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Portfolio Strategy October 2023

Real Rates and the Equity Market: Fatter Tails

The Stakes are Up

- Real long-term rates have climbed by more than +100 basis points this year, with most of the move occurring since June. They're the highest they've been in more than two decades, seemingly a response to the resilience of the economy and changes in the rhetoric and forecasts of the Fed. Given the enormous move in the discount rate the market's multiple has contracted by relatively little, less than a third of what we'd expect based on a theoretical model. It's apparent that equity investors are skeptical that the spike in rates will prove long lasting. We share that opinion, particularly given the improvements in the inflation and wage data. The current level of real rates is +100 basis points above our estimate of what should constitute normal in the 2020s.

- All of this has made the tails of the expected return distribution for equities fatter. If the bond market changes its view, and real rates retrace some or all of this year's move, that will boost multiples, provided the cause of the shift isn't a recession. Long-duration, high-growth issues and stable stocks would be the primary beneficiaries of that change. If on the other hand the equity market decides that +250 basis point real long rates are the new normal, there could be pressure on multiples. This year's rate increase mirrors that of the first nine months of 1987, pre-crash, although today's yield relationships are far less worrisome and corporate profitability is at an entirely different level. We don't think the market is paying us to go out on any limbs and our portfolios are unusually diversified, still with a mega-cap bias.

- The enormity of the budget deficit is one of the many factors influencing rates. The funding of that debt is an issue as the savings glut in the emerging markets has faded, as has the upward skewing of the U.S. income distribution. This year though purchases by foreigners have absorbed more than 40% of the issuance, the most in a decade. We think the best explanations for the rise in real rates are the positive economic surprises from the labor and housing markets, where the aging of Boomers has produced meaningful supply effects. The excess savings that developed during the Pandemic have also played a role in funding consumption, and we estimate that around a third of it remains on balance sheets, mostly in the top-fifth of the distribution.

- Typically rising real rates have constituted a tailwind for value strategies and those that emphasize the conservative deployment of capital. Lots of current free cash flow generation has also been a virtue. All of that once again proved true this year and our core stock selection model has generated almost +10 points of alpha. The energy and industrial capital equipment sectors have the best records in these periods, and that's been the case this time as well. Stable stocks, led by the utilities, have lagged, and those parts of the market are now of at least average appeal.

Conclusion: Sitting Pat

- This year has been frustrating for many stock pickers as the behavior of the bond market has explained 60% of the cross-market return distribution, one of the highest readings in six decades. That's generally been a bullish sign and returns in the next year have averaged almost +16%, with double-digit ones in 9 of the 15 episodes and no significant losses. While we think the bullish outcome is more likely than the bearish one, there are so many moving pieces at work, including the shifting decisionmaking framework of the Fed, as to limit our confidence. We're keeping our powder dry and Appendix 1 presents a portfolio we created back in July that represents our thinking. So far it's outperformed the market by +3 points.

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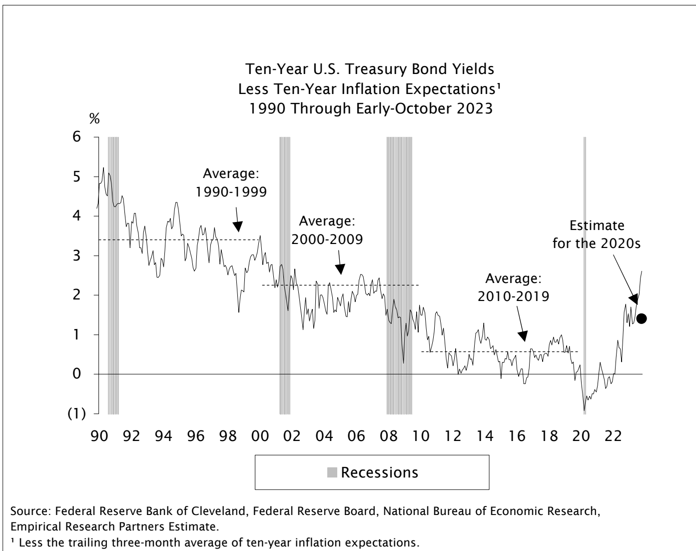
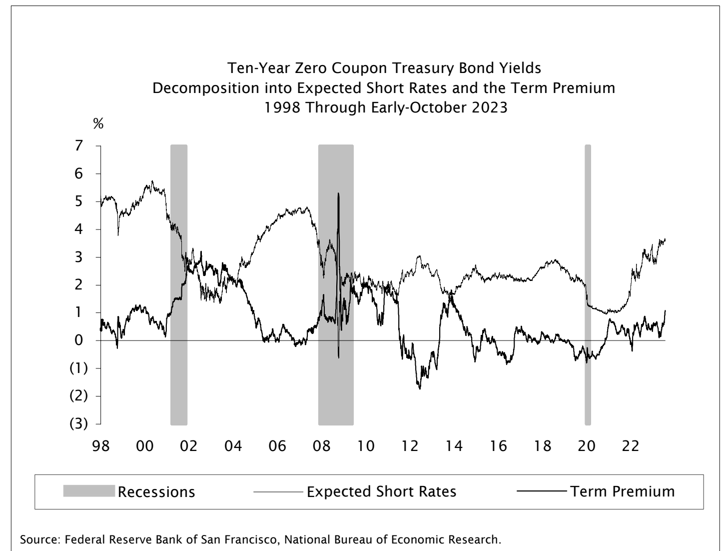
Conclusions in Brief

