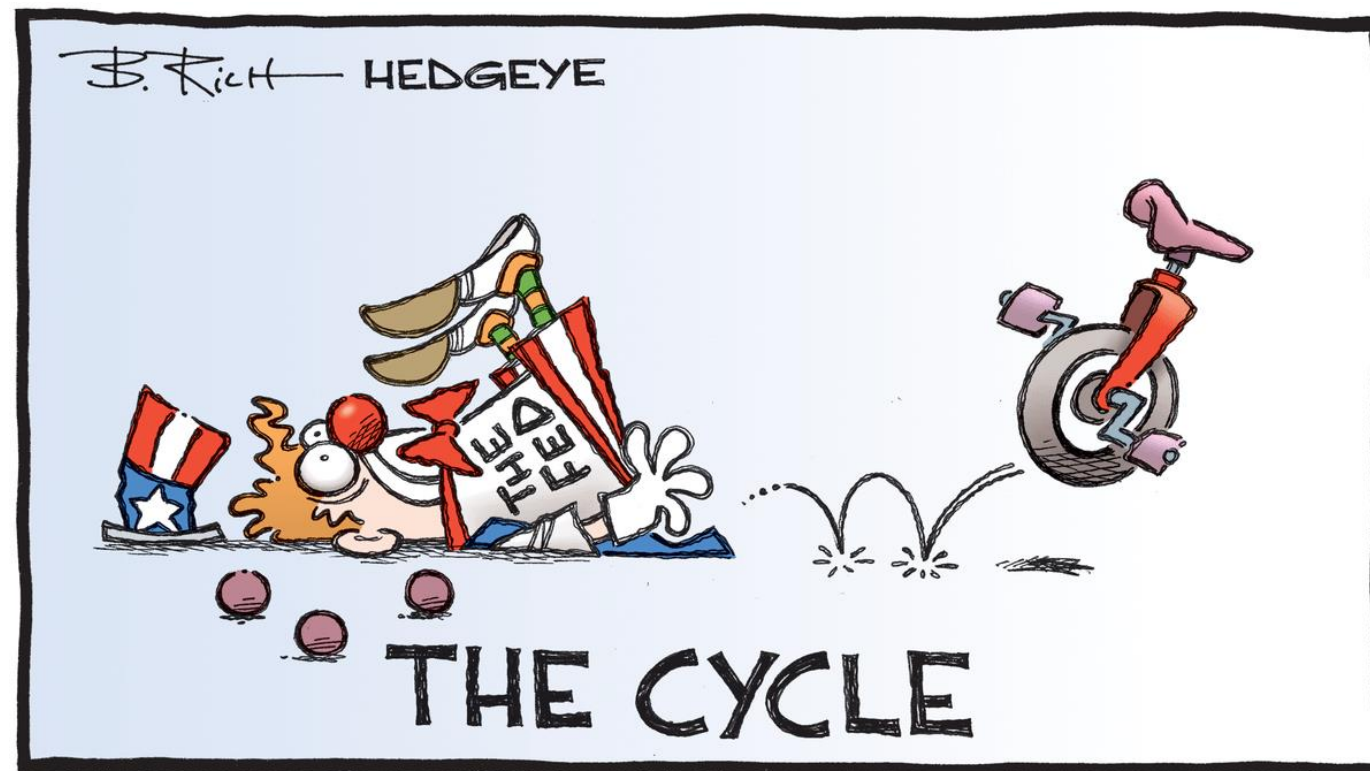


HEDGEYE



Hedgeye Macro

Research Process Overview



MACRO

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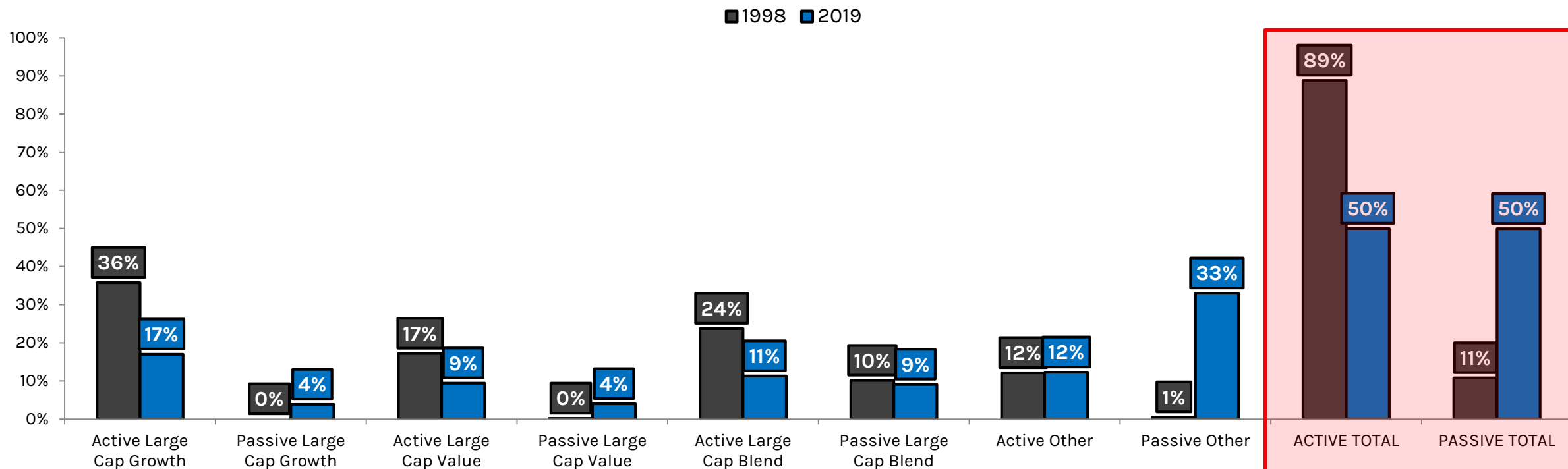
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The Investment Landscape Has Evolved Tremendously

Stock-picking has given way to factor-picking and it's our job as investors to embrace this sea change, rather than fight it.

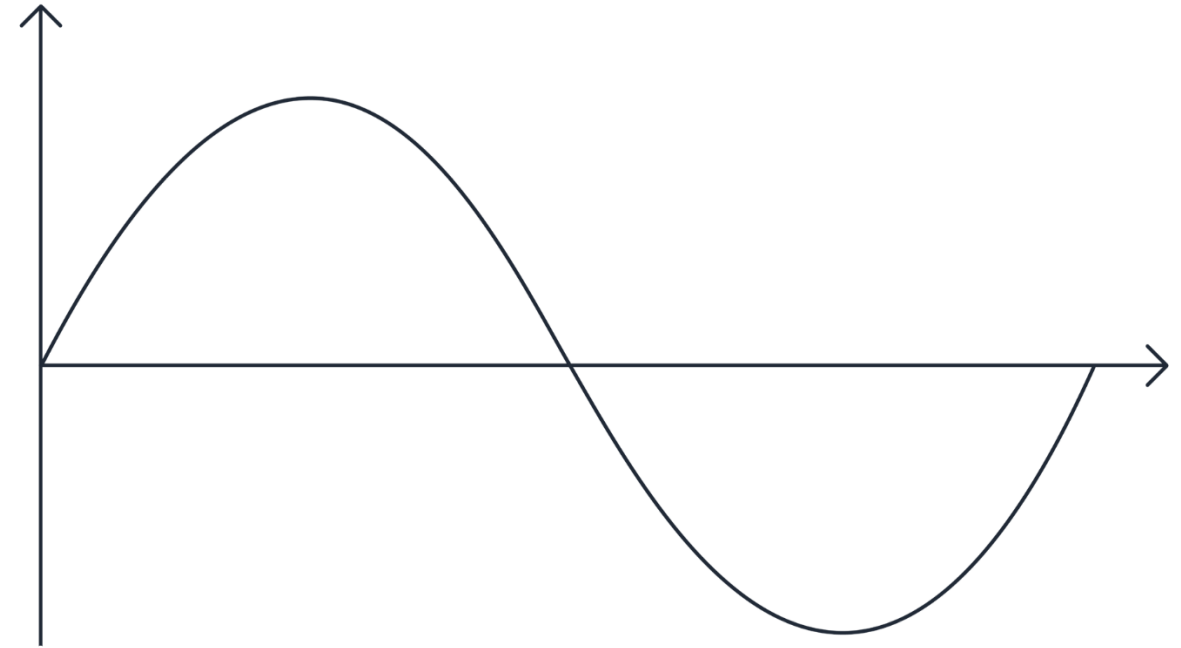
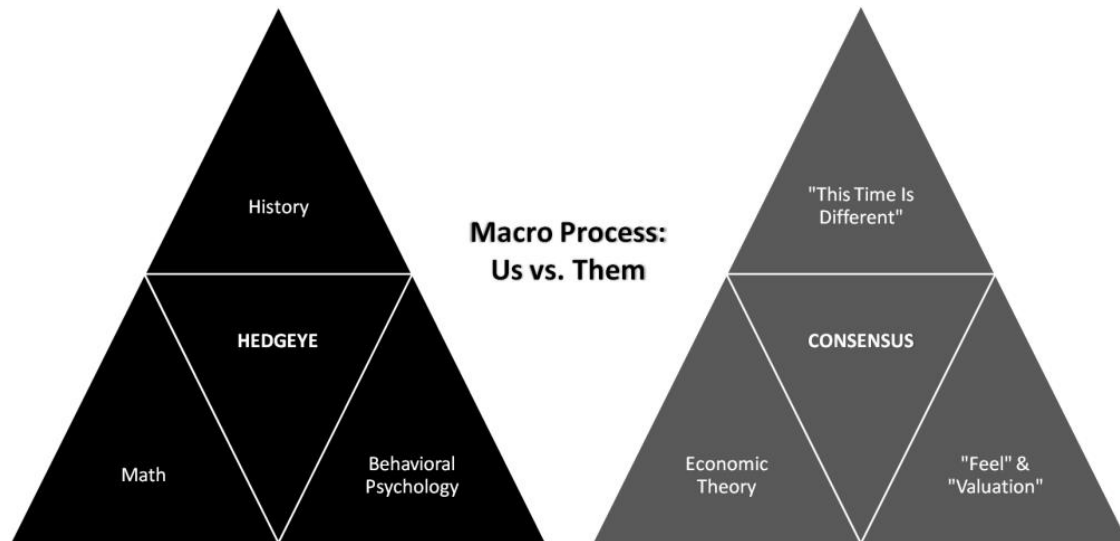
US Equity Fund AUM Share by Fund Structure



Skate To Where The Puck Is Going Within Asset Management

Assets invested in ETFs and ETPs listed globally surpassed \$5.6 trillion by mid-2019 topping global hedge fund assets by \$2.4 trillion. Moreover, BlackRock anticipates ETF/ETP AUM to more than double to \$12 trillion over the next 5 years. Regardless of whether or not you agree with this projection, you have to agree that **the proliferation of factor-based index investing and the growth of platform-oriented, market-neutral hedge fund strategies has made financial markets more sensitive to Macro risks than ever before.** For example, JPM estimates systematic trading accounts for over 90% of US equity trading volume. Are your investment processes equipped to compete for alpha in this new regime?

...So We Evolved Alongside It



WE ARE DIFFERENTIATED FROM THE HERD

Macroeconomic Research and **Global Macro Risk Management** are two very different fields. We specialize in the latter, incorporating key lessons from behavioral finance such as Prospect Theory and Bayesian Inference into our analysis. **We don't "feel" anything with regards to the markets or the economy; if we can't contextualize it with math, we don't have a view on it.**

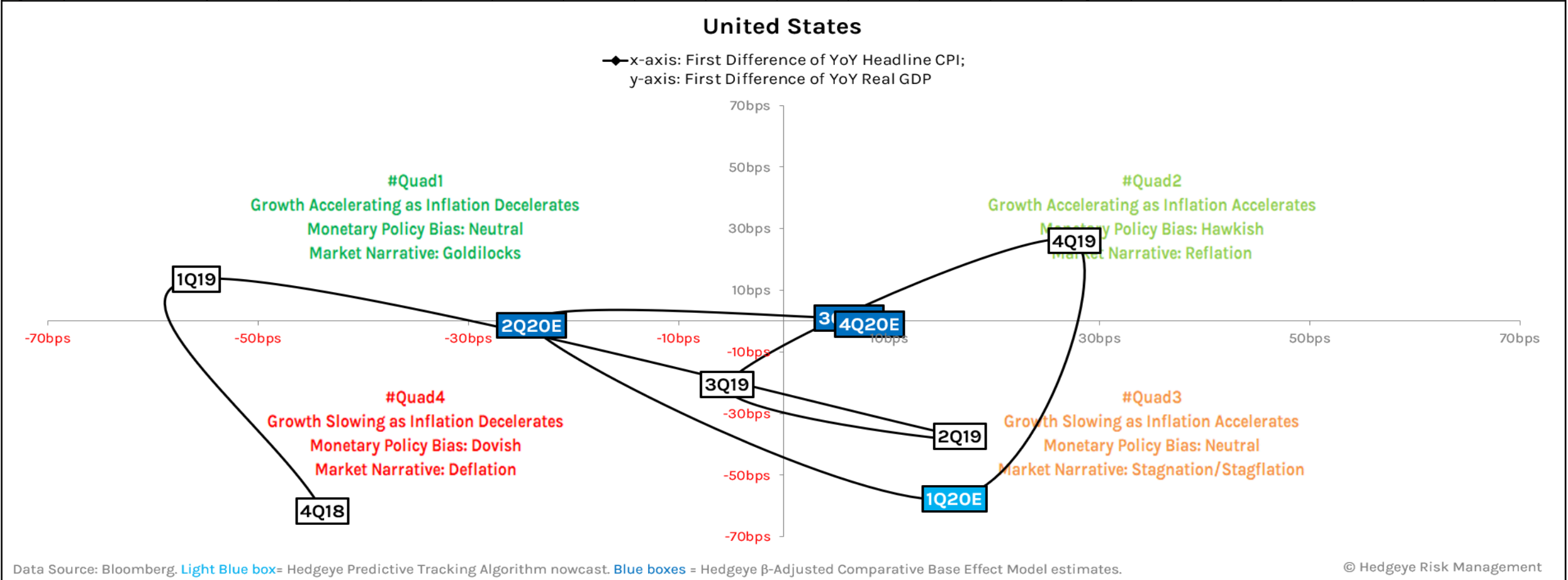
...BECAUSE WE FOCUS ON THE FACTS

Rate of change accelerations and decelerations are facts, not opinions, and our process is focused on contextualizing these facts, rather opining on the validity of **absolute levels** of growth, inflation, and/or policy. **This focus helps us consistently spot inflections in the performance of key factor exposures, across asset classes, 3-6 months ahead of investor consensus.**

What Are The Quads?

The GIP Model provides a regime-based framework that allows investors to quickly contextualize the three most causal factors for driving inter and intra asset class dispersion: GROWTH, INFLATION, and POLICY.

