside risks to our price objective are 1) weak consumer spending in the event of a macroeconomic downturn, 2) increased customer concentration and consolidation, 3) legislative and regulatory changes, 4) potential litigation settlements, which could include monetary damages, and/or result in changes in business practices, 5) loss of customer contracts due to increased competition or new entrants, including local/global payment networks, new start-ups and existing large and small technology companies, and 6) large fluctuations in the value of currencies/foreign exchange rates.

### **Analyst Certification**

I, Jason Kupferberg, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

### **Special Disclosures**

The following company is a co-defendant with Bank of America Corporation and certain of its subsidiaries in the In Re Payment Card Interchange Fee and Merchant Discount Anti-Trust Litigation ("Interchange Litigation"): Visa. This report is not a statement by Bank of America Corporation or any of its subsidiaries or affiliates. This report reflects only the personal views of the BofA Global Research analyst who authored this report. He/she is in no way authorized to speak on behalf of Bank of America Corporation or any of its subsidiaries or affiliates in connection with the Interchange Litigation or any other litigation. This report was researched and prepared solely by the BofA Global Research analyst who authored this report. This report has not been discussed with, reviewed by, and may not reflect information known to, professionals in Bank of America and its affiliates involved in the Interchange Litigation or any other litigation. Any facts and views expressed herein that relate to the Interchange Litigation and the payment card business are based solely on public information, and not based on any information provided by Bank of America or any of its subsidiaries or affiliates, and reflect only the personal views of the BofA Global Research analyst who authored this report.

The following company is a co-defendant with Bank of America Corporation and certain of its subsidiaries in the In Re Payment Card Interchange Fee and Merchant Discount Anti-Trust Litigation ("Interchange Litigation"): MasterCard. This report is not a statement by Bank of America Corporation or any of its subsidiaries or affiliates. This report reflects only the personal views of the BofA Global Research analyst who authored this report. He/she is in no way authorized to speak on behalf of Bank of America Corporation or any of its subsidiaries or affiliates in connection with the Interchange Litigation or any other litigation. This report was researched and prepared solely by the BofA Global Research analyst who authored this report. This report has not been discussed with, reviewed by, and may not reflect information known to,



professionals in Bank of America and its affiliates involved in the Interchange Litigation or any other litigation. Any facts and views expressed herein that relate to the Interchange Litigation and the payment card business are based solely on public information, and not based on any information provided by Bank of America or any of its subsidiaries or affiliates, and reflect only the personal views of the BofA Global Research analyst who authored this report.