- Real rates have soared…



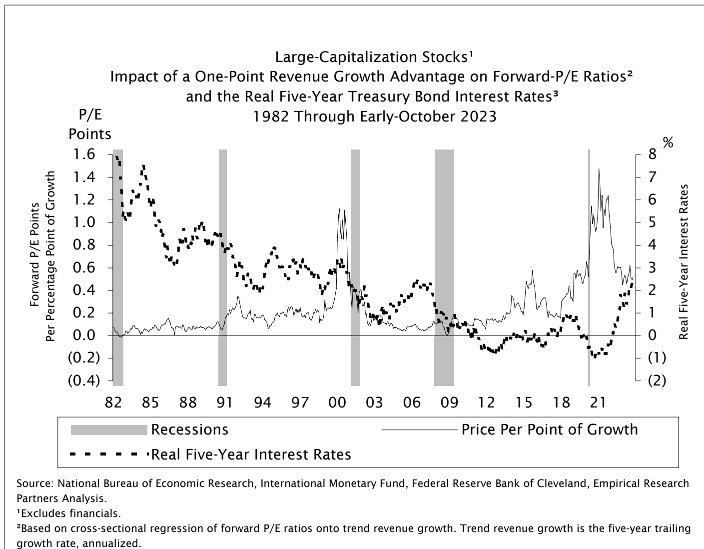
Source: Federal Reserve Bank of Cleveland, Federal Reserve Board, National Bureau of Economic Research, Empirical Research Partners Estimate.
¹ Less the trailing three-month average of ten-year inflation expectations.

- …In part a consequence of higher for longer:



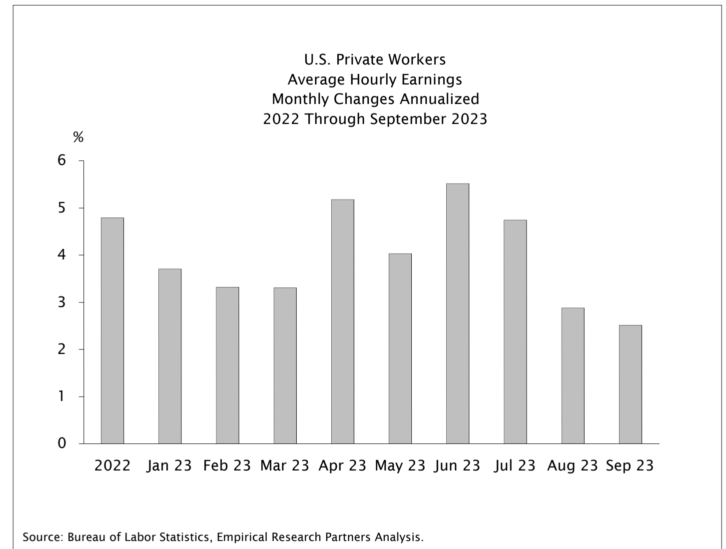
Source: Federal Reserve Bank of San Francisco, National Bureau of Economic Research.