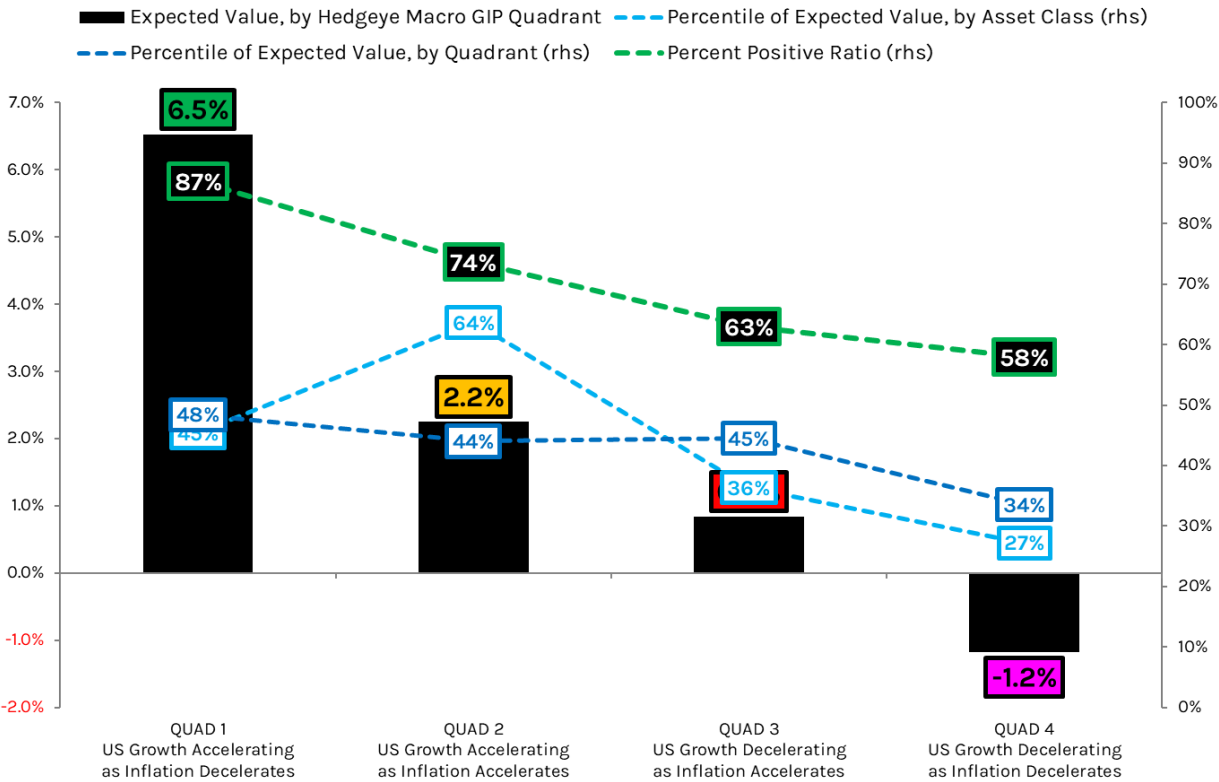
United States	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18	3Q18	4Q18	1Q19	2Q19	3Q19	4Q19	← Actuals Estimates →	1Q20E	2Q20E	3Q20E	4Q20E
Real GDP QoQ SAAR	2.30%	2.20%	3.20%	3.50%	2.50%	3.50%	2.90%	1.10%	3.10%	2.00%	2.10%	2.10%	Real GDP QoQ SAAR	0.79%	1.94%	2.12%	2.07%
Real GDP YoY	2.10%	2.16%	2.42%	2.80%	2.86%	3.20%	3.13%	2.52%	2.65%	2.28%	2.07%	2.33%	Real GDP YoY	1.76%	1.74%	1.75%	1.74%
3yr Comparative Base Effects	2.80%	2.35%	2.00%	1.97%	1.86%	1.75%	1.99%	2.41%	2.48%	2.68%	2.77%	2.66%	3yr Comparative Base Effects	2.76%	2.74%	2.60%	2.43%
Headline CPI YoY	2.54%	1.90%	1.97%	2.12%	2.21%	2.71%	2.64%	2.20%	1.64%	1.81%	1.76%	2.03%	Headline CPI YoY	2.20%	1.96%	2.02%	2.10%
2yr Comparative Base Effects	0.51%	0.50%	0.61%	1.13%	1.81%	1.48%	1.54%	1.96%	2.38%	2.31%	2.30%	2.16%	2yr Comparative Base Effects	1.93%	2.26%	2.20%	2.12%



Why Use The Quads?

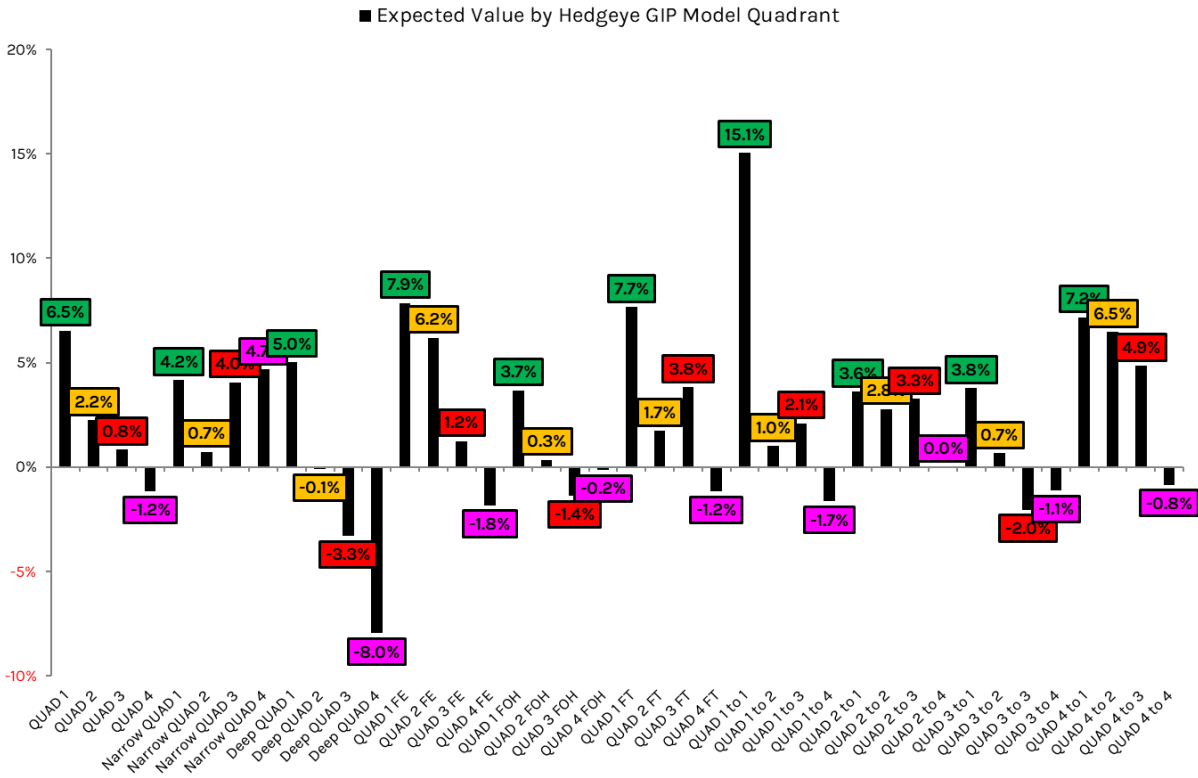
Backtesting every asset class, factor exposure, and geography through the lens of The Quads removes the qualitative guesswork from the process of identifying market history analogs.

S&P 500 Total Return Index



Data Source: Bloomberg. Asset classes include equities, fixed income, currencies and commodities. Quarterly observations starting in 1Q98.

S&P 500 Total Return Index



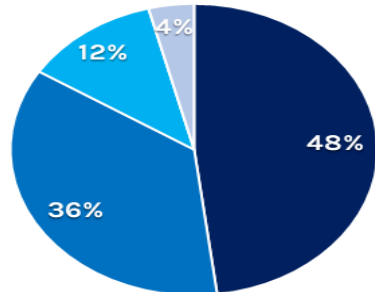
Data Source: Bloomberg. Asset classes include equities, fixed income, currencies and commodities. Quarterly observations starting in 1Q98.

What Works In Each Quad?

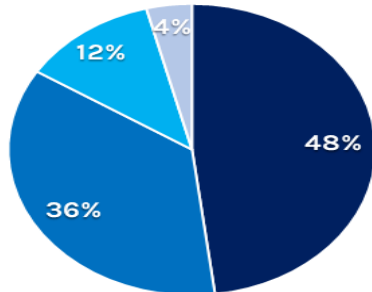
For illustrative purposes only. Not intended to simulate or recommend static core exposures or asset class weights.

Quad 1: Goldilocks				Quad 2: Reflation				Quad 3: Stagflation				Quad 4: Deflation			
Exposure	ETF	Hypothetical Long-Only Balanced Portfolio*	Hypothetical Long-Short Market Neutral Portfolio**	Exposure	ETF	Hypothetical Long-Only Balanced Portfolio*	Hypothetical Long-Short Market Neutral Portfolio**	Exposure	ETF	Hypothetical Long-Only Balanced Portfolio*	Hypothetical Long-Short Market Neutral Portfolio**	Exposure	ETF	Hypothetical Long-Only Balanced Portfolio*	Hypothetical Long-Short Market Neutral Portfolio**
Tech	XLK	6.0%	6.0%	Tech	XLK	6.0%	6.0%	Utilities	XLU	6.0%	6.0%	Consumer Staples	XLP	4.5%	4.5%
Consumer Discretionary	XLY	6.0%	6.0%	Consumer Discretionary	XLY	6.0%	6.0%	Tech	XLK	6.0%	6.0%	Health Care	XLV	4.5%	4.5%
Industrials	XLI	6.0%	6.0%	Industrials	XLI	6.0%	6.0%	Energy	XLE	6.0%	6.0%	REITS	VNQ	4.5%	4.5%
Materials	XLB	6.0%	6.0%	Energy	XLE	6.0%	6.0%	REITS	VNQ	6.0%	6.0%	Utilities	XLU	4.5%	4.5%
Utilities	XLU	-	-5.4%	Telecom	IYZ	-	-5.4%	Financials	XLF	-	-5.4%	Tech	XLK	-	-4.1%
Consumer Staples	XLP	-	-5.4%	Utilities	XLU	-	-5.4%	Materials	XLB	-	-5.4%	Energy	XLE	-	-4.1%
Energy	XLE	-	-5.4%	Consumer Staples	XLP	-	-5.4%	Telecom	IYZ	-	-5.4%	Industrials	XLI	-	-4.1%
Health Care	XLV	-	-5.4%	REITS	VNQ	-	-5.4%	Consumer Staples	XLP	-	-5.4%	Financials	XLF	-	-4.1%
High Beta	SPHB	6.0%	6.0%	Momentum	MTUM	6.0%	6.0%	Secular Growers	QQQ	6.0%	6.0%	Low Beta	SPLV	4.5%	4.5%
Momentum	MTUM	6.0%	6.0%	Growth	IWF	6.0%	6.0%	Low Beta	SPLV	6.0%	6.0%	Dividend Yield	SPHD	4.5%	4.5%
Cyclicals	IWN	6.0%	6.0%	Small Caps	IWM	6.0%	6.0%	Quality	QUAL	6.0%	6.0%	Defensives	DEF	4.5%	4.5%
Mid Caps	MDY	6.0%	6.0%	High Beta	SPHB	6.0%	6.0%	Growth	IWF	6.0%	6.0%	Quality	QUAL	4.5%	4.5%
Low Beta	SPLV	-	-5.4%	Low Beta	SPLV	-	-5.4%	Small Caps	IWM	-	-5.4%	Momentum	MTUM	-	-4.1%
Defensives	DEF	-	-5.4%	Value	IWD	-	-5.4%	Dividend Yield	SPHD	-	-5.4%	High Beta	SPHB	-	-4.1%
Dividend Yield	SPHD	-	-5.4%	Dividend Yield	SPHD	-	-5.4%	Value	IWD	-	-5.4%	Growth	IWF	-	-4.1%
Mega Caps	DIA	-	-5.4%	Defensives	DEF	-	-5.4%	Cyclicals	IWN	-	-5.4%	Secular Growers	QQQ	-	-4.1%
Convertibles	CWB	9.0%	9.0%	BDCs	BIZD	9.0%	9.0%	Munis	MUB	10.0%	10.0%	Long Duration Treasuries	TLT	10.0%	10.0%
High Yield Credit	HYG	9.0%	9.0%	Convertibles	CWB	9.0%	9.0%	Long Duration Treasuries	TLT	10.0%	10.0%	Medium Duration Treasuries	IEF	10.0%	10.0%
Leveraged Loans	BKLN	9.0%	9.0%	Preferreds	PFF	9.0%	9.0%	TIPS	TIP	10.0%	10.0%	Munis	MUB	10.0%	10.0%
BDCs	BIZD	9.0%	9.0%	Leveraged Loans	BKLN	9.0%	9.0%	Investment Grade Credit	LQD	10.0%	10.0%	MBS	MBB	10.0%	10.0%
TIPS	TIP	-	-8.1%	Long Duration Treasuries	TLT	-	-8.1%	BDCs	BIZD	-	-9.0%	Convertibles	CWB	-	-9.0%
Short Duration Treasuries	SHY	-	-8.1%	Munis	MUB	-	-8.1%	Preferreds	PFF	-	-9.0%	TIPS	TIP	-	-9.0%
MBS	MBB	-	-8.1%	Investment Grade Credit	LQD	-	-8.1%	Convertibles	CWB	-	-9.0%	Leveraged Loans	BKLN	-	-9.0%
Medium Duration Treasuries	IEF	-	-8.1%	Medium Duration Treasuries	IEF	-	-8.1%	Leveraged Loans	BKLN	-	-9.0%	High Yield Credit	HYG	-	-9.0%
EUR/USD	FXE	12.0%	12.0%	EM FX	CEW	12.0%	12.0%	G10 FX	UDN	8.0%	8.0%	DXY	UUP	12.0%	12.0%
DXY	UUP	-	-10.8%	DXY	UUP	-	-10.8%	EM FX	CEW	-	-7.2%	EUR/USD	FXE	-	-10.8%
Copper	JJC	4.0%	4.0%	Crude Oil	USO	4.0%	4.0%	Crude Oil	USO	4.0%	4.0%	Gold	GLD	12.0%	12.0%
Agriculture	DBA	-	-3.6%	Agriculture	DBA	-	-3.6%	Base Metals	DBB	-	-3.6%	Crude Oil	USO	-	-10.8%

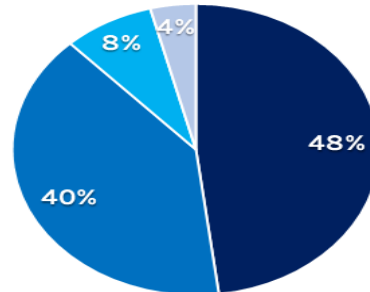
■ Equities
■ Fixed Income
■ Currencies
■ Commodities/Real Assets



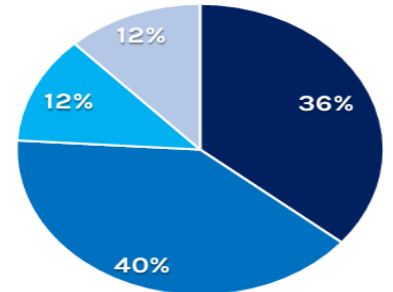
■ Equities
■ Fixed Income
■ Currencies
■ Commodities/Real Assets



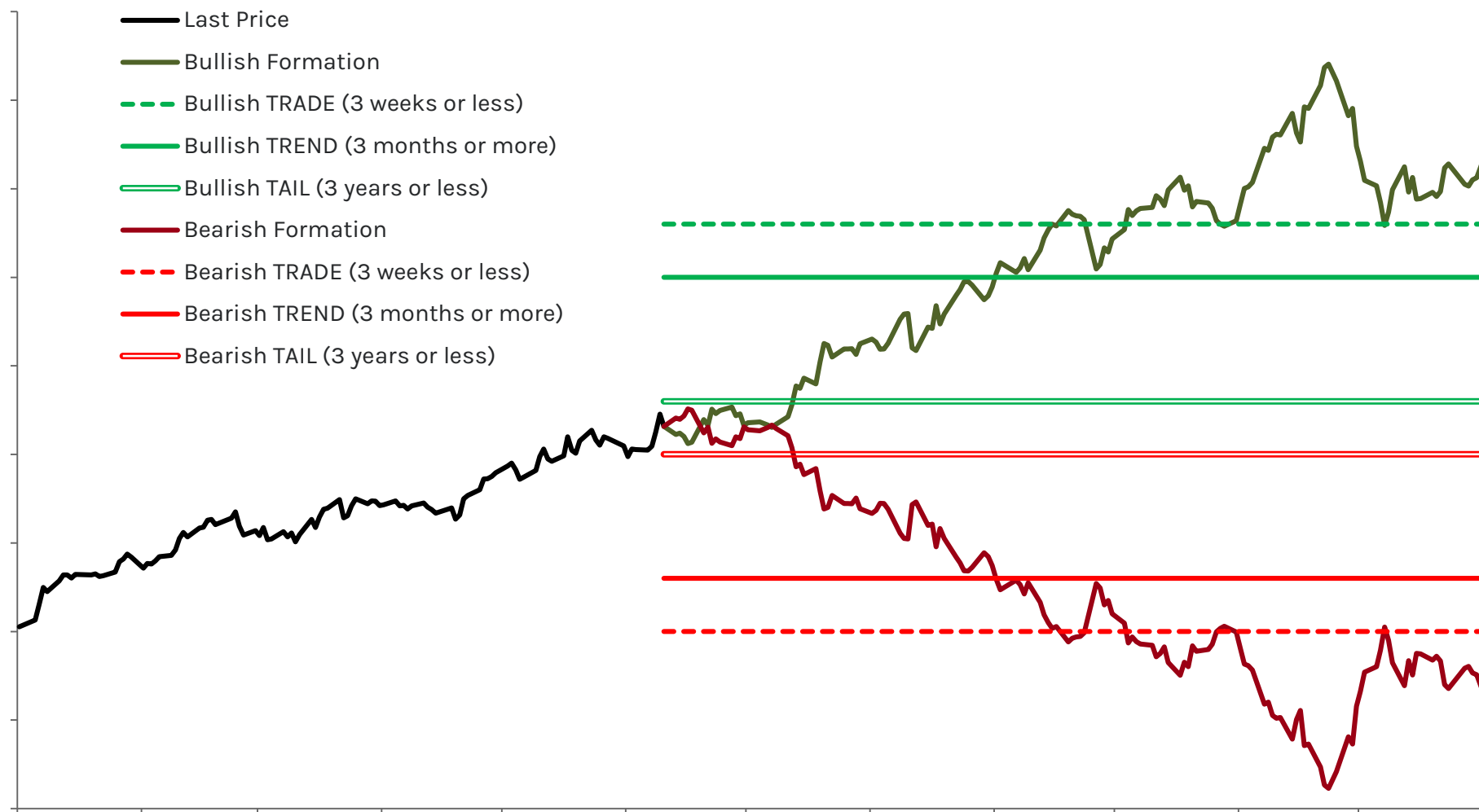
■ Equities
■ Fixed Income
■ Currencies
■ Commodities/Real Assets



■ Equities
■ Fixed Income
■ Currencies
■ Commodities/Real Assets



The Quads Provide A Reliable Starting Point For Asset Allocation And Keith's Quantitative Signaling Overlay Confirms Market Direction And Helps Risk Manage Core Exposures



Core to the process of selecting our core exposures is determining whether the ticker screens well from the perspective of Keith's proprietary risk management process, which employs PRICE, VOLUME and VOLATILITY as discrete factors in the calculus of levels that backtest well as critical momentum thresholds.