### ${\bf US-Payments, Processors, Specialty\ Finance\ and\ IT\ services\ Coverage\ Cluster}$

Investment rating	Company	Bof A Ticker	Bloomberg symbol	Analyst
BUY				
	Accenture Plc	ACN	ACN US	Jason Kupferberg
	American Express Company	AXP	AXP US	Mihir Bhatia
	Ares Capital Corporation	ARCC	ARCC US	Derek Hewett
	Ares Commercial Real Estate Corporation	ACRE	ACRE US	Derek Hewett
	Barings BDC Inc	BBDC	BBDC US	Derek Hewett
	Blackrock TCP Capital Corp	TCPC	TCPC US	Derek Hewett
	Blackstone Mortgage Trust Inc	BXMT	BXMT US	Derek Hewett
	BlockInc	SQ	SQ US	Jason Kupferberg
	Bread Financial Holdings Inc	BFH	BFH US	Mihir Bhatia
	Carlyle Secured Lending Inc	CGBD	CGBD US	Derek Hewett
	CI&T	CINT	CINT US	Jason Kupferberg
	Compass Diversified Holdings	CODI	CODIUS	Derek Hewett
	Crescent Capital BDC	CCAP	CCAPUS	Derek Hewett
	DLocal .	DLO	DLO US	Jason Kupferberg
	EngageSmart	ESMT	ESMT US	Jason Kupferberg
	EPAM Systems	EPAM	EPAM US	Jason Kupferberg
	Essent Group	ESNT	ESNT US	Mihir Bhatia
	Fidelity National Information Services	FIS	FIS US	Jason Kupferberg
	Fisery Inc	FISV	FISV US	Jason Kupferberg
	FleetCor Technologies Inc.	FLT	FLT US	Mihir Bhatia
	Flywire	FLYW	FLYW US	Jason Kupferberg
	Global Payments Inc	GPN	GPN US	Jason Kupferberg
	Mastercard Inc	MA	MA US	Jason Kupferberg
	MGIC Investment Corp.	MA MTG	MA US MTG US	Mihir Bhatia
	New Mountain Finance Corporation	NMFC	NMFC US	Derek Hewett
	Nuvei	NVEL	NVEL CN	Jason Kupferberg
	Nuvei	YNVEI	NVEI CN	Jason Kupferberg
	Owl Rock Capital Corporation	ORCC	ORCC US	Derek Hewett
	PayPal Holdings Inc	PYPL	PYPL US	Jason Kupferberg
	Radian Group Inc	RDN	RDN US	Mihir Bhatia
	Safehold, Inc	SAFE	SAFE US	Derek Hewett
	Shift4 Payments, Inc	FOUR	FOURUS	Jason Kupferberg
	Sixth Street Specialty Lending, Inc	TSLX	TSLX US	Derek Hewett
	SoFi Technologies Inc	SOFI	SOFI US	Mihir Bhatia
	Starwood Property Trust	STWD	STWD US	Derek Hewett
	TaskUs	TASK	TASK US	Cassie Chan
	Telus International	TIXT	TIXT US	Cassie Chan
	Telus International	YTIXT	TIXT CN	Cassie Chan
	Visa Inc.	V	V US	Jason Kupferberg
	WEX Inc.	WEX	WEX US	Mihir Bhatia
EUTRAL				
EUIKAL	Affirm Holdings	Λ E DN 4	A EDM LIC	lacan Kunfarhara
	Affirm Holdings	AFRM	AFRM US	Jason Kupferberg
	AGNC Investment Corp	AGNC	AGNC US	Derek Hewett
	Annaly Capital Management	NLY	NLY US	Derek Hewett
	Apollo Commercial Real Estate Finance	ARI	ARI US	Derek Hewett
	Bain Capital Specialty Finance, Inc.	BCSF	BCSF US	Derek Hewett
	Blackstone Secured Lending Fund	BXSL	BXSL US	Derek Hewett
	BrightSpire Capital Inc.	BRSP	BRSP US	Derek Hewett
	Capital One Financial	COF	COF US	Mihir Bhatia
	Discover Financial	DFS	DFS US	Mihir Bhatia
	Ellington Financial	EFC	EFC US	Derek Hewett
	Goldman Sachs BDC, Inc.	GSBD	GSBD US	Derek Hewett
	Golub Capital BDC, Inc.	GBDC	GBDC US	Derek Hewett
	Ladder Capital Corp	LADR	LADR US	Derek Hewett
	Paymentus	PAY	PAY US	Jason Kupferberg
	PennyMac Mortgage Investment Trust	PMT	PMT US	Derek Hewett
	Synchrony Financial	SYF	SYF US	Mihir Bhatia
	Thoughtworks	TWKS	TWKS US	Jason Kupferberg
	TPG Real Estate Finance Trust	TRTX	TRTX US	Derek Hewett
	TTEC Holdings	TTEC	TTEC US	Cassie Chan
	20	7120	. / 20 00	
NDERPERFORM				
	ADP	ADP	ADP US	Jason Kupferberg
	Angel Oak Mortgage Inc.	AOMR	AOMRUS	Derek Hewett