- The equity market has taken the rise mostly in stride, believing it's transitory…



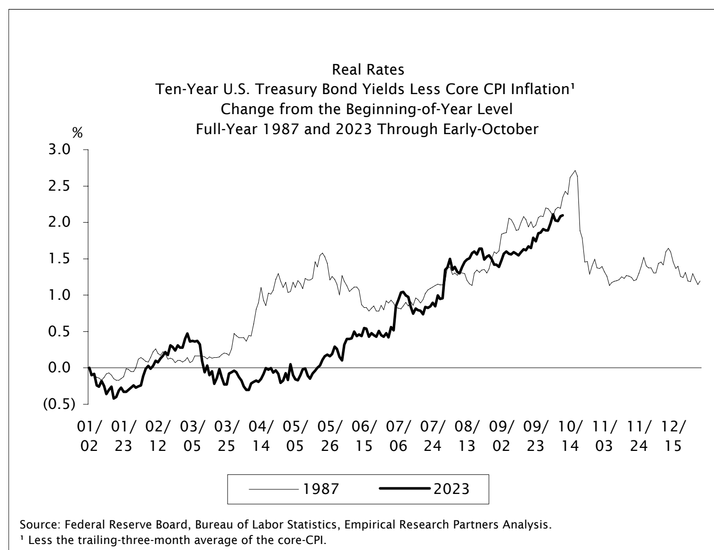
Source: National Bureau of Economic Research, International Monetary Fund, Federal Reserve Bank of Cleveland, Empirical Research Partners Analysis.
¹Excludes financials.
²Based on cross-sectional regression of forward P/E ratios onto trend revenue growth. Trend revenue growth is the five-year trailing growth rate, annualized.

- …A view we share:



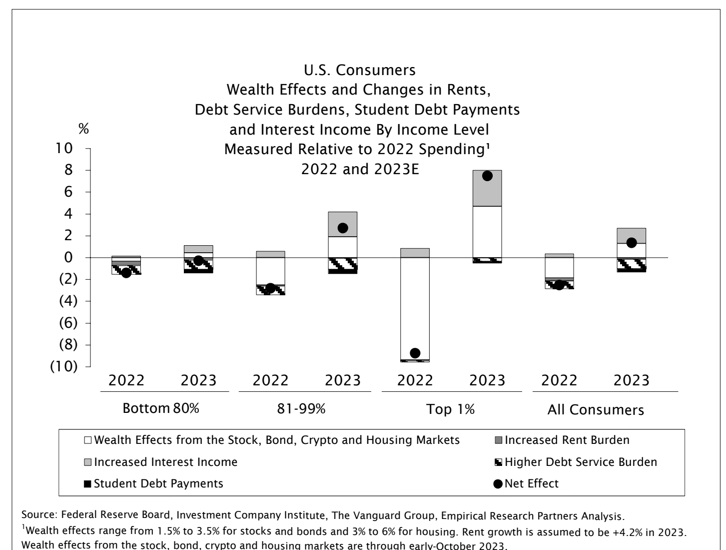
Source: Bureau of Labor Statistics, Empirical Research Partners Analysis.

- It's possible sentiment could take a turn for the worse...



Source: Federal Reserve Board, Bureau of Labor Statistics, Empirical Research Partners Analysis.
¹ Less the trailing-three-month average of the core-CPI.

- …And wealth effects are a key transmission channel for monetary policy:



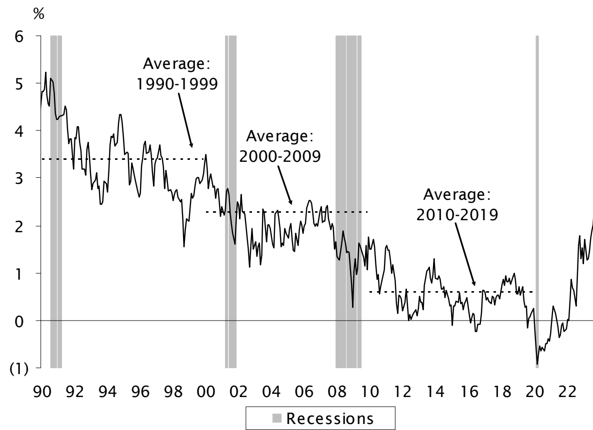
Source: Federal Reserve Board, Investment Company Institute, The Vanguard Group, Empirical Research Partners Analysis.
¹Wealth effects range from 1.5% to 3.5% for stocks and bonds and 3% to 6% for housing. Rent growth is assumed to be +4.2% in 2023. Wealth effects from the stock, bond, crypto and housing markets are through early-October 2023.