Assets where last price is greater than all three (in ascending order) are said to be in a "Bullish Formation" and all dips should be bought, inasmuch that assets in the converse "Bearish Formation" should be repeatedly shorted on strength.

A | B Testing Process: Quantify Investor Consensus

HEDGEYE

Monitoring Sector and Style factor Performance allows us to quantitatively map the evolution of our current macro themes while the CFTC data provides an important sentiment backboard against which we can measure and fade consensus.

STYLE FACTOR PERFORMANCE*

	FACTOR	1D % Chg	1W % Chg	1M % Chg	3M % Chg	6M % Chg	YTD % Chg
Debt	High Debt/EV	4.3%	13.5%	-32.2%	-36.9%	-32.7%	-37.0%
	Low Debt/EV	1.2%	5.0%	-18.1%	-20.3%	-12.7%	-20.1%
SI	High Short Interest	3.7%	13.9%	-29.2%	-34.7%	-29.0%	-34.6%
	Low Short Interest	2.0%	4.7%	-22.6%	-24.8%	-19.7%	-24.7%
BETA	High Beta	6.2%	25.3%	-38.0%	-44.8%	-38.5%	-44.6%
	Low Beta	0.2%	-3.4%	-15.4%	-15.8%	-12.4%	-16.1%
YIELD	High Yield	4.7%	15.4%	-35.3%	-42.7%	-39.3%	-42.6%
	Low Yield	2.8%	10.5%	-20.8%	-23.4%	-14.9%	-23.1%
MKT CAP	MCAP Bottom 25%	4.2%	14.7%	-33.9%	-41.4%	-37.1%	-41.4%
	MCAP Top 25%	1.6%	4.0%	-19.3%	-21.0%	-13.4%	-20.7%
Sales	Top 25% Sales Growth	3.5%	15.3%	-22.3%	-25.5%	-17.4%	-25.2%
	Bottom 25% Sales Growth	3.2%	9.8%	-29.5%	-35.0%	-30.6%	-34.9%
EPS	Top 25% EPS Growth	4.4%	18.3%	-25.8%	-30.7%	-22.9%	-30.5%
	Bottom 25% EPS Growth	3.0%	6.1%	-28.7%	-32.9%	-29.6%	-33.0%

*Mean Performance of Top Quartile vs. Bottom Quartile, S&P500 Companies

CFTC NON-COMMERCIAL NET LONG POSITIONING

CFTC NON-COMMERCIAL NET LONG POSITIONING						3Y		Z-Score		
	Metric	Latest	W/W Chg	3M Ave	6M Ave	1Y Ave	Max	Min	1Y	3Y
EQUITIES	SPX (Index + E-mini)	(25,469)	(22,252)	18,408	13,326	30,699	249,638	(128,189)	-1.63X	-1.44X
	VIX	(79,487)	(16,165)	(119,203)	(151,608)	(134,410)	92,913	(218,362)	1.25X	0.13X
	Russell 2000 (mini)	(16,195)	(38,782)	39,981	19,087	(26,920)	72,749	(165,490)	0.19X	-0.16X
	Dow Jones (mini)	8,864	(6,885)	25,574	29,678	30,467	95,976	(282)	-1.92X	-1.28X
	Nasdaq (mini)	23,964	5,804	22,218	25,449	21,353	113,412	(24,815)	0.21X	0.01X
	Nikkei Index	957	2,378	(5,356)	(6,788)	(8,564)	14,214	(16,298)	2.56X	0.41X
RATES	10Y UST	(57,127)	(35,881)	(166,940)	(167,770)	(245,086)	372,991	(758,490)	1.75X	0.47X
	2Y UST	(59,022)	(14,196)	(186,361)	(222,909)	(202,532)	67,767	(421,551)	1.37X	1.01X
	5Y UST	(94,447)	(159,830)	(181,603)	(212,158)	(145,380)	65,383	(866,140)	0.48X	0.93X
	UST Bonds	(51,526)	(8,222)	(45,580)	(55,732)	(46,860)	122,839	(142,810)	-0.22X	-0.75X
	30D Fed Funds	310,671	(32,249)	334,713	286,690	98,662	397,055	(286,025)	1.01X	1.84X
	Eurodollar	601,188	(974,363)	1,183,722	1,234,955	950,098	2,134,274	(3,110,209)	-0.66X	1.08X
CURRENCIES	USD	7,141	(5,271)	16,256	22,083	25,708	44,298	(10,666)	-2.31X	-0.75X
	JPY	31,146	21,345	(25,927)	(26,121)	(25,891)	32,039	(140,151)	1.64X	2.02X
	EUR	31,085	43,522	(64,419)	(65,621)	(69,774)	147,318	(123,765)	3.60X	0.32X
	GBP	13,482	(11,672)	22,523	(9,050)	(32,269)	49,216	(108,402)	1.07X	1.03X
	AUD	(32,737)	24,850	(37,292)	(41,232)	(49,096)	77,969	(74,181)	1.45X	-0.33X
	CAD	(11,563)	(7,966)	15,099	19,629	2,945	78,001	(99,736)	-0.49X	-0.16X
	MXN	33,663	(78,804)	143,055	137,519	130,474	170,379	(21,903)	-3.76X	-0.99X
	NZD	(20,800)	(5,087)	(7,393)	(20,179)	(18,762)	35,981	(42,544)	-0.15X	-0.68X
COMMODITIES	CHF	8,034	6,089	1,090	(7,178)	(14,069)	8,034	(47,216)	1.67X	1.97X
	CRUDE OIL	437,850	50,040	464,199	456,559	461,905	784,290	332,714	-0.42X	-0.64X
	GOLD	177,470	(80,988)	252,440	237,659	200,257	292,066	(103,009)	-0.25X	0.52X
	COPPER	(36,825)	1,906	(22,929)	(25,911)	(26,835)	67,602	(60,135)	-0.51X	-1.40X
	Natural Gas	(124,483)	87,245	(223,890)	(199,492)	(163,186)	57,455	(262,534)	0.60X	-0.48X
	RBOB Gasoline	83,190	(4,076)	108,974	93,562	85,315	129,000	29,519	-0.11X	0.07X
	ULSD Heating Oil	(14,213)	9,839	(15,876)	(7,963)	(8,704)	67,696	(27,674)	-0.55X	-1.14X
	Silver	35,799	(7,676)	63,374	56,543	41,635	107,003	(30,158)	-0.21X	0.12X
	Platinum	23,948	(7,159)	55,088	48,063	34,608	69,306	(11,540)	-0.57X	0.10X
	Aluminum	163,475	(2,043)	159,440	161,536	158,399	168,292	122,356	0.48X	1.31X
	Nickel	42,230	(365)	42,647	44,026	37,396	47,708	13,508	0.55X	1.21X
	Corn	(61,169)	(41,604)	(23,966)	(46,032)	(11,105)	372,754	(270,560)	-0.34X	-0.54X
	Soybeans	(2,026)	(5,957)	(15,072)	3,325	(26,909)	210,365	(148,817)	0.45X	-0.02X
	Wheat	3,366	(18,033)	35,661	23,175	9,599	63,219	(143,292)	-0.19X	0.47X
	Live Cattle	22,221	(3,906)	70,815	74,956	79,413	183,134	19,421	-1.26X	-1.73X
	Lean Hogs	34,947	(2,055)	31,498	35,765	55,615	97,769	(11,151)	-0.88X	-0.23X
	Sugar	61,105	(53,876)	140,231	13,120	(39,343)	228,364	(205,161)	0.83X	1.12X
	Cotton	(11,090)	(10,491)	26,325	12,053	(346)	129,851	(37,827)	-0.40X	-1.24X
	Coffee	8,879	(3,750)	18,985	5,278	(16,330)	46,860	(106,651)	0.72X	1.32X
	Cocoa	26,032	(29,817)	61,324	53,593	34,031	81,269	(43,846)	-0.26X	0.40X
	Orange Juice	(4,576)	1,113	(6,268)	(6,279)	(6,519)	5,540	(9,416)	2.58X	-0.33X

A | B Testing Process: Measure & Map The Volatility of Volatility

HEDGEYE

Deliberately studying the VOLATILITY OF VOLATILITY leads to high-probability decision-making opportunities. TIMING matters.

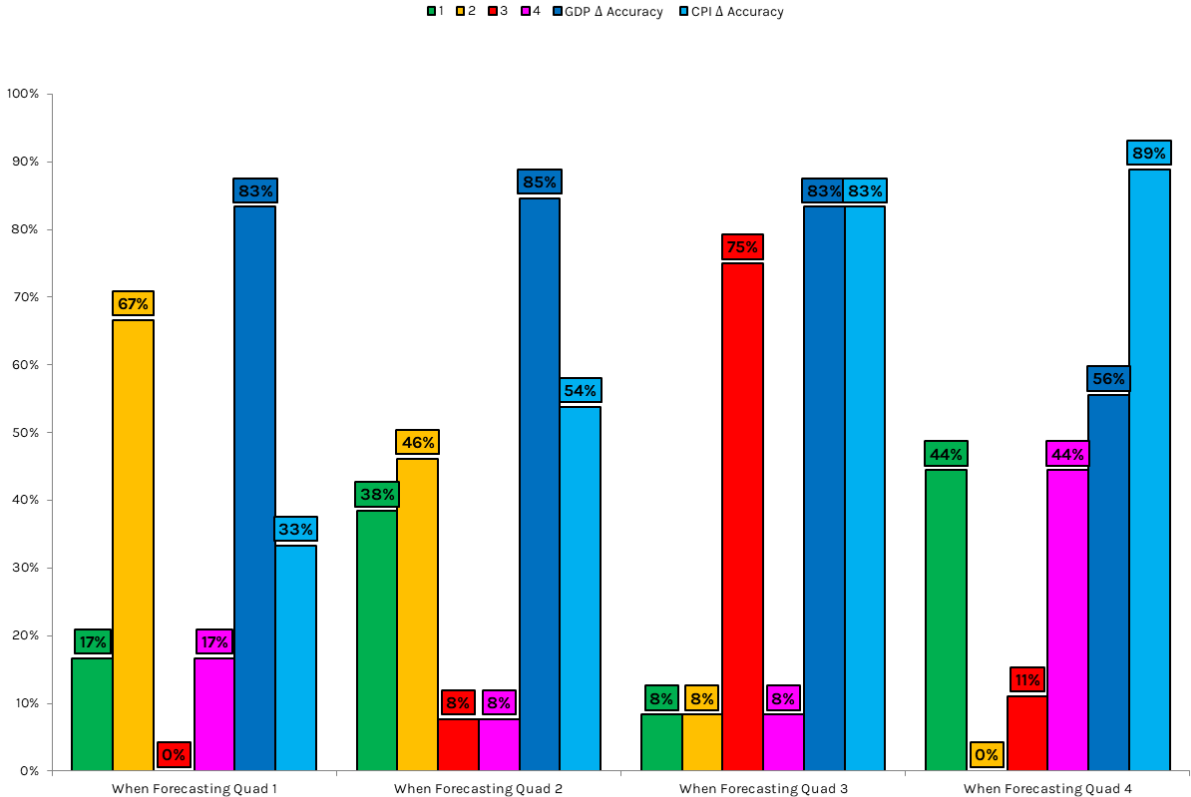
TIME WINDOW SETTING: VOLATILITY_30D PUT_IMP_VOL_30D		TOTAL RETURN PERFORMANCE	IVOL PREMIUM/DISCOUNT						REALIZED VOLATILITY TRENDS			IMPLIED VOLATILITY TRENDS		
			IVOL PREM %						RVOL		PERCENTILE	IVOL	PERCENTILE	
		YTD %	IVOL / RVOL	Yesterday	1W Ago	1M Ago	TTM Z-Score	3Yr Z-Score	CURRENT	MM %	10YR	CURRENT	MM %	10YR
US EQUITIES														
CURRENT														
Power Shares QQQ Trust ETF	QQQ US EQUITY	-14.07%	-28%	-32%	-4%	21%	-1.7	-1.3	78.0	379%	100%	55.9	183%	100%
Technology Sector SPDR ETF	XLK US EQUITY	-15.00%	-31%	-35%	1%	12%	-1.3	-1.2	90.2	350%	100%	62.6	178%	100%
Consumer Staples Sector SPDR ETF	XLK US EQUITY	-18.59%	-24%	-30%	-2%	61%	-0.8	-0.7	68.2	792%	100%	51.6	320%	100%
Health Care Sector SPDR ETF	XLV US EQUITY	-19.64%	-26%	-31%	4%	11%	-1.4	-1.3	68.4	404%	100%	50.6	237%	100%
Utilities Sector SPDR ETF	XLU US EQUITY	-20.20%	-43%	-40%	-2%	25%	-1.3	-1.7	88.5	868%	100%	50.4	340%	100%
Communication Services SPDR ETF	XLK US EQUITY	-21.20%	-27%	-36%	0%	28%	-1.5		72.0	406%	100%	52.5	187%	99%
Consumer Discretionary Sector SPDR ETF	XLK US EQUITY	-21.95%	-26%	-28%	14%	35%	-1.5	-1.3	77.3	528%	100%	57.0	244%	100%
SPDR S&P 500 ETF Trust	SPY US EQUITY	-22.85%	-26%	-29%	8%	15%	-1.3	-1.1	77.7	530%	100%	57.5	307%	100%
Materials Sector SPDR ETF	XLB US EQUITY	-28.09%	-27%	-36%	19%	1%	-1.0	-1.1	83.6	398%	100%	60.8	259%	100%
Industrials Sector SPDR ETF	XLI US EQUITY	-28.44%	-32%	-31%	16%	14%	-1.3	-1.3	87.8	488%	100%	59.8	251%	100%
Vanguard Real Estate REIT ETF	VNO US EQUITY	-29.02%	-34%	-40%	-9%	11%	-2.5	-1.9	96.1	756%	100%	63.0	406%	100%
Financials Sector SPDR ETF	XLK US EQUITY	-33.16%	-24%	-32%	23%	21%	-1.4	-1.3	100.4	594%	100%	76.0	336%	100%
I-Shares Russell 2000 ETF	IWM US EQUITY	-33.37%	-24%	-27%	11%	17%	-1.3	-1.3	82.9	482%	100%	63.0	277%	100%
Energy Sector SPDR ETF	XLE US EQUITY	-51.15%	-29%	-28%	21%	2%	-1.4	-1.5	124.0	490%	100%	88.7	313%	100%
INTERNATIONAL EQUITIES														
I-Shares China Large-Cap ETF	FXI US EQUITY	-14.44%	-31%	-28%	22%	-21%	-2.2	-2.1	60.5	130%	100%	41.6	101%	98%
I-Shares MSCI Japan ETF	EWJ US EQUITY	-17.89%	-28%	-27%	16%	15%	-1.8	-1.4	54.3	322%	100%	38.9	163%	100%
I-Shares MSCI Emerging Markets ETF	EEM US EQUITY	-24.07%	-35%	-36%	17%	-15%	-1.9	-1.9	77.7	255%	100%	50.4	170%	99%
Euro Stoxx 50 Index	SX5E INDEX	-24.97%	-25%	-29%	36%	-11%	-1.2	-1.1	67.1	338%	100%	50.5	268%	100%
CURRENCIES														
PowerShares US Dollar Index ETF	UUP US EQUITY	5.47%	-35%	-16%	41%	51%	-2.1	-1.2	20.3	420%	100%	13.2	124%	97%
Currency Shares Japanese Yen ETF	FXJ US EQUITY	-2.57%	-42%	-39%	-11%	-3%	-3.0	-2.9	21.8	261%	100%	12.6	115%	88%
Currency Shares Euro Trust ETF	FXE US EQUITY	-3.14%	-13%	22%	48%	21%	-1.5	-1.0	12.9	212%	93%	11.2	126%	75%
Currency Shares British Pound ETF	FXB US EQUITY	-10.29%	-5%	-2%	26%	-25%	-0.5	-0.6	19.3	135%	99%	18.2	196%	99%
COMMODITIES														
SPDR Gold Shares ETF	GLD US EQUITY	5.88%	5%	10%	66%	46%	0.0	-0.1	34.0	252%	99%	35.7	153%	100%
PowerShares DB Agriculture Fund ETF	DBA US EQUITY	-11.35%	-12%	-6%	31%	15%	-1.6	-1.6	25.0	146%	98%	22.1	89%	95%
United States Natural Gas Fund ETF	UNG US EQUITY	-22.66%	13%	13%	42%	1%	-0.5	0.0	55.4	57%	91%	62.4	74%	97%
United States Oil Fund ETF	USO US EQUITY	-60.34%	-8%	7%	24%	34%	-0.7	-0.7	132.7	413%	100%	122.0	252%	100%
FIXED INCOME														
I-Shares 20+ Year Treasury Bond ETF	TLT US EQUITY	20.35%	-46%	-37%	-1%	18%	-2.1	-2.8	52.5	341%	100%	28.5	103%	99%
I-Shares 7-10 Year Treasury Bond ETF	IEF US EQUITY	8.97%	1%	-28%	24%	41%	-0.4	-0.4	17.7	257%	100%	17.8	155%	99%
I-Shares IBOX IG Corporate Bond ETF	LQD US EQUITY	-3.70%	-22%	-5%	94%	43%	-1.0	-1.4	45.0	1275%	100%	35.3	653%	100%
I-Shares J.P. Morgan USD EM Bond ETF	EMB US EQUITY	-13.86%	-15%	2%	34%	44%	-1.0	-1.3	51.3	1443%	100%	43.6	813%	100%
I-Shares IBOX HY Corporate Bond ETF	HYG US EQUITY	-15.73%	5%	14%	43%	-8%	-0.4	-0.3	36.0	627%	100%	37.8	734%	100%