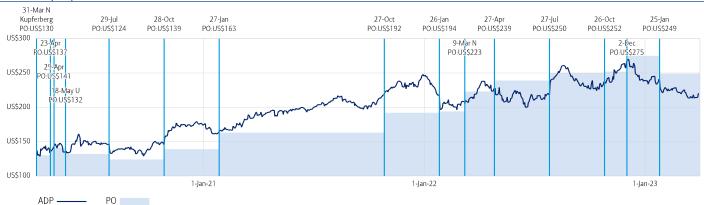
#### US - Payments, Processors, Specialty Finance and IT services Coverage Cluster

Investment rating	Company	Bof A Ticker	Bloomberg symbol	Analyst
	CGI Inc.	GIB	GIB US	Jason Kupferberg
	CGI Inc.	YGIBA	GIB/A CN	Jason Kupferberg
	Cognizant Technology Solutions	CTSH	CTSH US	Jason Kupferberg
	Coinbase	COIN	COIN US	Jason Kupferberg
	DXC Technology	DXC	DXC US	Jason Kupferberg
	Enact Holdings	ACT	ACT US	Mihir Bhatia
	Guild Holdings Company	GHLD	GHLD US	Derek Hewett
	Home Point Capital	HMPT	HMPT US	Mihir Bhatia
	Invesco Mortgage Capital, Inc.	IVR	IVR US	Derek Hewett
	loanDepot Inc	LDI	LDIUS	Derek Hewett
	MidCap Financial Investment Co	MFIC	MFIC US	Derek Hewett
	New York Mortgage Trust	NYMT	NYMT US	Derek Hewett
	Paychex	PAYX	PAYX US	Jason Kupferberg
	Rocket Companies, Inc.	RKT	RKT US	Mihir Bhatia
	Western Union	WU	WUUS	Jason Kupferberg

## **Disclosures**

### **Important Disclosures**

### Automatic Data (ADP) Price Chart



B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

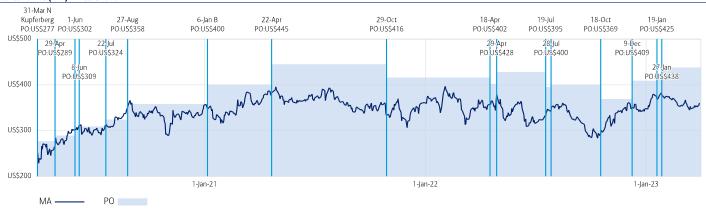
### Block Inc (SQ) Price Chart



 $B: Buy, N: Neutral, U: Underperform, PO: Price \ Objective, NA: \ No \ longer \ valid, \ NR: \ No \ Rating$ 

The Investment Opinion System is contained at the end of the report under the heading 'Fundamental Equity Opinion Key'. Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

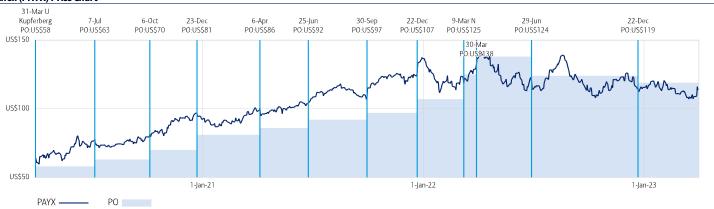
#### Mastercard Inc (MA) Price Chart



B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

#### Paychex (PAYX) Price Chart



B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

### Visa (V) Price Chart



B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

#### Equity Investment Rating Distribution: Technology Group (as of 31 Dec 2022)

Coverage Universe	Count	Percent	Inv. Banking Relationships <sup>R1</sup>	Count	Percent
Buy	216	50.35%	Buy	113	52.31%
Hold	119	27.74%	Hold	58	48.74%
Sell	94	21.91%	Sell	31	32.98%

#### Equity Investment Rating Distribution: Global Group (as of 31 Dec 2022)

Coverage Universe	Count	Percent	Inv. Banking Relationships <sup>R1</sup>	Count	Percent
Buy	1853	52.58%	Buy	1040	56.13%
Hold	840	23.84%	Hold	493	58.69%
Sell	831	23.58%	Sell	404	48.62%

<sup>[8]</sup> Issuers that were investment banking dients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold and a stock rated Underperform is included as a Sell.