Real Rates and the Equity Market: Fatter Tails

The Stakes are Up

Real long-term interest rates have soared, increasing by more than +100 basis points this year and by more than +88 basis points just since the end of June (see Exhibit 1). They're now +100 basis points above our guesstimate of "normal" in the 2020s that we put together in April. The bond market has become convinced that the economy just isn't all that rate sensitive, and the Fed's forecasts imply that short rates will stay higher for longer (see Exhibit 2). That thinking is apparent in the yields of ten-year Treasury bonds, that've caught up with that priced into the one-year-forward Fed Funds futures (see Exhibit 3). The longstanding bearish prognostication of the yield curve proved incorrect, and we've had a dramatic bear steepening.

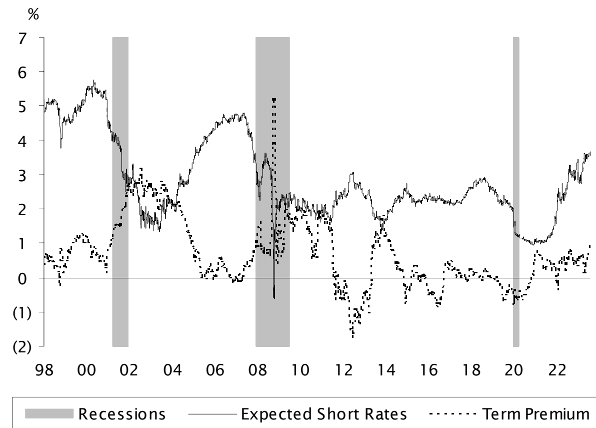
Exhibit 1: Ten-Year U.S. Treasury Bond Yields Less Ten-Year Inflation Expectations[1] 1990 Through Early-October 2023



Source: Federal Reserve Bank of Cleveland, Federal Reserve Board, National Bureau of Economic Research, Empirical Research Partners Analysis.

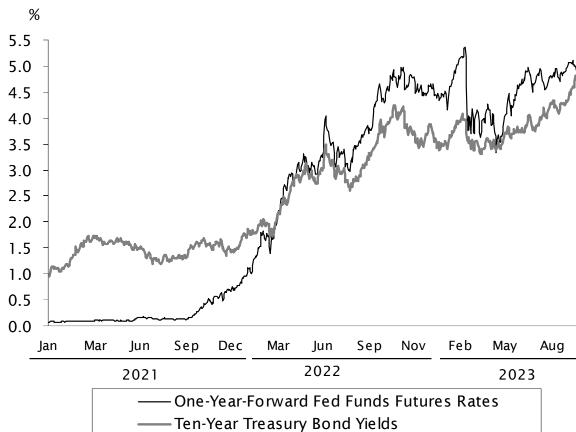
[1]Less the trailing three-month average of ten-year inflation expectations as estimated by the Cleveland Fed model.

Exhibit 2: Ten-Year Zero Coupon Treasury Bond Yields Decomposition into Expected Short Rates and the Term Premium 1998 Through Early-October 2023



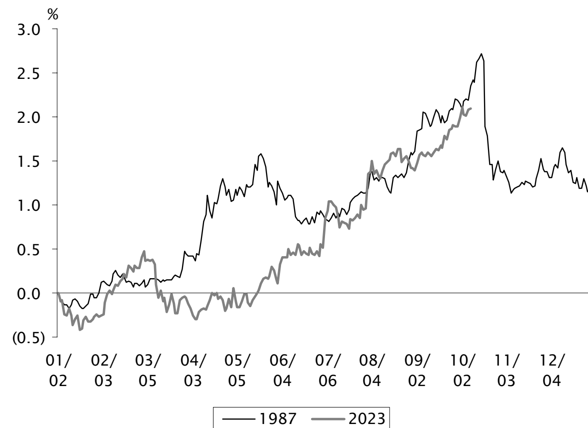
Source: Federal Reserve Bank of San Francisco, National Bureau of Economic Research.

Exhibit 3: One-Year-Forward Fed Funds Futures Rates and Ten-Year Treasury Bond Yields 2021 Through October 9, 2023



Source: Bloomberg L.P.

Exhibit 4: Real Rates Ten-Year U.S. Treasury Bond Yields Less the Trailing Three-Month Core-CPI Change from the Beginning-of-Year Level Full-Year 1987 and 2023 Through Early-October

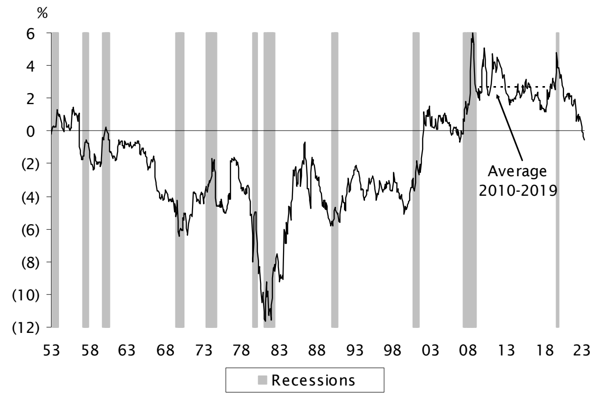


Source: Federal Reserve Board, Bureau of Labor Statistics, Empirical Research Partners Analysis.