Data Source: CBOE, CME, Bloomberg

Measuring And Mapping The Quads With Precision Ex Ante Matters To Driving Ex Post Returns

US Comparative Base Effects Model Backtest

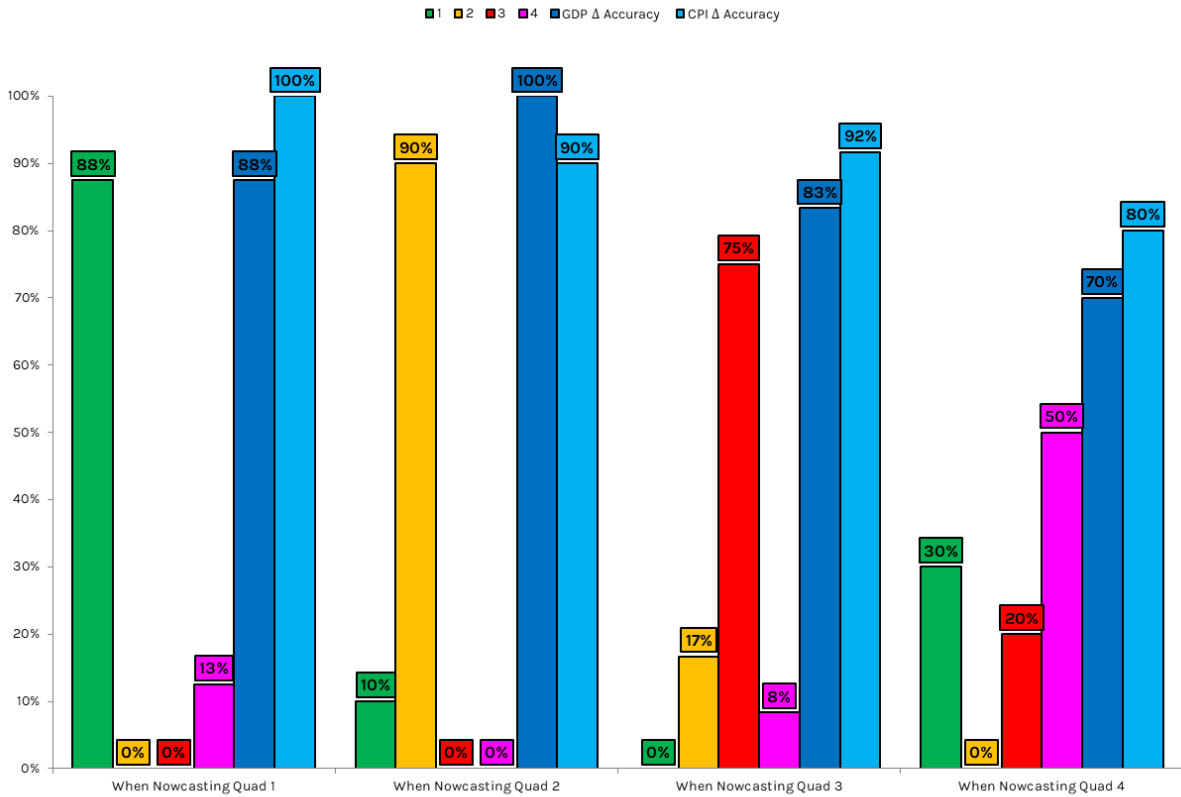
Hedgeye Comparative Base Effects Model Quad Projection Accuracy: United States



Data Source: Bloomberg

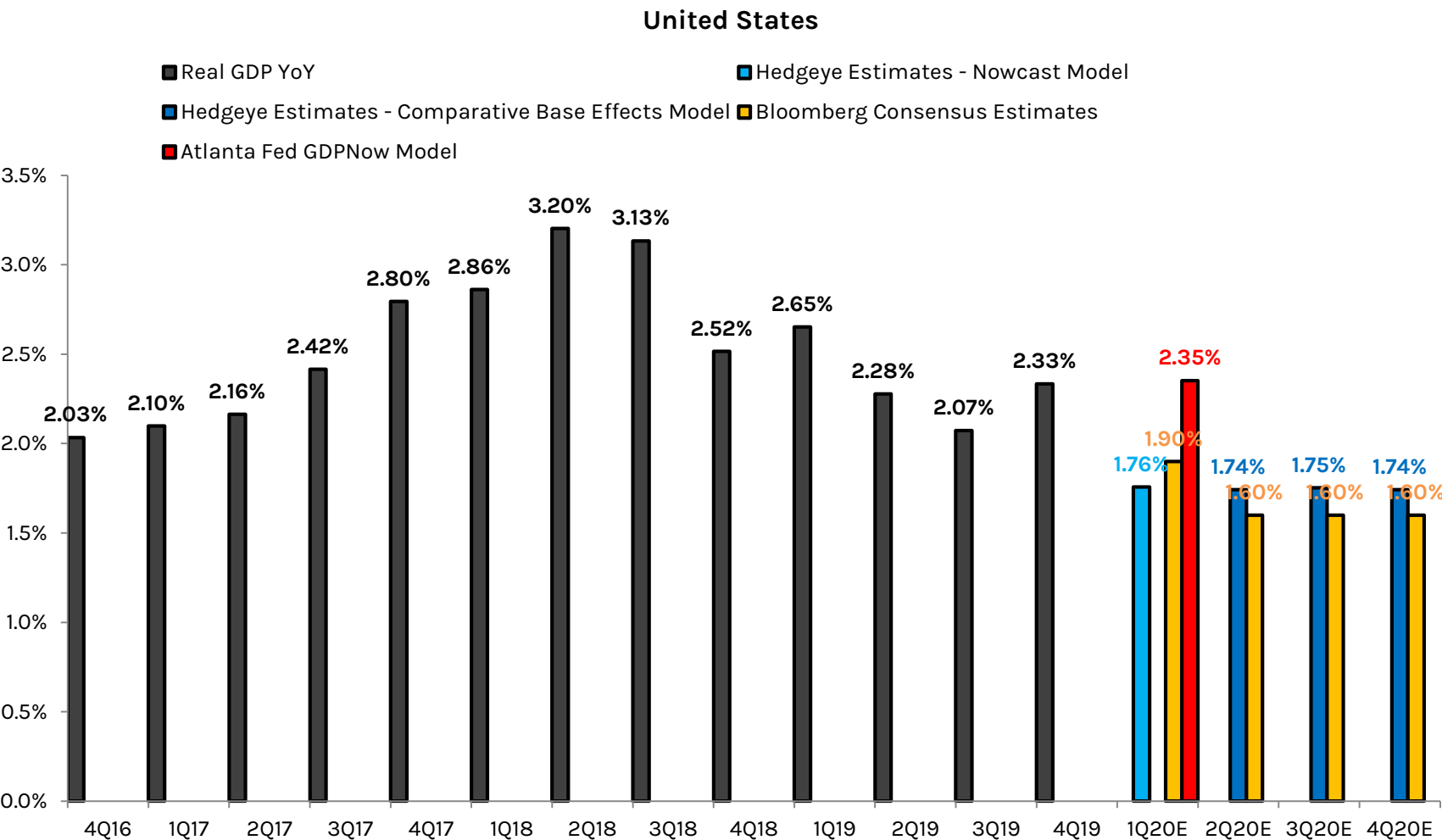
US Nowcast Model Backtest

Hedgeye Nowcast Model Quad Projection Accuracy: United States



Data Source: Bloomberg

US Real GDP YoY Projections

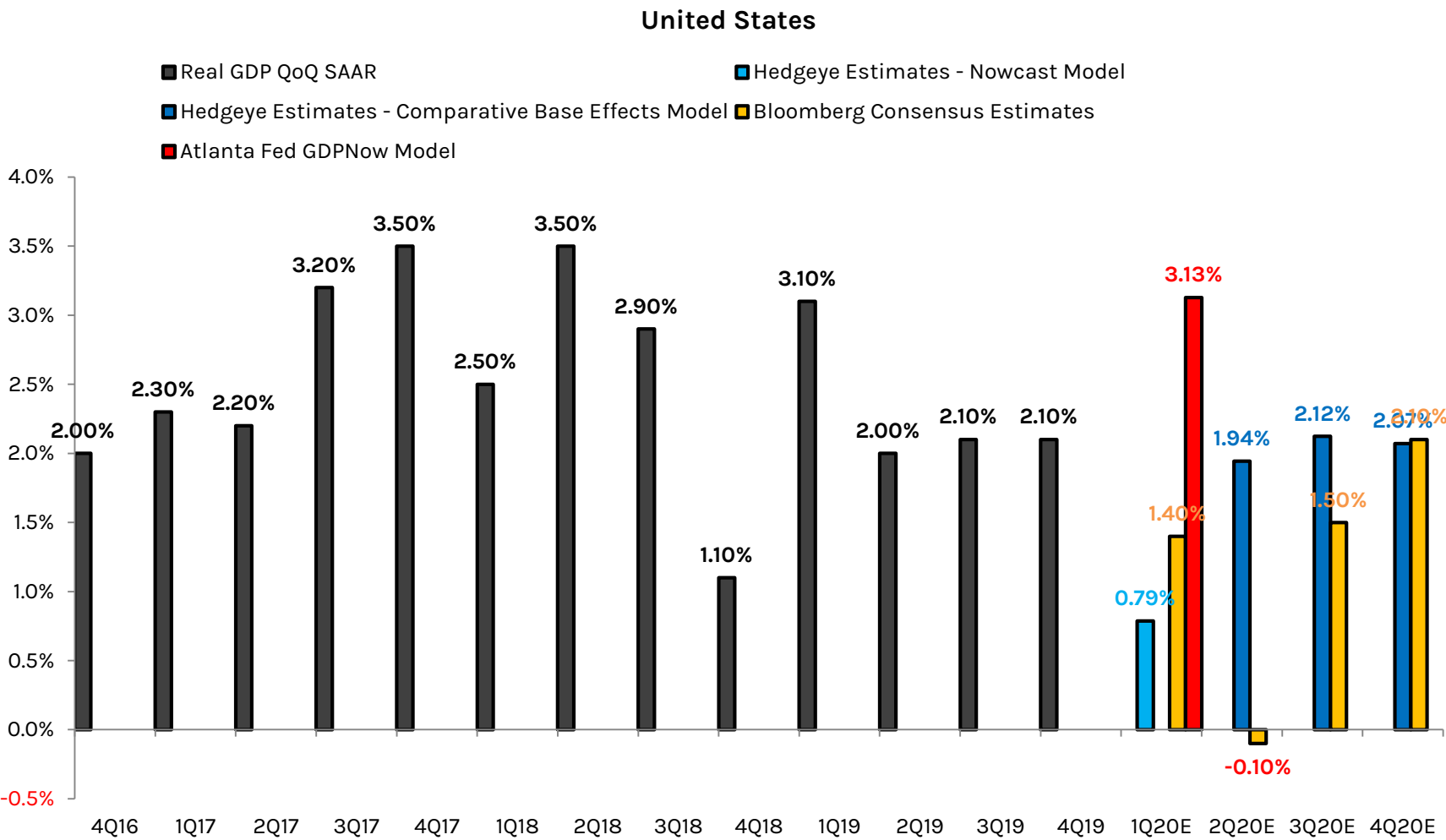


We use two distinct models to forecast the YoY growth rate of Real GDP and the combination of the two allows us to develop both a highly accurate real-time assessment of near-term economic momentum, as well as a high-probability scenario for where growth is likely to trend over the NTM.

Intra-quarter, we employ a stochastic nowcasting framework that relies on nonlinear interpolation to relay rate of change signals from the individual features of the model in a fractally oriented manner to influence adjustment to the base rate. In out-quarters where high-frequency data has yet to be reported, we employ a Bayesian inference process that adjusts each of the preceding forecasted base rates inversely and proportionally to the marginal rates of change in the base effects.

All told, our US GDP nowcast model has an average absolute forecast error of 26bps and an 85% success rate in terms of accurately projecting the rate of change of GROWTH.

US Real GDP QoQ SAAR Projections

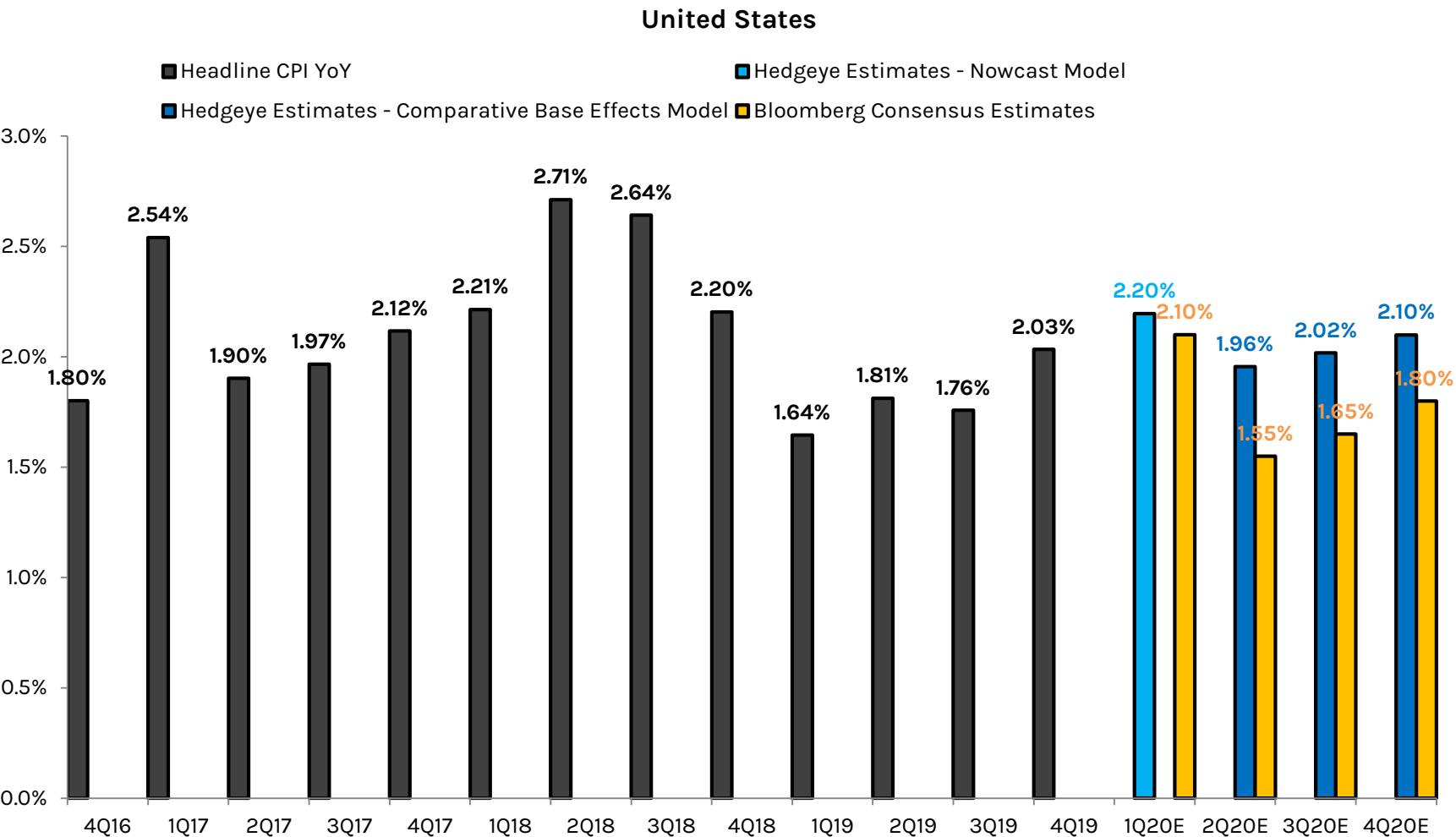


One differentiating factor of our forecasting process is that we aim to solve for where the economy is trending on a Full-Cycle Investing basis, rather than trying to identify super short-term economic momentum.