FUNDAMENTAL EQUITY OPINION KEY: Opinions include a Volatility Risk Rating, an Investment Rating and an Income Rating. VOLATILITY RISK RATINGS, indicators of potential price fluctuation, are: A - Low, B - Medium and C - High. INVESTMENT RATINGS reflect the analyst's assessment of both a stock's: absolute total return potential as well as its attractiveness for investment relative to other stocks within its Coverage Cluster (defined below). There are three investment ratings: 1 - Buy stocks are expected to have a total return of at least 10% and are the most attractive stocks in the coverage cluster; 2 - Neutral stocks are expected to remain flat or investment ratings considering, among other than Buy rated stocks and 3 - Underperformstocks are the least attractive stocks in a coverage cluster. Analysts assign investment ratings considering, among other things, the 0-12 month total return expectation for a stock and the firm's guidelines for ratings dispersions (shown in the table below). The current price objective for a stock should be referenced to better understand the total return expectation at any given time. The price objective reflects the analyst's view of the potential price appreciation (depreciation).

# Investment rating Total return expectation (within 12-month period of date of initial rating) Ratings dispersion guidelines for coverage cluster<sup>82</sup>

Buy	≥ 10%	≤ /0%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

INCOME RATINGS, indicators of potential cash dividends, are: 7 - same/higher (dividend considered to be secure), 8 - same/lower (dividend not considered to be secure) and 9 - pays no cash dividend. Coverage Cluster is comprised of stocks covered by a single analyst or two or more analysts sharing a common industry, sector, region or other classification(s). A stock's coverage cluster is included in the most recent BofA Global Research report referencing the stock.

Price Charts for the securities referenced in this research report are available on the Price Charts website, or call 1-800-MERRILL to have them mailed.

BofAS or one of its affiliates acts as a market maker for the equity securities recommended in the report: Automatic Data, Block Inc, Mastercard Inc, Paychex, Visa.

BofAS or an affiliate was a manager of a public offering of securities of this issuer within the last 12 months: Mastercard Inc, Visa.

The issuer is or was, within the last 12 months, an investment banking client of BofAS and/or one or more of its affiliates: Automatic Data, Block Inc, Mastercard Inc, Paychex, Visa. BofAS or an affiliate has received compensation from the issuer for non-investment banking services or products within the past 12 months: Automatic Data, Block Inc, Mastercard Inc, Paychex, Visa.

The issuer is or was, within the last 12 months, a non-securities business client of BofAS and/or one or more of its affiliates: Automatic Data, Block Inc, Mastercard Inc, Paychex, Visa. BofAS or an affiliate has received compensation for investment banking services from this issuer within the past 12 months: Automatic Data, Mastercard Inc, Visa. BofAS or an affiliate expects to receive or intends to seek compensation for investment banking services from this issuer or an affiliate of the issuer within the next three months: Automatic Data, Block Inc, Mastercard Inc, Paychex, Visa.

BofÁS together with its affiliates beneficially owns one percent or more of the common stock of this issuer. If this report was issued on or after the 9th day of the month, it reflects the ownership position on the last day of the previous month. Reports issued before the 9th day of a month reflect the ownership position at the end of the second month preceding the date of the report. Automatic Data, Paychex, Visa.

BofAS or one of its affiliates is willing to sell to, or buy from, clients the common equity of the issuer on a principal basis: Automatic Data, Block Inc, Mastercard Inc, Paychex, Visa. The issuer is or was, within the last 12 months, a securities business client (non-investment banking) of BofAS and/or one or more of its affiliates: Automatic Data, Mastercard Inc, Paychex, Visa. BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall profitability of Bank of America Corporation, including profits derived from investment banking. The analyst(s) responsible for this report may also receive compensation based upon, among other factors, the overall profitability of the Bank's sales and trading businesses relating to the class of securities or financial instruments for which such analyst is responsible.