A rigorous study of financial market history suggests the latter growth rate to be little more than noise in the context of making accurate intermediate-to-long-term investment decisions.

As such, we interpolate our QoQ SAAR forecasts from what is being implied by our forecasted YoY growth rates.

US Headline CPI YoY Projections



We use two distinct models to forecast the YoY growth rate of Headline CPI and the combination of the two allows us to develop both a highly accurate real-time assessment of near-term inflation momentum, as well as a high-probability scenario for where inflation is likely to trend over the NTM.

Intra-quarter, we employ a stochastic nowcasting framework that relies on nonlinear interpolation to relay rate of change signals from the individual features of the model in a fractally oriented manner to influence adjustment to the base rate. In out-quarters where high-frequency data has yet to be reported, we employ a Bayesian inference process that adjusts each of the preceding forecasted base rates inversely and proportionally to the marginal rates of change in the base effects.

All told, our US CPI nowcast model has an average absolute forecast error of 17bps and a 90% success rate in terms of accurately projecting the rate of change of INFLATION.

US Real GDP Nowcast Model

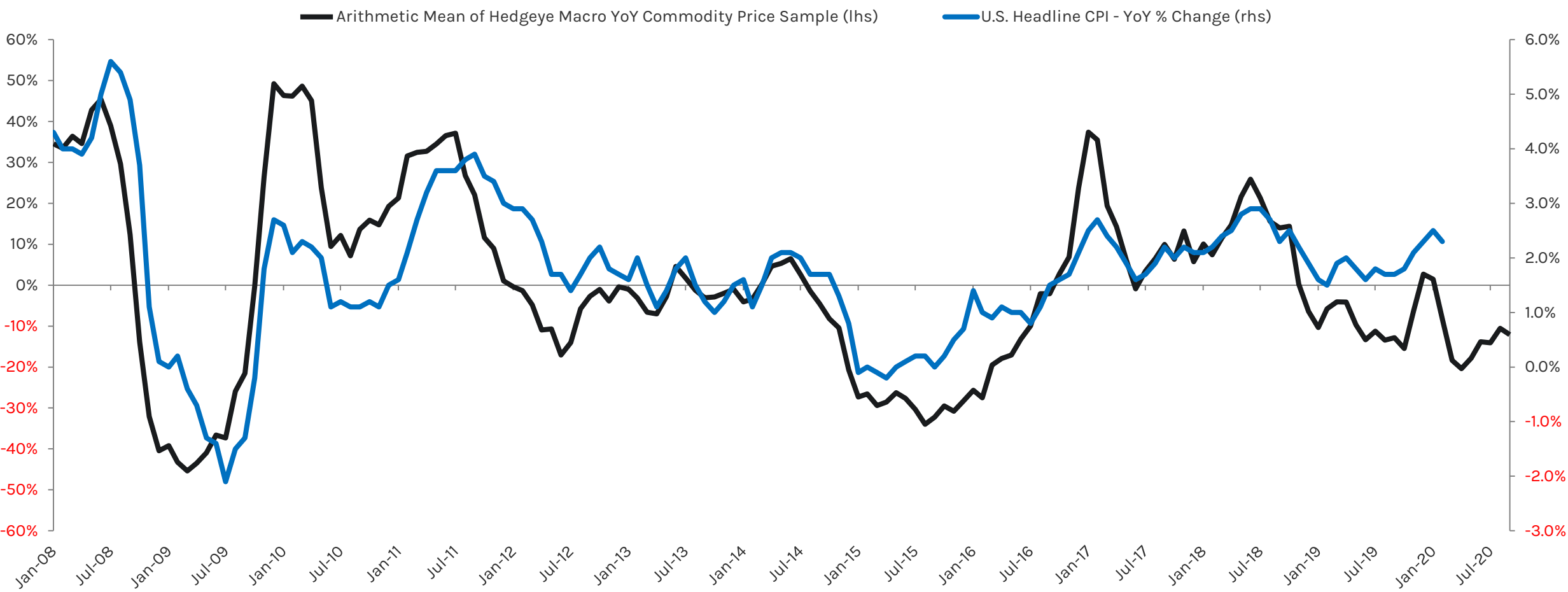
Each of the following 30 features backtests as statistically significant with respect to predicting the rate of change of Real GDP growth and are dynamically re-weighted each quarter according to changes in the relative strength of their first difference regressions with the dependent variable.

HEDGEYE US NOWCAST MODEL SUMMARY	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	4Q19	1Q20	Δ
Real PCE YoY (1)	2.96	3.29	3.25	3.51	3.75	3.08	3.23	3.03	1.69	2.42	2.33	2.76	2.70	2.61	2.60	2.56	2.46	2.67	2.31	2.28	3.31	2.75	-	-	2.64	2.75	0.11
Headline Retail Sales YoY (15)	4.66	6.46	6.08	6.51	6.08	3.90	4.79	4.08	1.57	2.35	2.24	3.83	3.78	3.01	3.33	3.53	4.35	3.97	3.14	3.27	5.38	4.96	4.35	-	3.93	4.65	0.73
Retail Sales Control Group YoY (7)	4.52	5.89	4.59	5.04	4.46	4.08	4.60	4.65	0.94	3.34	2.66	3.96	3.71	3.45	4.53	4.73	5.10	4.37	3.66	2.44	5.80	3.59	4.01	-	3.97	3.80	-0.16
Auto Sales YoY (22)	0.61	0.67	4.76	-0.06	3.56	-5.79	-2.67	0.00	-1.46	-2.75	-2.36	0.57	-3.93	2.91	-0.46	0.84	2.23	-1.21	-5.43	-1.78	-4.57	1.45	1.63	-	-3.93	1.54	5.47
Real Disposable Personal Income YoY (26)	3.92	3.67	4.07	4.09	4.30	3.99	3.84	3.67	4.19	3.24	3.43	3.28	3.12	3.01	2.94	2.54	2.64	3.00	2.66	2.88	1.78	2.24	-	-	2.44	2.24	-0.20
Personal Savings Rate (20)	7.70	7.50	7.60	7.50	7.50	7.50	7.30	7.20	8.80	8.30	8.80	8.40	8.00	7.80	7.80	7.40	7.70	7.80	7.70	7.80	7.50	7.90	-	-	7.67	7.90	0.23
Total Employees On Nonfarm Payrolls YoY (6)	1.54	1.62	1.62	1.57	1.60	1.65	1.60	1.53	1.57	1.67	1.39	1.37	1.42	1.28	1.26	1.29	1.27	1.35	1.34	1.42	1.42	1.42	1.60	-	1.40	1.51	0.12
Private Sector Wages YoY (14)	2.83	2.91	2.91	2.85	3.08	2.97	3.25	3.46	3.54	3.35	3.53	3.51	3.46	3.58	3.53	3.65	3.73	3.67	3.76	3.52	3.25	3.33	3.32	-	3.51	3.33	-0.18
Aggregate Hours Worked YoY (4)	1.83	1.92	2.21	1.86	1.90	1.94	1.89	1.24	1.57	1.96	1.10	1.37	1.12	0.99	0.67	0.71	0.97	1.06	1.05	1.13	0.84	0.84	1.60	-	1.00	1.22	0.22
Aggregate Labor Income YoY (5)	4.71	4.91	5.21	4.76	5.14	5.02	5.28	4.63	5.00	5.28	4.65	4.84	4.50	4.32	4.10	4.20	4.46	4.20	4.30	4.45	3.87	3.94	4.65	-	4.21	4.30	0.09
Monthly Initial Jobless Claims YoY (16)	-8.74	-7.72	-8.51	-11.37	-10.94	-21.08	-9.17	-6.68	-8.88	-6.08	2.27	-3.63	-2.93	-1.20	-0.07	-1.16	0.93	-0.12	-0.23	-4.19	4.39	-4.47	-4.89	477.90	-0.01	156.18	156.19
Monthly Continuing Claims YoY (3)	-7.96	-10.15	-11.50	-10.94	-11.88	-13.95	-13.80	-12.94	-10.13	-10.04	-7.04	-5.81	-7.73	-3.47	-2.18	-3.30	-1.58	-0.04	2.19	0.85	1.95	0.53	-1.10	1.65	1.66	0.36	-1.30
Conference Board Consumer Confidence (28)	125.6	128.8	127.1	127.9	134.7	135.3	137.9	136.4	126.6	121.7	131.4	124.2	129.2	131.3	124.3	135.8	134.2	126.3	126.1	126.8	128.2	130.4	130.7	-	127.0	130.6	3.52
Industrial Production YoY (2)	3.79	2.83	3.43	3.93	5.26	5.41	4.06	4.06	3.77	3.63	2.74	2.26	0.71	1.73	1.02	0.40	0.30	-0.18	-0.82	-0.43	-0.90	-1.02	0.04	-	-0.72	-0.49	0.23
Durable Goods New Orders YoY (8)	8.95	10.21	2.56	10.18	12.38	7.98	6.23	5.42	3.68	8.36	0.50	0.85	-0.76	-3.78	-1.93	0.98	-2.96	-5.78	-1.24	-4.85	-3.31	-3.75	-0.06	-	-3.13	-1.90	1.23
Core Capital Goods New Orders YoY (10)	6.78	6.77	8.40	9.12	7.62	1.71	4.12	6.07	1.88	4.07	2.43	3.84	1.10	1.12	0.94	-0.77	-0.83	-0.94	-0.99	0.20	1.03	0.57	-0.57	-	0.08	0.00	-0.08
Factory Orders YoY (13)	7.98	9.68	5.78	9.38	10.28	8.02	6.47	4.05	2.45	4.12	0.67	1.20	0.57	-1.73	-1.32	0.38	-1.91	-3.69	-1.29	-1.94	-0.23	-0.76	-	-	-1.15	-0.76	0.39
Manufacturing & Trade Inventories YoY (18)	4.32	4.37	3.94	4.40	4.28	4.57	5.23	4.75	5.08	5.37	5.05	5.06	5.35	5.26	5.19	4.80	4.15	3.60	3.01	2.82	2.07	1.10	-	-	2.64	1.10	-1.54
Nonresidential Construction Spending YoY (27)	3.49	3.76	4.09	6.04	6.52	7.70	4.42	1.32	1.16	3.92	2.36	4.85	4.90	2.25	1.86	0.63	1.19	0.36	2.97	7.57	6.37	5.13	-	-	5.64	5.13	-0.51
Residential Construction Spending YoY (24)	7.17	7.28	4.97	3.75	1.20	-0.15	-2.55	-5.13	-7.12	-7.86	-11.14	-8.91	-9.28	-9.47	-8.46	-7.00	-2.84	-1.36	4.04	2.81	6.39	9.20	-	-	4.41	9.20	4.79
ISM Manufacturing PMI (17)	58.4	59.0	59.9	58.2	60.8	59.3	58.5	58.8	55.0	55.5	54.1	54.6	53.4	52.3	51.6	51.3	48.8	48.2	48.5	48.1	47.8	50.9	50.1	-	48.1	50.5	2.37
ISM Non-Manufacturing PMI (19)	57.5	58.2	59.2	57.5	58.9	61.2	60.3	60.2	58.0	56.0	58.5	56.3	55.7	56.3	55.4	54.8	56.0	53.5	54.4	53.9	54.9	55.5	57.3	-	54.4	56.4	2.00
NFIB Small Business Optimism Index (25)	104.8	107.8	107.2	107.9	108.8	107.9	107.4	104.8	104.4	101.2	101.7	101.8	103.5	105.0	103.3	104.7	103.1	101.8	102.4	104.7	102.7	104.3	104.5	-	103.3	104.4	1.13
Exports YoY (9)	9.04	10.99	8.60	7.18	6.23	5.84	5.42	2.50	-0.50	1.84	1.39	0.37	-1.12	-0.88	-1.65	-0.29	0.40	-1.45	-1.73	-0.13	1.85	1.10	-	-	0.00	1.10	1.11
Imports YoY (11)	7.60	7.86	7.73	9.32	9.78	9.97	9.00	3.81	3.65	2.13	0.12	2.45	0.29	3.34	1.29	0.05	-0.05	-2.94	-4.83	-3.87	-3.14	-2.39	-	-	-3.95	-2.39	1.56
Trade Balance YoY (21)	-1.76	5.00	-3.99	-18.75	-25.64	-28.74	-24.66	-9.22	-20.71	-3.27	4.77	-11.68	-6.40	-23.64	-14.38	-1.39	1.75	8.51	16.31	18.37	20.05	15.76	-	-	18.24	15.76	-2.49
Headline CPI YoY (23)	2.46	2.80	2.87	2.95	2.70	2.28	2.52	2.18	1.91	1.55	1.52	1.86	2.00	1.79	1.65	1.81	1.75	1.71	1.76	2.05	2.29	2.49	2.33	-	2.03	2.41	0.38
PCE Deflator YoY (30)	2.10	2.33	2.37	2.45	2.26	2.02	2.04	1.91	1.78	1.41	1.31	1.40	1.52	1.38	1.36	1.44	1.43	1.33	1.31	1.33	1.54	1.73	-	-	1.39	1.73	0.33
Core PCE Deflator YoY (29)	1.96	2.06	2.03	2.11	2.00	2.00	1.86	1.96	1.97	1.77	1.62	1.48	1.57	1.48	1.61	1.65	1.76	1.66	1.64	1.50	1.54	1.63	-	-	1.56	1.63	0.07
M2 Money Supply YoY (12)	3.90	3.83	4.21	3.95	3.96	3.91	3.75	3.51	3.94	4.34	4.15	3.81	4.07	4.27	4.54	5.00	5.06	5.51	6.26	6.89	6.49	6.82	7.42	8.28	6.55	7.51	0.96

Data Source: Bloomberg. Intellectual Property of Hedgeye Risk Management. Nowcast feature rank shown in parenthesis.

US Headline CPI Nowcast Model

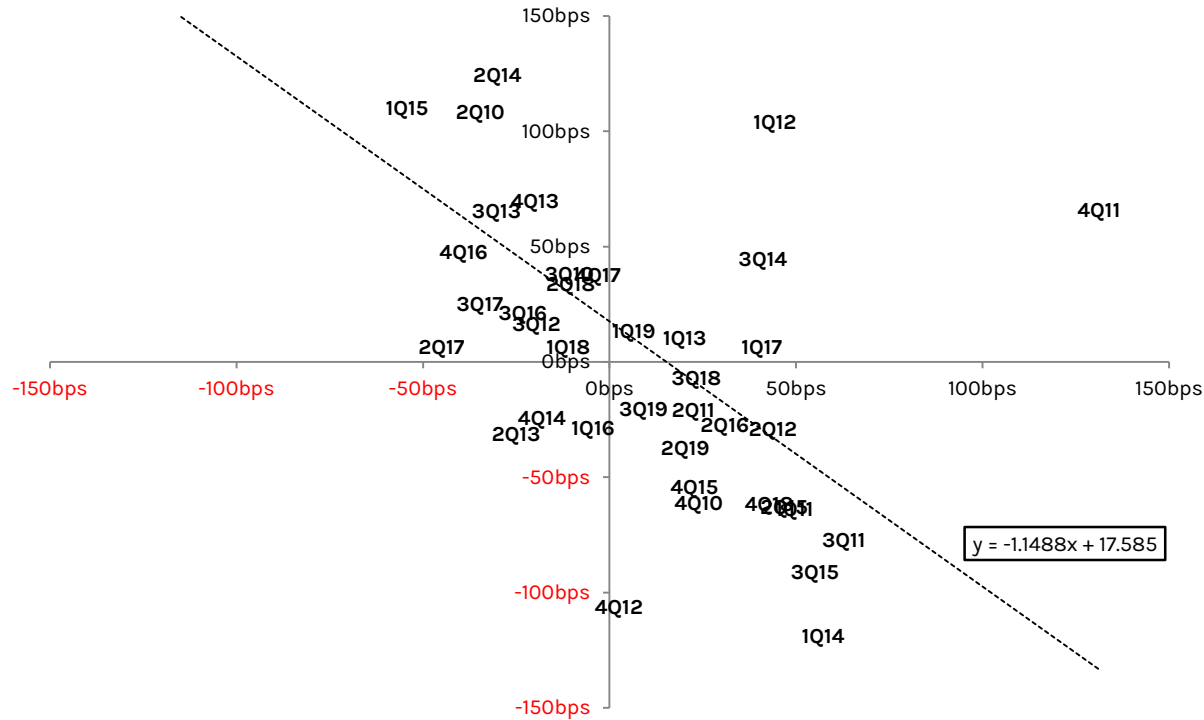
Structural shifts in the economy have increasingly mitigated the risk of a wage/price spiral, leading to an increased sensitivity of headline CPI to annual fluctuations in tradeable goods prices – a dynamic our model has astutely capitalized on.



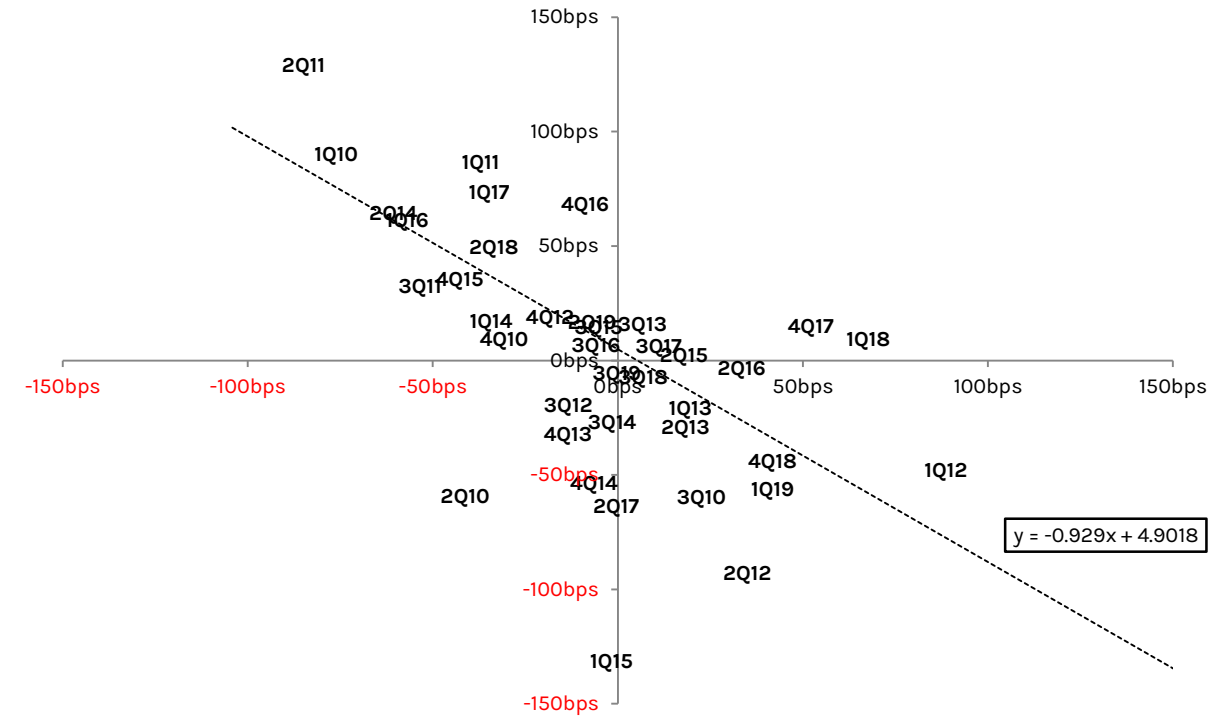
The Hedgeye Macro commodity price sample includes the CRB Index, CRB Raw Industrials Index, Brent Crude Oil and the UN Food and Agriculture Price Index. YoY deltas are calculated from monthly averages. Forward estimates assume no change to current monthly averages.

A Quick Lesson In Base Effects

x-axis: First Difference of the 2yr Average YoY Real GDP Growth Rate in the Comparative Base Period;
y-axis: First Difference of the YoY Real GDP Growth Rate in the Forecast Period (Trailing 10Y)
Raw Backtest: 78%; Momentum Backtest: 83%

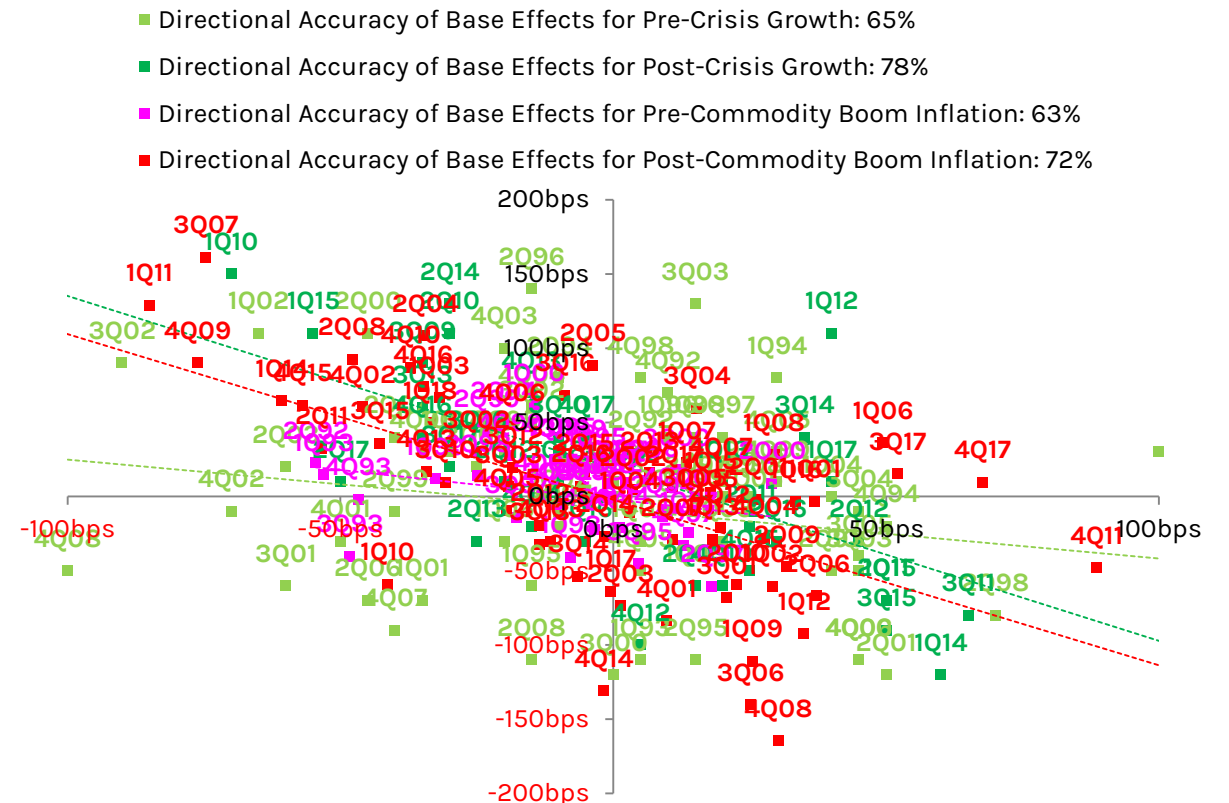
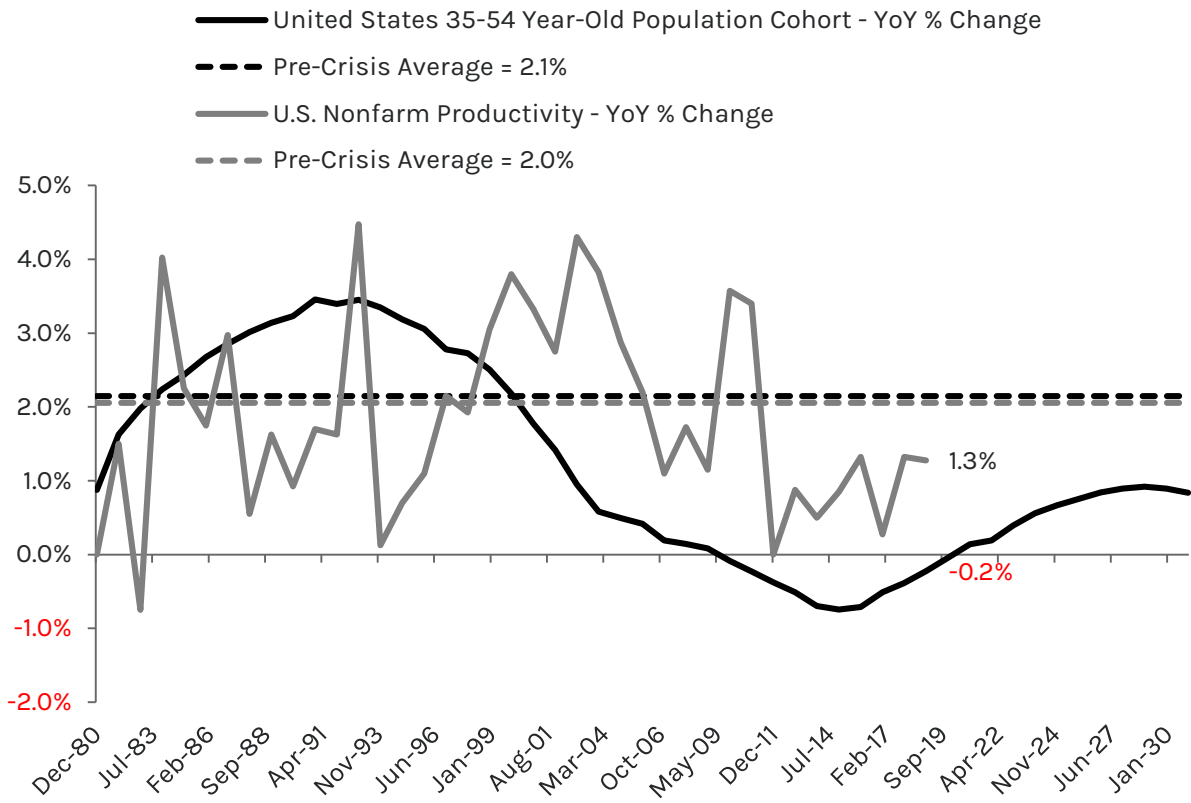


x-axis: First Difference of the 2yr Average YoY Headline CPI Rate in the Comparative Base Period;
y-axis: First Difference of the YoY Headline CPI Rate in the Forecast Period (Trailing 10Y)
Raw Backtest: 68%; Momentum Backtest: 77%



Using the US economy as an example, the marginal rate of change in the 2yr comparative base explains INFLECTIONS in GROWTH and INFLATION 78% and 68% of the time, respectively. Moreover, 2yr comps perpetuate MOMENTUM in GROWTH or INFLATION 83% and 77% of the time, respectively. These figures are near the modal outcomes of the GROWTH and INFLATION backtests across the near-50 economies we maintain detailed GIP Models for – which means base effects matter a lot to projecting the probable path forward for any economy.

Base Effects Matter More Now Than Ever



As the economy has grown increasingly more reliant upon financial leverage to replace a lost ~300 basis points of organic growth potential...

... both growth and inflation have become decidedly more cyclical throughout the post-crisis era. Leverage amplifies volatility.

The Quads Are Global

G20 GIP Model Summary

3/26/2020	Hedgeye Macro GIP Model Signals													GROWTH						Strength Of Signal				INFLATION							Strength Of Signal			
	Actuals									Estimates				Real GDP YoY					NTM Δ	Conditional Probability Of Est. Δ				Headline CPI YoY					NTM Δ	Conditional Probability Of Est. Δ				
	4Q17	1Q18	2Q18	3Q18	4Q18	1Q19	2Q19	3Q19	4Q19	1Q20E	2Q20E	3Q20E	4Q20E	4Q19	1Q20E	2Q20E	3Q20E	4Q20E	4Q20E Less 4Q19A	1Q20E	2Q20E	3Q20E	4Q20E	4Q19	1Q20E	2Q20E	3Q20E	4Q20E	4Q20E Less 4Q19A	1Q20E	2Q20E	3Q20E	4Q20E	
Argentina	-	3	3	2	3	2	2	4	1	4	1	1	1	-1.10	-1.50	-0.45	0.40	1.25	235bps	61	78	73	73	52.14	50.40	46.32	43.24	38.27	-1387bps	63	79	72	86	
Australia	4	1	1	3	4	4	4	1	1	3	4	1	3	2.20	1.98	1.98	2.23	2.18	-2bps	74	50	77	55	1.49	1.59	1.57	1.55	1.80	31bps	71	55	55	98	
Brazil	2	4	3	2	4	4	2	1	2	3	4	3	3	1.67	1.34	1.29	0.99	0.91	-76bps	79	54	76	57	3.37	3.73	3.09	3.13	3.17	-20bps	72	89	52	53	
Canada	3	3	3	2	4	4	2	4	3	3	1	1	2	1.47	1.09	1.29	1.33	1.54	7bps	90	71	55	72	2.10	2.18	1.94	1.85	2.10	0bps	67	97	67	97	
China	3	3	1	3	4	4	2	3	2	3	4	1	1	5.03	-12.72	-12.81	-11.62	-11.11	-1614bps	98	53	94	69	4.23	4.91	4.74	4.39	3.76	-48bps	98	64	80	98	
Eurozone	1	4	3	3	4	1	4	1	3	3	1	2	2	1.00	0.90	1.22	1.48	1.85	85bps	71	98	98	98	1.00	1.12	0.92	0.96	1.04	4bps	71	85	56	65	
France	2	3	3	3	4	1	1	4	4	3	1	1	2	0.92	0.13	0.29	0.50	0.92	0bps	98	82	92	98	1.23	1.42	1.20	1.03	1.21	-2bps	84	90	80	83	
Germany	1	4	3	3	4	1	3	1	3	2	1	2	1	0.50	0.84	1.34	1.73	2.06	156bps	96	98	98	94	1.20	1.42	1.20	1.42	1.32	12bps	88	88	88	68	
India	3	2	3	4	4	1	3	3	3	2	1	2	1	4.70	6.50	6.64	7.15	7.53	283bps	98	55	70	65	5.84	6.60	6.33	6.60	6.04	20bps	84	62	62	74	
Indonesia	1	4	1	4	2	4	3	3	4	4	4	1	2	4.97	4.91	4.82	4.88	4.90	-7bps	61	68	63	54	2.95	2.79	2.53	2.49	2.67	-28bps	57	61	52	58	
Italy	1	4	3	3	4	1	1	1	4	1	1	1	2	0.09	0.41	0.53	0.69	1.10	101bps	98	69	75	98	0.30	0.23	0.15	0.11	0.21	-9bps	58	59	54	62	
Japan	2	3	1	3	1	1	2	1	3	1	4	1	2	-0.70	-0.13	-0.23	0.02	1.22	192bps	93	57	69	98	0.50	0.48	0.46	0.45	0.51	1bps	52	51	51	55	
Mexico	2	4	1	3	4	4	3	1	4	2	2	3	2	-0.49	-0.21	0.12	0.03	0.70	119bps	74	77	57	98	2.94	3.21	3.28	3.60	3.87	93bps	75	57	80	75	
Russia	4	1	2	2	2	3	1	1	4	1	4	3	3	1.53	1.96	1.65	1.22	0.41	-111bps	80	71	80	98	3.43	2.26	1.87	1.90	1.90	-153bps	74	58	51	50	
South Africa	4	4	3	2	4	4	2	4	4	2	4	4	2	-0.50	-0.46	-0.61	-0.81	-0.41	9bps	55	69	76	98	3.77	4.23	3.92	3.86	4.06	29bps	90	76	56	67	
South Korea	4	1	2	3	2	4	2	1	2	3	4	2	4	2.30	1.95	1.75	2.15	1.60	-70bps	98	78	98	98	0.30	0.91	0.70	0.98	0.75	45bps	98	85	97	88	
Spain	1	4	3	3	4	1	4	4	3	2	1	2	2	1.83	1.89	2.23	2.29	2.38	55bps	59	98	60	63	0.50	0.70	0.39	0.49	0.71	21bps	74	88	62	77	
Turkey	3	1	3	3	3	1	1	1	1	2	1	1	2	5.96	8.34	8.91	9.29	9.34	339bps	98	67	61	52	10.32	11.51	10.63	9.08	9.32	-99bps	98	86	98	60	
United Kingdom	3	4	1	2	4	1	3	4	4	2	1	3	2	1.10	1.10	1.35	1.25	1.40	30bps	51	90	66	74	1.43	1.55	1.49	1.52	1.86	42bps	69	60	55	98	
United States	2	2	2	4	4	1	3	4	2	3	4	2	3	2.33	1.76	1.74	1.75	1.74	-59bps	98	52	51	51	2.03	2.20	1.96	2.02	2.10	7bps	86	98	64	68	
MODE/MEDIAN	2	4	3	3	4	1	2	1	4	3	1	1	2	1.50	1.10	1.32	1.29	1.47	-2bps	85	70	74	73	2.06	2.19	1.90	1.88	2.00	-6bps	74	78	62	71	

Data Source: Bloomberg, BIS, World Bank, and IMF. Intellectual Property of Hedgeye Risk Management.