### Other Important Disclosures

From time to time research analysts conduct site visits of covered issuers. BofA Global Research policies prohibit research analysts from accepting payment or reimbursement for travel expenses from the issuer for such visits.

Prices are indicative and for information purposes only. Except as otherwise stated in the report, for any recommendation in relation to an equity security, the price referenced is the publicly traded price of the security as of close of business on the day prior to the date of the report or, if the report is published during intraday trading, the price referenced is indicative of the traded price as of the date and time of the report and in relation to a debt security (including equity preferred and CDS), prices are indicative as of the date and time of the report and are from various sources including BofA Securities trading desks.

The date and time of completion of the production of any recommendation in this report shall be the date and time of dissemination of this report as recorded in the report timestamp.

Recipients who are not institutional investors or market professionals should seek the advice of their independent financial advisor before considering information in this report in connection with any investment decision, or for a necessary explanation of its contents.

Officers of BofAS or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments. Refer to BofA Global Research policies relating to conflicts of interest.

\*BofA Securities' includes BofA Securities, Inc. (\*BofAS') and its affiliates. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor if they have questions concerning this report or concerning the appropriateness of any investment idea described herein for such investor. \*BofA Securities' is a global brand for BofA Global Research.

Information relating to Non-US affiliates of BofA Securities and Distribution of Affiliate Research Reports:

BofAS and/or Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by The Financial Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no 842



602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code), BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at <a href="https://www.bofaml.com/BofASEdisclaimer">www.bofaml.com/BofASEdisclaimer</a>; BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia): Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSFC); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada Inc, regulated by the Investment Industry Regulatory Organization of Canada; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Financial Services Agency; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; BofAS Japan: BofA Securities Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Services and Exchange Board of India (SEBI); Merrill Lynch (Brazil): Merrill Lynch (Brazil): Merrill Lynch (Brazil): Merrill

This information: has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSFC; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by BofAS India; and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distributes this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of Bank of America N.A., Australia Branch, neither MLEA nor any of its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil and its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information in Germany and is regulated by BaFin, the ECB and the CBI. BofA Securit

This information has been prepared and issued by BofAS and/or one or more of its non-US affiliates. The author(s) of this information may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so. BofAS and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofAS and/or MLPF&S clients in the US by its non-US affiliates. Any US person receiving this information and wishing to effect any transaction in any security discussed herein should do so through BofAS and/or MLPF&S and not such foreign affiliates. Hong Kong recipients of this information should contact Merrill Lynch (Asia Pacific) Limited in respect of any matters relating to dealing in securities or provision of specific advice on securities or any other matters arising from, or in connection with, this information. Singapore recipients of this information should contact Merrill Lynch (Singapore) Pte Ltd in respect of any matters arising from, or in connection with, this information. For clients that are not accredited investors, expert investors or institutional investors Merrill Lynch (Singapore) Pte Ltd accepts full responsibility for the contents of this information distributed to such clients in Singapore.

#### General Investment Related Disclosures:

Taiwan Readers: Neither the information nor any opinion expressed herein constitutes an offer or a solicitation of an offer to transact in any securities or other financial instrument. No part of this report may be used or reproduced or quoted in any manner whatsoever in Taiwan by the press or any other person without the express written consent of BofA Securities. This document provides general information only, and has been prepared for, and is intended for general distribution to, BofA Securities clients. Neither the information nor any opinion expressed constitutes an offer or an invitation to make an offer, to buy or sell any securities or other financial instrument or any derivative related to such securities or instruments (e.g., options, futures, warrants, and contracts for differences). This document is not intended to provide personal investment advice and it does not take into account the specific investment objectives, financial situation and the particular needs of, and is not directed to, any specific person(s). This document and its content do not constitute, and should not be considered to constitute, investment advice for purposes of ERISA, the US tax code, the Investment Advisers Act or otherwise. Investors should seek financial advice regarding the appropriateness of investing in financial instruments and implementing investment strategies discussed or recommended in this document and should understand that statements regarding future prospects may not be realized. Any decision to purchase or subscribe for securities in any offering must be based solely on existing public information on such security or the information in the prospectus or other offering document issued in connection with such offering, and not on this document.