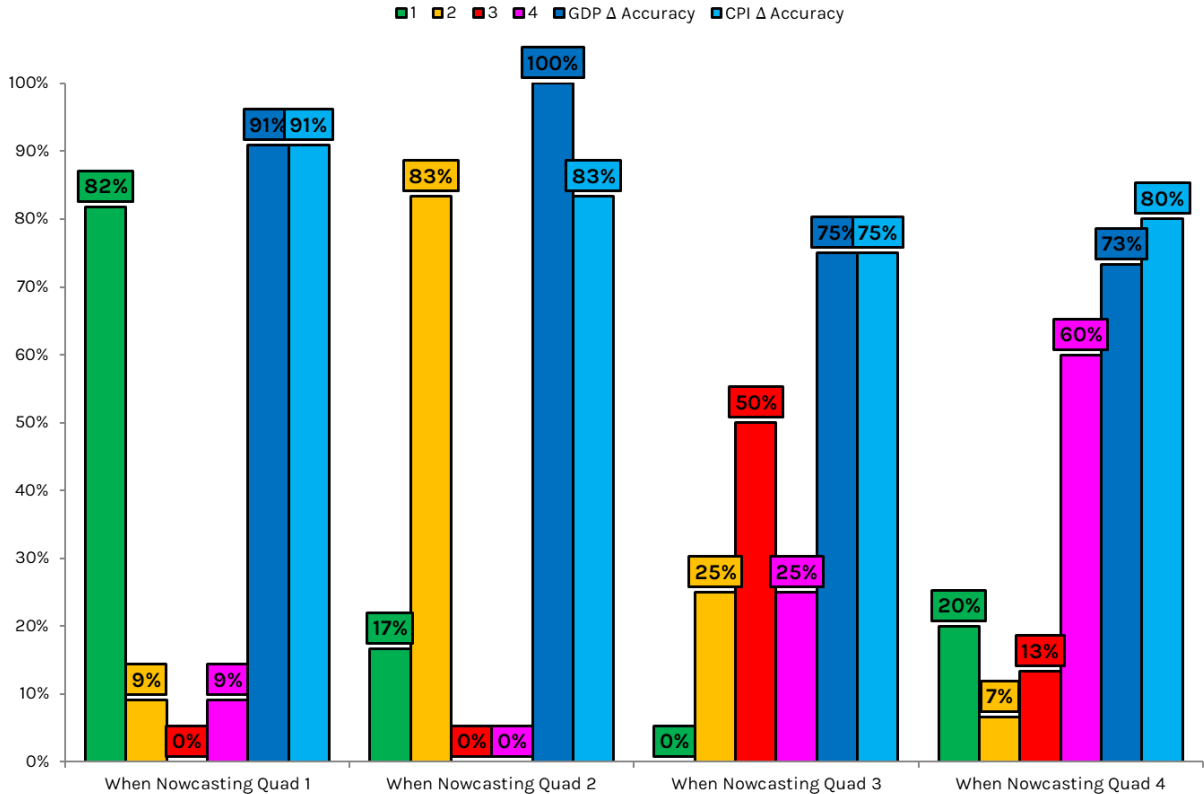
GREEN header = Hedgeye Nowcast estimates. BLUE header = Hedgeye β-Adjusted Comparative Base Effect Model estimates. GREEN/RED shading in GDP and CPI projections denotes sequential acceleration/deceleration.

Conditional probability inversely proportional to the prior base rate's percentile score within a 95% confidence interval band around the projected GROWTH or INFLATION rate in a given quarter.

... As Are The Backtests

Eurozone Nowcast Model Backtest

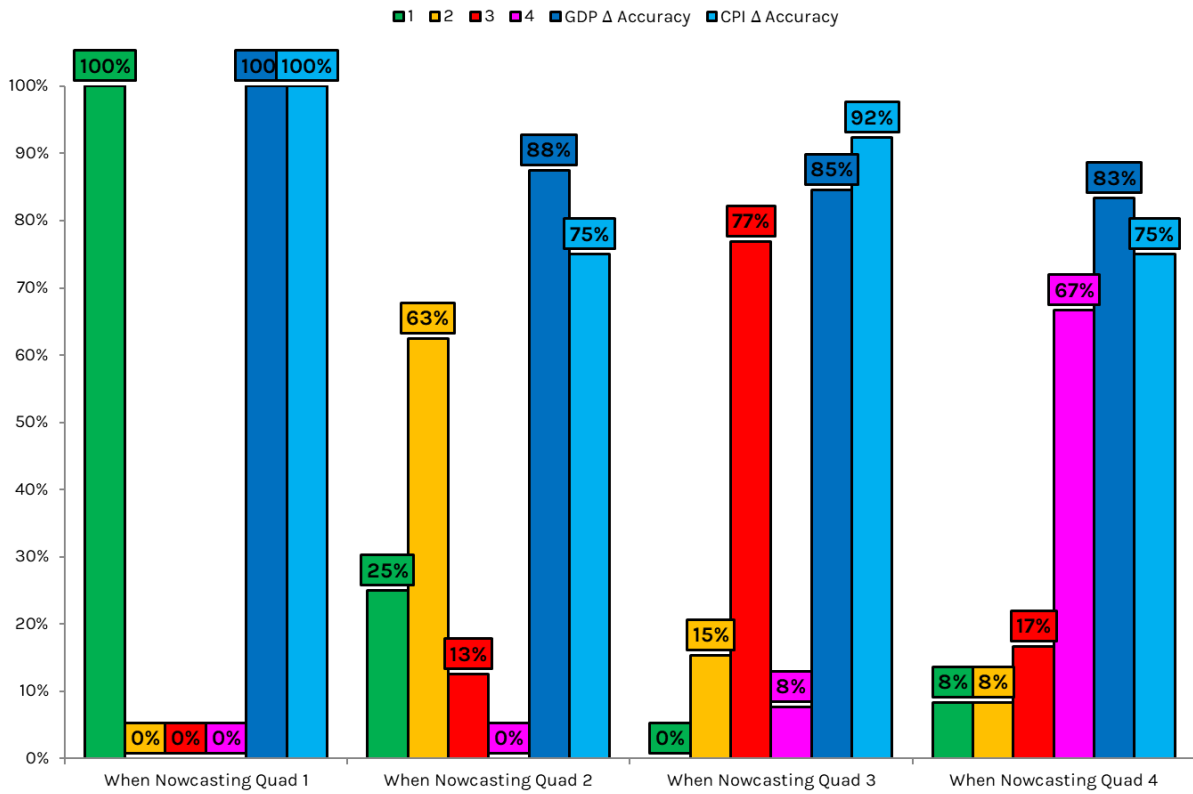
Hedgeye Nowcast Model Quad Projection Accuracy: Eurozone



Data Source: Bloomberg

Brazil Nowcast Model Backtest

Hedgeye Nowcast Model Quad Projection Accuracy: Brazil

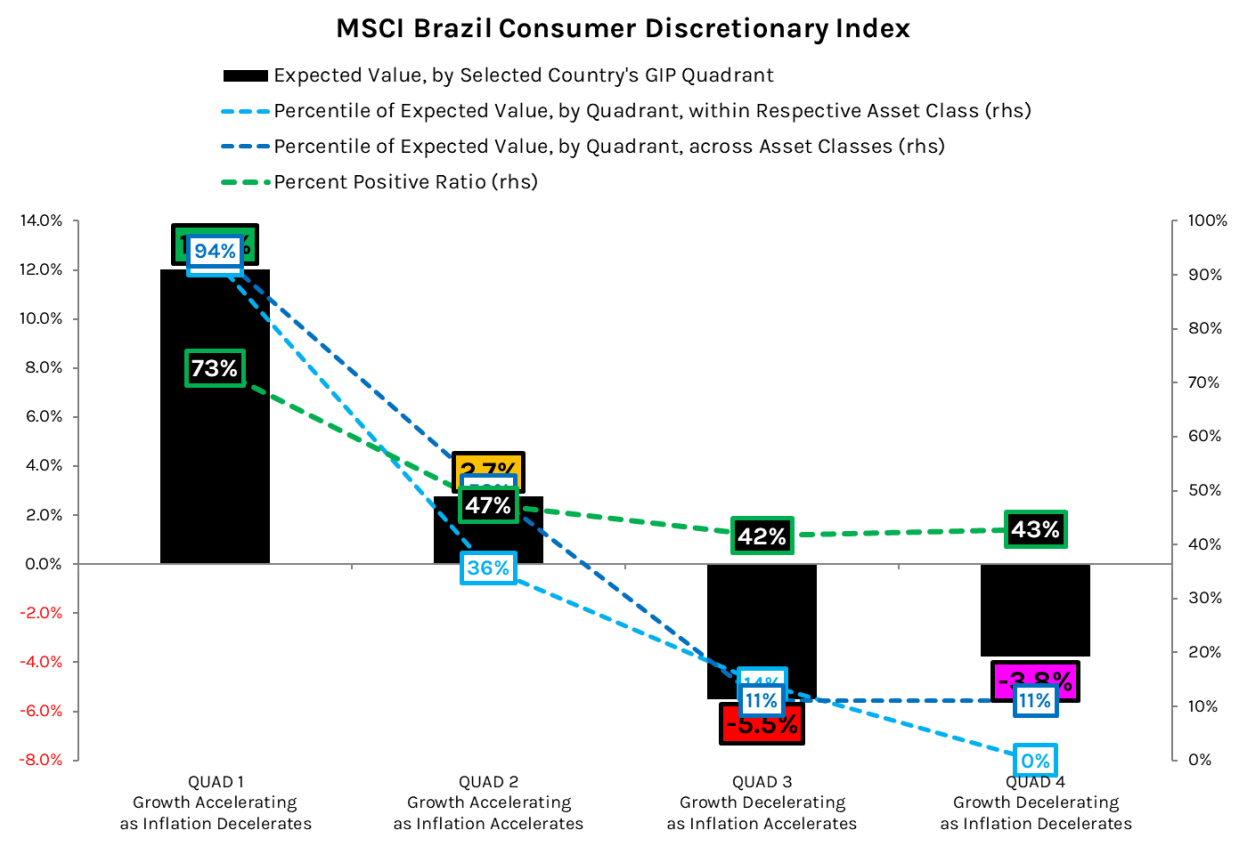
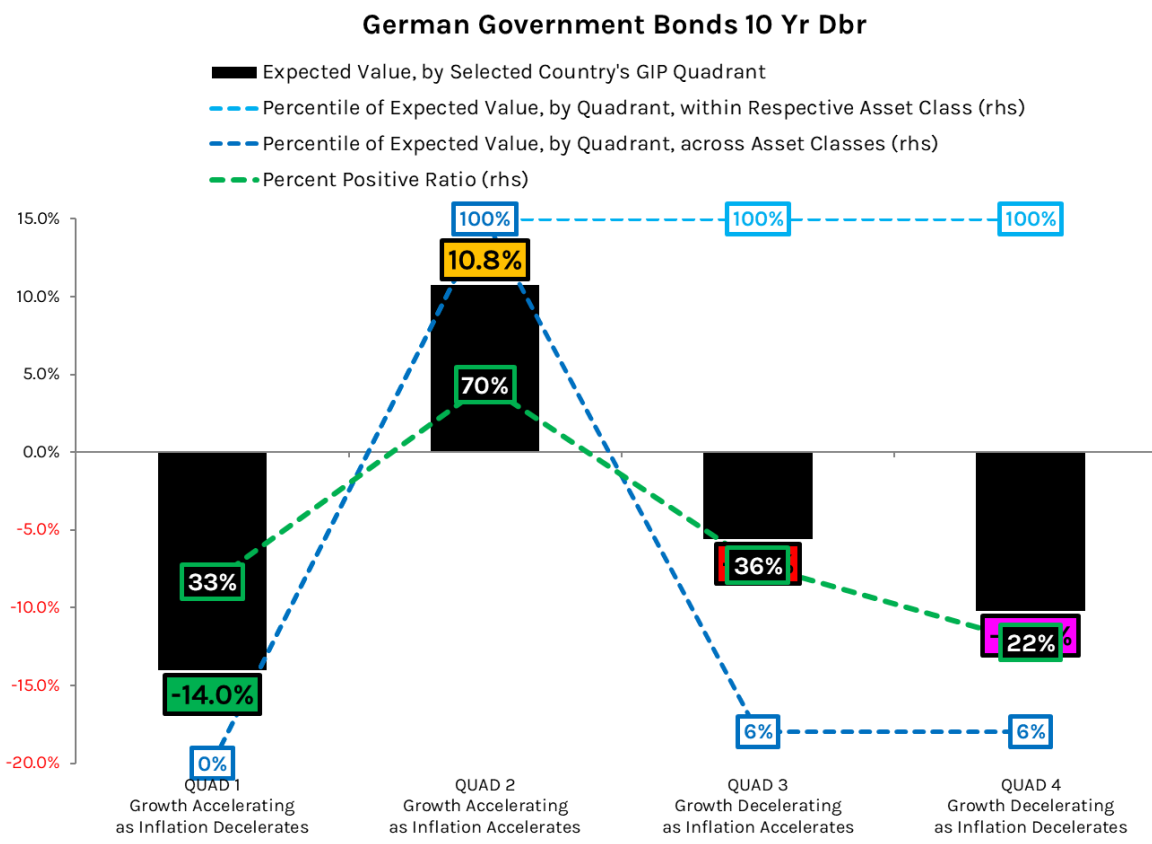


Data Source: Bloomberg

... As Are The Market Implications

Germany GIP Model Factor Exposure Backtest: 10yr Bund Yield

Brazil GIP Model Factor Exposure Backtest: Brazilian Consumer Stocks



Data Source: Bloomberg. Asset classes include equities, fixed income, currencies and commodities. Quarterly observations starting in 1Q98.

Data Source: Bloomberg. Asset classes include equities, fixed income, currencies and commodities. Quarterly observations starting in 1Q98.

The Quads Are Global

Emerging Market GIP Model Summary

3/26/2020	Hedgeye Macro GIP Model Signals													GROWTH						Strength Of Signal				INFLATION						Strength Of Signal			
	Actuals									Estimates				Real GDP YoY					NTM Δ	Conditional Probability Of Est. Δ				Headline CPI YoY					NTM Δ	Conditional Probability Of Est. Δ			
	4Q17	1Q18	2Q18	3Q18	4Q18	1Q19	2Q19	3Q19	4Q19	1Q20E	2Q20E	3Q20E	4Q20E	4Q19	1Q20E	2Q20E	3Q20E	4Q20E	4Q20E Less 4Q19A	1Q20E	2Q20E	3Q20E	4Q20E	4Q19	1Q20E	2Q20E	3Q20E	4Q20E	4Q20E Less 4Q19A	1Q20E	2Q20E	3Q20E	4Q20E
Argentina	-	3	3	2	3	2	2	4	1	4	1	1	1	-1.10	-1.50	-0.45	0.40	1.25	235bps	61	78	73	73	52.14	50.40	46.32	43.24	38.27	-1387bps	63	79	72	86
Brazil	2	4	3	2	4	4	2	1	2	3	4	3	3	1.67	1.34	1.29	0.99	0.91	-76bps	79	54	76	57	3.37	3.73	3.09	3.13	3.17	-20bps	72	89	52	53
Chile	2	1	2	3	1	4	2	1	3	2	4	1	1	-2.10	-0.41	-0.97	-0.53	1.98	408bps	98	86	78	98	2.83	3.35	3.05	2.80	2.64	-20bps	87	71	68	62
China	3	3	1	3	4	4	2	3	2	3	4	1	1	5.03	-12.72	-12.81	-11.62	-11.11	-1614bps	98	53	94	69	4.23	4.91	4.74	4.39	3.76	-48bps	98	64	80	98
Colombia	2	1	1	1	2	1	2	2	2	1	4	4	4	3.30	3.73	3.53	3.38	3.38	8bps	84	66	62	50	3.83	3.54	3.22	3.00	2.92	-91bps	70	71	65	55
Czech Republic	2	4	3	3	1	3	3	2	3	3	1	4	2	1.50	1.45	2.10	1.75	2.30	80bps	54	98	80	97	3.00	3.31	3.10	3.01	3.08	8bps	80	71	58	56
Emerging Markets	3	2	4	3	3	4	3	4	2	4	1	2	4	4.70	3.25	3.44	3.98	3.92	-78bps	98	67	98	56	4.07	4.01	3.83	4.16	3.67	-40bps	59	81	98	98
Greece	3	1	3	2	3	4	1	4	3	2	4	3	1	0.50	1.09	0.44	-0.06	1.59	109bps	72	75	69	98	0.43	0.53	0.32	0.44	0.22	-21bps	58	67	59	67
Hong Kong	4	2	4	3	3	4	3	3	4	4	1	1	2	-2.90	-3.31	-2.61	-0.61	0.19	309bps	87	98	98	98	3.00	2.10	1.90	1.57	1.67	-133bps	98	61	69	56
Hungary	1	1	2	2	-	4	3	1	3	3	1	4	1	4.50	4.34	4.39	4.19	4.44	-6bps	64	54	67	72	3.43	4.06	3.52	3.48	3.43	0bps	98	93	53	54
India	3	2	3	4	4	1	3	3	3	2	1	2	1	4.70	6.50	6.64	7.15	7.53	283bps	98	55	70	65	5.84	6.60	6.33	6.60	6.04	20bps	84	62	62	74
Indonesia	1	4	1	4	2	4	3	3	4	4	4	1	2	4.97	4.91	4.82	4.88	4.90	-7bps	61	68	63	54	2.95	2.79	2.53	2.49	2.67	-28bps	57	61	52	58
Malaysia	4	4	4	4	1	4	2	3	4	3	1	2	2	3.60	3.48	3.68	3.98	4.23	63bps	66	77	91	84	0.99	1.17	0.90	0.98	1.22	23bps	63	70	56	68
Mexico	2	4	1	3	4	4	3	1	4	2	2	3	2	-0.49	-0.21	0.12	0.03	0.70	119bps	74	77	57	98	2.94	3.21	3.28	3.60	3.87	93bps	75	57	80	75
Peru	4	1	2	3	2	3	3	1	4	1	4	2	4	1.84	2.72	2.01	2.66	2.16	32bps	87	80	78	71	1.88	1.80	1.60	1.68	1.36	-52bps	58	69	58	79
Philippines	3	3	3	3	1	4	4	1	1	2	1	4	3	6.40	6.70	6.90	6.75	6.40	0bps	76	67	63	80	1.53	2.21	2.08	1.98	2.21	68bps	98	60	57	67
Poland	3	1	2	3	4	4	3	3	3	3	1	1	2	3.20	2.98	3.03	3.43	3.93	73bps	69	54	84	92	2.83	3.78	3.27	2.97	3.24	40bps	98	98	78	75
Russia	4	1	2	2	2	3	1	1	4	1	4	3	3	1.53	1.96	1.65	1.22	0.41	-111bps	80	71	80	98	3.43	2.26	1.87	1.90	1.90	-153bps	74	58	51	50
South Africa	4	4	3	2	4	4	2	4	4	2	4	4	2	-0.50	-0.46	-0.61	-0.81	-0.41	9bps	55	69	76	98	3.77	4.23	3.92	3.86	4.06	29bps	90	76	56	67
South Korea	4	1	2	3	2	4	2	1	2	3	4	2	4	2.30	1.95	1.75	2.15	1.60	-70bps	98	78	98	98	0.30	0.91	0.70	0.98	0.75	45bps	98	85	97	88
Taiwan	1	3	2	4	4	4	2	1	2	2	4	2	2	3.31	3.56	3.09	3.36	3.45	14bps	76	98	79	60	0.69	0.70	0.46	0.68	1.15	45bps	51	74	73	98
Thailand	3	1	3	3	1	4	3	1	4	2	1	2	2	1.60	2.01	2.46	3.06	3.26	166bps	71	74	81	61	0.40	0.70	0.37	0.53	0.94	55bps	81	85	67	94
Turkey	3	1	3	3	3	1	1	1	1	2	1	1	2	5.96	8.34	8.91	9.29	9.34	339bps	98	67	61	52	10.32	11.51	10.63	9.08	9.32	-99bps	98	86	98	60
MODE/MEDIAN	3	1	3	3	4	4	3	1	4	2	1	1	2	2.30	2.01	2.10	2.66	2.30	0bps	76	70	77	72	2.98	3.26	3.07	2.89	2.79	-18bps	77	71	66	67

Data Source: Bloomberg, BIS, World Bank, and IMF. Intellectual Property of Hedgeye Risk Management.
GREEN header = Hedgeye Nowcast estimates. BLUE header = Hedgeye β-Adjusted Comparative Base Effect Model estimates. GREEN/RED shading in GDP and CPI projections denotes sequential acceleration/deceleration.
Conditional probability inversely proportional to the prior base rate's percentile score within a 95% confidence interval band around the projected GROWTH or INFLATION rate in a given quarter.

The Quads Are Global

Global GIP Model Summary

3/26/2020	GIP Model Signals												High-Frequency Economic Data Signals												3/26/2020	Structural Economic Risk Factors						Financial Market Valuation Signals								
	Actuals								Hedgeye Forecasts				Consumption		Manufacturing		Exports		Manufacturing PMI		Consumer Conf.		Business Conf.			Headline CPI		Core CPI		Economic Cycle Risk			Global Capital Cycle Risk			Stock Market	Bond Market	Currency		
	1Q18	2Q18	3Q18	4Q18	1Q19	2Q19	3Q19	4Q19	1Q20E	2Q20E	3Q20E	4Q20E	6-12M Trend	Percentile of Latest Reading (T3Y)	6-12M Trend	Percentile of Latest Reading (T3Y)	6-12M Trend	Percentile of Latest Reading (T3Y)	6-12M Trend	Percentile of Latest Reading (T3Y)	6-12M Trend	Percentile of Latest Reading (T3Y)	6-12M Trend	Percentile of Latest Reading (T3Y)		6-12M Trend	Percentile of Latest Reading (T3Y)	Private Nonfinancial Sector Leverage (Z-Score; T5Y)	Private Nonfinancial Sector Debt Service Ratio (Z-Score; T5Y)	35-54 Year-Old Population Cohort (5Y-Forward CAGR)	Sovereign Budget Balance as a % of Nominal GDP	Current Account Balance as a % of Nominal GDP	Twin Surplus (+)/Deficit (-) Balance as a % of Nominal GDP	MSCI Index Price-to-NTM-Earnings Ratio Spread vs. MSCI ACWI (Z-Score; T3Y)	10Y Yield Spread vs. Barclays Global Agg. YTW (Z-Score; T3Y)	Broad Real Effective Exchange Rate (Z-Score; T3Y)				
Hedgeye Global Macro Risk Monitor	Argentina	3	3	2	3	2	2	4	1	4	1	1	1	↑	94%	↓	0%	↑	29%	-	-	↑	63%	-	-	↓	54%	-	-	Argentina	0.6x	-	1.5%	-4.4%	-1.7%	-6.1%	-0.9x	0.0x	-1.0x	
	Australia	1	1	3	4	4	4	1	1	3	4	1	3	↓	6%	↓	74%	↓	3%	↓	12%	↓	11%	↓	0%	↓	14%	↑	9%	Australia	-1.1x	-1.8x	1.3%	0.0%	0.5%	0.5%	0.6x	-1.4x	-1.4x	
	Austria	1	3	3	1	4	3	4	4	2	1	2	2	→	54%	↓	17%	-	-	↓	31%	↓	20%	↓	20%	→	69%	↑	91%	Austria	-2.4x	-	-1.1%	0.2%	1.9%	2.1%	-1.3x	0.0x	-0.4x	
	Belgium	4	3	2	3	4	1	1	4	3	1	3	2	→	20%	↑	23%	↓	63%	-	-	↑	87%	↓	31%	↓	14%	→	91%	Belgium	-0.8x	-1.2x	-0.4%	-0.7%	-1.7%	-2.4%	-1.7x	0.0x	-0.5x	
	Brazil	4	3	2	4	4	2	1	2	3	4	3	3	↑	26%	↑	37%	↓	43%	↑	63%	↑	46%	↑	97%	↓	63%	↓	20%	Brazil	0.2x	-0.7x	1.2%	-7.1%	-2.7%	-9.7%	-0.5x	-0.7x	-1.2x	
	Canada	3	3	2	4	4	2	4	3	3	1	1	2	↓	49%	↑	40%	↓	26%	↑	31%	↓	0%	↓	54%	→	63%	↓	51%	Canada	1.3x	0.4x	0.4%	-0.6%	-2.0%	-2.6%	-1.0x	-2.4x	0.0x	
	Chile	1	2	3	1	4	2	1	3	2	4	1	1	↓	89%	↑	63%	↑	23%	-	-	-	-	-	↑	100%	↑	100%	Chile	2.5x	-	0.8%	-1.7%	-4.2%	-5.8%	-2.1x	0.0x	-2.8x		
	China	3	1	3	4	4	2	3	2	3	4	1	1	↓	0%	↓	14%	↑	100%	0%	↓	100%	0%	0%	↑	97%	↓	0%	China	0.7x	-0.1x	0.1%	-4.9%	1.3%	-	1.0x	-0.9x	1.5x		
	Colombia	1	1	1	2	1	2	2	2	1	4	4	4	↑	89%	↓	83%	↓	63%	-	-	↓	23%	-	0%	↑	57%	→	23%	Colombia	-1.0x	-	1.0%	-2.4%	-4.3%	-6.6%	-2.9x	3.3x	-1.1x	
	Czech Republic	4	3	3	1	3	3	2	3	3	1	4	2	→	26%	↓	14%	↓	23%	↓	23%	↓	0%	↓	0%	↑	100%	↑	100%	Czech Republic	-0.5x	1.6x	0.2%	1.1%	-0.4%	-	-1.5x	0.7x	1.7x	
	Denmark	4	2	1	4	3	4	1	3	3	4	3	1	↓	74%	↓	23%	↑	34%	↑	9%	→	26%	↓	31%	↑	89%	Denmark	-1.5x	-1.4x	-1.0%	0.8%	7.8%	8.6%	1.9x	-0.3x	-1.8x			
	Emerging Markets	2	4	3	3	4	3	4	2	4	1	2	4	↓	0%	↓	23%	↑	100%	↓	0%	-	-	-	↑	97%	↓	0%	Emerging Markets	0.5x	-	0.6%	-3.3%	0.5%	-	1.4x	3.8x	1.9x		
	Eurozone	4	3	3	4	1	4	1	3	3	1	2	2	→	20%	↓	14%	↓	23%	↓	31%	↓	37%	↑	57%	↑	17%	↑	71%	Eurozone	-0.5x	0.6x	-1.2%	-0.5%	3.0%	-	-2.4x	-0.6x	-1.7x	
	Finland	3	3	3	3	4	2	1	4	3	4	1	2	↑	71%	↓	0%	↓	77%	-	-	↓	14%	0%	→	54%	→	69%	Finland	-1.2x	-1.6x	-0.3%	-0.8%	-0.8%	-1.6%	-1.5x	0.2x	-1.6x		
	France	3	3	3	4	1	1	4	4	3	1	1	2	↑	17%	↓	3%	↓	0%	→	9%	↑	77%	→	26%	→	63%	↑	100%	France	1.5x	1.3x	-0.3%	-2.5%	-0.7%	-3.2%	-2.8x	-0.2x	-1.3x	
	Germany	4	3	3	4	1	3	1	3	2	1	2	1	↑	26%	↓	37%	↓	14%	→	34%	↓	14%	↑	60%	↓	49%	↑	54%	Germany	2.5x	2.0x	-1.5%	1.9%	7.6%	9.5%	-1.6x	-0.6x	-1.6x	
	Greece	1	3	2	3	4	1	4	3	2	4	3	1	↑	20%	↓	9%	↓	63%	↓	97%	↑	100%	↑	100%	→	17%	↑	34%	Greece	-1.9x	-	-1.2%	1.0%	-1.4%	-	-1.9x	-0.8x	-1.8x	
	Hong Kong	2	4	3	3	4	3	3	4	4	1	1	2	↓	9%	→	31%	↓	51%	-	-	↑	73%	-	-	↓	46%	-	-	Hong Kong	1.3x	1.7x	-0.6%	0.2%	6.0%	6.2%	0.0x	-2.5x	0.3x	
	Hungary	1	2	2	-	4	3	1	3	3	1	4	1	↑	86%	↓	17%	→	31%	-	-	↓	11%	↓	6%	→	97%	→	100%	Hungary	-1.2x	-1.1x	-0.1%	-2.3%	-0.9%	-3.2%	-0.9x	0.5x	-1.5x	
	India	2	3	4	4	1	3	3	3	2	1	2	1	-	-	↓	37%	↓	37%	↑	94%	-	-	-	↑	94%	-	-	India	-0.8x	-1.0x	2.1%	-3.6%	-0.9%	-4.5%	-4.0x	-1.2x	0.6x		
	Indonesia	4	1	4	2	4	3	3	4	4	4	1	2	↓	3%	↓	6%	↑	69%	↓	97%	↓	0%	-	-	→	20%	→	17%	Indonesia	1.3x	0.7x	0.8%	-2.2%	-2.7%	-4.9%	-2.7x	1.2x	1.2x	
	Ireland	1	4	3	4	1	3	1	2	2	1	2	1	↓	20%	↓	51%	↓	31%	↓	23%	↓	29%	↓	20%	→	71%	↑	63%	Ireland	-1.2x	-	0.2%	0.1%	-9.5%	-	-0.8x	-0.1x	-2.0x	
	Italy	4	3	3	4	1	1	1	4	1	1	1	2	↑	71%	↓	43%	↓	34%	↓	29%	↓	31%	↓	20%	→	0%	→	17%	Italy	-1.0x	-1.1x	-1.9%	-2.2%	3.0%	-	-0.9x	-0.2x	-1.8x	
	Japan	3	1	3	1	1	2	1	3	1	4	1	2	↓	11%	↓	20%	↓	43%	0%	↓	11%	↓	0%	→	23%	→	26%	Japan	2.0x	1.8x	-0.9%	-2.6%	3.6%	-	1.6x	2.0x	0.0x		
	Malaysia	4	4	4	1	4	2	3	4	3	1	2	2	-	-	↓	3%	↓	17%	-	-	↑	40%	↑	26%	↑	46%	-	-	Malaysia	0.3x	0.1x	0.0%	-3.7%	3.3%	-	0.1x	-1.0x	0.6x	
	Mexico	4	1	3	4	4	3	1	4	2	2	3	2	↑	86%	→	29%	↓	23%	↓	31%	↑	80%	↓	6%	↓	17%	→	26%	Mexico	0.8x	1.5x	1.6%	-1.6%	-0.2%	-1.9%	-1.2x	0.7x	1.8x	
	Netherlands	1	2	3	3	3	2	3	4	1	4	1	2	↓	20%	↑	17%	↓	34%	-	-	↑	100%	↓	17%	↑	74%	↑	74%	Netherlands	-1.8x	-1.4x	-1.3%	1.5%	9.7%	11.2%	0.1x	-0.2x	-1.1x	
	New Zealand	4	3	3	-	4	3	1	3	2	1	1	1	-	-	↓	49%	→	26%	-	-	→	57%	↑	63%	↑	64%	-	-	New Zealand	0.1x	-	-0.3%	0.4%	-3.3%	-	1.3x	-1.2x	-0.7x	
	Norway	3	2	3	2	1	4	1	1	1	4	1	3	→	14%	↑	49%	↓	14%	↓	14%	↓	43%	-	-	↓	0%	→	57%	Norway	-0.5x	1.7x	0.2%	8.8%	4.0%	12.8%	-1.6x	-1.0x	-1.5x	
	Peru	1	2	3	2	3	3	1	4	1	4	2	4	-	-	↑	94%	↑	51%	-	-	-	-	-	↓	46%	-	-	Peru	-	-	1.9%	-2.3%	-1.6%	-3.9%	-1.7x	-0.7x	0.5x		
	Philippines	3	3	3	1	4	4	1	1	2	1	4	3	-	-	↑	37%	↑	69%	-	-	-	-	↓	40%	↓	23%	↑	100%	Philippines	-	-	1.7%	-3.6%	-0.1%	-3.7%	-2.6x	0.0x	1.6x	
	Poland	1	2	3	4	4	3	3	3	3	1	1	2	↓	86%	↓	40%	↓	9%	↓	23%	↓	17%	↓	0%	↑	100%	↑	100%	Poland	-1.6x	-1.4x	1.2%	-0.2%	-0.1%	-0.3%	-1.5x	-1.3x	1.3x	
	Portugal	4	2	3	4	1	4	4	2	2	1	2	2	↓	37%	↑	69%	↑	40%	-	-	↑	40%	↓	3%	→	23%	→	20%	Portugal	-1.3x	-1.3x	-1.2%	-0.4%	-0.1%	-0.5%	0.5x	-0.4x	-2.1x	
	Russia	1	2	2	2	3	1	1	4	1	4	3	3	↑	100%	→	63%	↓	20%	↓	17%	↑	97%	↓	43%	↓	23%	↓	23%	Russia	-0.4x	-1.0x	1.5%	1.5%	8.2%	9.7%	2.3x	0.3x	0.9x	
	Singapore	1	2	3	4	3	3	1	2	1	1	2	1	↑	49%	→	23%	↑	57%	0%	-	-	↓	86%	→	11%	-	-	Singapore	3.0x	-	-0.5%	-0.3%	17.0%	-	-0.2x	-1.7x	-1.2x		
	South Africa	4	3	2	4	4	2	4	4	2	2	4	4	2	↓	31%	↓	17%	↓	83%	-	-	↓	26%	↑	23%	↓	54%	↓	3%	South Africa	1.8x	1.4x	2.7%	-6.3%	-3.0%	-9.3%	-2.0x	0.0x	-0.2x
	South Korea	1	2	3	2	4	2	1	2	3	4	2	4	↑	40%	↑	17%	↑	54%	↑	31%	↓	11%	↓	43%	→	37%	↓	0%	South Korea	2.6x	2.4x	-1.1%	1.3%	3.7%	5.0%	1.0x	-0.4x	-1.4x	
	Spain	4	3	3	4	1	4	4	3	2	1	2	2	↑	60%	↓	9%	↓	49%	↓	29%	↓	11%	↓	9%	↓	23%	→	80%	Spain	-1.3x	-1.2x	-1.5%	-2.5%	2.0%	-	-1.2x	-0.1x	-1.6x	
	Sweden	1	3	3	1	4	3	1	3	1	1	2	4																											

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