Securities and other financial instruments referred to herein, or recommended, offered or sold by BofA Securities, are not insured by the Federal Deposit Insurance Corporation and are not deposits or other obligations of any insured depository institution (including, Bank of America, N.A.). Investments in general and, derivatives, in particular, involve numerous risks, including, among others, market risk, counterparty default risk and liquidity risk. No security, financial instrument or derivative is suitable for all investors. Digital assets are extremely speculative, volatile and are largely unregulated. In some cases, securities and other financial instruments may be difficult to value or sell and reliable information about the value or risks related to the security or financial instrument may be difficult to obtain. Investors should note that income from such securities and other financial instruments, if any, may fluctuate and that price or value of such securities and instruments may rise or fall and, in some cases, investors may lose their entire principal investment. Past performance is not necessarily a guide to future performance. Levels and basis for taxation may change.

This report may contain a short-term trading idea or recommendation, which highlights a specific near-term catalyst or event impacting the issuer or the market that is anticipated to have a short-term price impact on the equity securities of the issuer. Short-term trading ideas and recommendations are different from and do not affect a stock's fundamental equity rating, which reflects both a longer term total return expectation and attractiveness for investment relative to other stocks within its Coverage Cluster. Short-term trading ideas and recommendations may be more or less positive than a stock's fundamental equity rating.

BofA Securities is aware that the implementation of the ideas expressed in this report may depend upon an investor's ability to "short" securities or other financial instruments and that such action may be limited by regulations prohibiting or restricting "shortselling" in many jurisdictions. Investors are urged to seek advice regarding the applicability of such regulations prior to executing any short idea contained in this report.

Foreign currency rates of exchange may adversely affect the value, price or income of any security or financial instrument mentioned herein. Investors in such securities and instruments, including ADRs, effectively assume currency risk.

BofAS or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BofAS or one of its affiliates may, at any time, hold a trading position (long or short) in the securities and financial instruments discussed in this report.

BofA Securities, through business units other than BofA Global Research, may have issued and may in the future issue trading ideas or recommendations that are inconsistent with, and reach different conclusions from, the information presented herein. Such ideas or recommendations may reflect different time frames, assumptions, views and analytical methods of the persons who prepared them, and BofA Securities is under no obligation to ensure that such other trading ideas or recommendations are brought to the attention of any recipient of this information. In the event that the recipient received this information pursuant to a contract between the recipient and BofAS for the provision of research services for a separate fee, and in connection therewith BofAS may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofAS has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofAS). If such recipient uses the services of BofAS in connection with the sale or purchase of a security referred to herein, BofAS may act as principal for its own account or as agent for another person. BofAS is and continues to act solely as a broker-dealer in connection with the execution of any transactions, including transactions in any securities referred to herein.

### BofA ESGMeter Methodology:

ESGMeter is a proprietary metric based on quantitative analysis and fundamental analyst inputs that reflects our assessment of a company's Environmental, Social and Governance-related attributes. The ESGMeter is intended to indicate a company's likelihood of experiencing stronger financial stability (higher return on equity and lower earnings and price volatility) over the next



three years relative to peer group. There are three ESGMeter levels - Low, Medium, and High - which indicate whether a company has attributes most likely to translate into superior financial stability (in the case of a High level) or weaker financial stability (in the case of a Low level) over the next three years relative to its peer group. A Medium level suggests that a company exhibits ESG characteristics that are likely associated with financial stability results in line with its peer group over the next three years. Full details of our methodology, financial stability definition and disclaimers are available at <a href="Modes and 1656/BSGMeter methodology">BogMeter methodology</a>. ESGMeter is not indicative of a company's future stock price performance and is not an investment recommendation or rating. ESGMeter is independent of the BofA Global Research fundamental equity analyst's investment rating, volatility risk rating, income rating or price objective for that company.

#### Copyright and General Information:

Copyright 2023 Bank of America Corporation. All rights reserved. iQdatabase® is a registered service mark of Bank of America Corporation. This information is prepared for the use of BofA Securities clients and may not be redistributed, retransmitted or disclosed, in whole or in part, or in any form or manner, without the express written consent of BofA Securities. BofA Global Research information is distributed simultaneously to internal and client websites and other portals by BofA Securities and is not publicly-available material. Any unauthorized use or disclosure is prohibited. Receipt and review of this information constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion, or information contained herein (including any investment recommendations, estimates or price targets) without first obtaining express permission from an authorized officer of BofA Securities. Materials prepared by BofA Global Research personnel are based on public information. Facts and views presented in this material have not been reviewed by, and may not reflect information known to, professionals in other business areas of BofA Securities, including investment banking personnel. BofA Securities has established information barriers between BofA Global Research and certain business groups. As a result, BofA Securities does not disclose certain client relationships with, or compensation received from, such issuers. To the extent this material discusses any legal proceeding or issues, it has not been prepared as nor is it intended to express any legal conclusion, opinion or advice. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BofA Global Research personnel's knowledge of legal proceedings in which any BofA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public inform

This information has been prepared independently of any issuer of securities mentioned herein and not in connection with any proposed offering of securities or as agent of any issuer of any securities. None of BofAS any of its affiliates or their research analysts has any authority whatsoever to make any representation or warranty on behalf of the issuer(s). BofA Global Research policy prohibits research personnel from disclosing a recommendation, investment rating, or investment thesis for review by an issuer prior to the publication of a research report containing such rating, recommendation or investment thesis.

Any information relating to the tax status of financial instruments discussed herein is not intended to provide tax advice or to be used by anyone to provide tax advice. Investors are urged to seek tax advice based on their particular circumstances from an independent tax professional.

The information herein (other than disclosure information relating to BofA Securities and its affiliates) was obtained from various sources and we do not guarantee its accuracy. This information may contain links to third-party websites. BofA Securities is not responsible for the content of any third-party website or any linked content contained in a third-party website. Content contained on such third-party websites is not part of this information and is not incorporated by reference. The inclusion of a link does not imply any endorsement by or any affiliation with BofA Securities. Access to any third-party website is at your own risk, and you should always review the terms and privacy policies at third-party websites before submitting any personal information to them. BofA Securities is not responsible for such terms and privacy policies and expressly disclaims any liability for them.

All opinions, projections and estimates constitute the judgment of the author as of the date of publication and are subject to change without notice. Prices also are subject to change without notice. BofA Securities is under no obligation to update this information and BofA Securities ability to publish information on the subject issuer(s) in the future is subject to applicable quiet periods. You should therefore assume that BofA Securities will not update any fact, circumstance or opinion contained herein.

Subject to the quiet period applicable under laws of the various jurisdictions in which we distribute research reports and other legal and BofA Securities policy-related restrictions on the publication of research reports, fundamental equity reports are produced on a regular basis as necessary to keep the investment recommendation current.

Certain outstanding reports or investment opinions relating to securities, financial instruments and/or issuers may no longer be current. Always refer to the most recent research report relating to an issuer prior to making an investment decision.

In some cases, an issuer may be classified as Restricted or may be Under Review or Extended Review. In each case, investors should consider any investment opinion relating to such issuer (or its security and/or financial instruments) to be suspended or withdrawn and should not rely on the analyses and investment opinion(s) pertaining to such issuer (or its securities and/or financial instruments) nor should the analyses or opinion(s) be considered a solicitation of any kind. Sales persons and financial advisors affiliated with BofAS or any of its affiliates may not solicit purchases of securities or financial instruments that are Restricted or Under Review and may only solicit securities under Extended Review in accordance with firm policies.

Neither BofA Securities nor any officer or employee of BofA Securities accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this information.