Ominously, all of this reminds us of 1987, when real rates climbed for nine months, with disastrous consequences (see Exhibit 4). There are of course notable differences between the two periods. Back then, the yield of ten-year Treasuries exceeded the free cash flow yield of the large-cap equity market by +477 percentage points, and now the gap is +56 basis points (see Exhibit 5). The current differential is however the widest since mid-2007. When we use earnings yields the comparison is +154 basis points versus (73) basis points. We're not sure what the relationships

should be as free cash flow margins have been trending higher for decades and are today more than twice their level of 35 years ago (see Exhibit 6). Second-quarter margins were close to a record level despite a multi-year inflation headwind. The price being paid for top-line growth, while down dramatically from its 2020 peak, is still far above the levels of the late-1980s (see Exhibit 7).

Exhibit 5: The Large-Cap Equity Market
Free Cash Flow Yields Compared to
That of Ten-Year Treasury Bonds¹
1953 Through Early-October 2023



Source: Federal Reserve Board, Corporate Reports, National Bureau of Economic Research, Empirical Research Partners Analysis.

¹Excludes financials and utilities; capitalization-weighted composite.

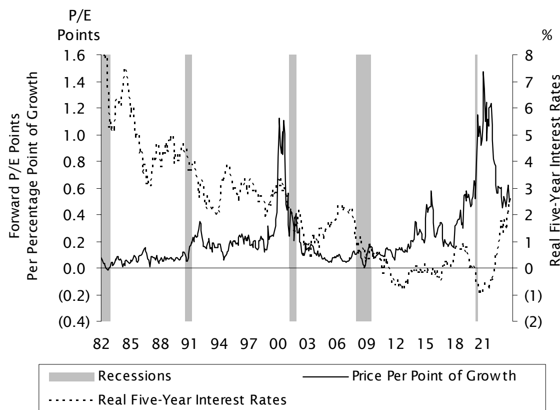
Exhibit 6: The Core of the Large-Cap Market¹
Free Cash Flow Margins
1952 Through September 2023

Source: Corporate Reports, National Bureau of Economic Research, Empirical Research Partners Analysis.

¹Excludes financials, REITs, utilities and energy; based on trailing four-quarter data.

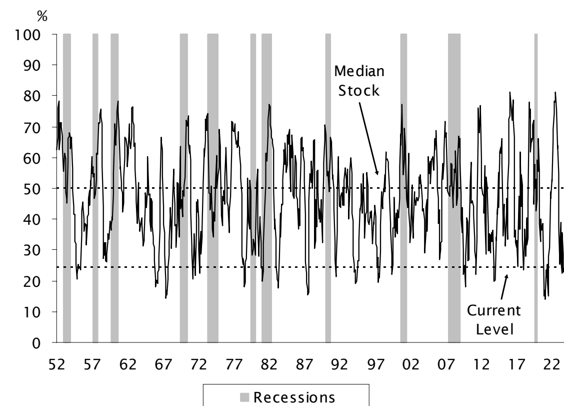
The internal dynamics of the equity market have been heavily influenced by the spike in real rates. The utilities have lagged the cap-weighted market by (30) percentage points this year, and their nine-month price momentum is at one of its worst levels in seven decades (see Exhibit 8).

Exhibit 7: Large-Capitalization Stocks
Impact of a One-Point Revenue Growth Advantage
on Forward-P/E Ratios
and the Real Five-Year Treasury Bond Interest Rates
1982 Through Early-October 2023



Source: National Bureau of Economic Research, International Monetary Fund, Federal Reserve Bank of Cleveland, Empirical Research Partners Analysis.

Exhibit 8: Large-Capitalization Utility Stocks
Nine-Month Stock Price Trends¹
Percentile Ranks (1=Lowest; 100=Highest)
1952 Through Early-October 2023



Source: National Bureau of Economic Research, Empirical Research Partners Analysis.

¹Equally-weighted data.

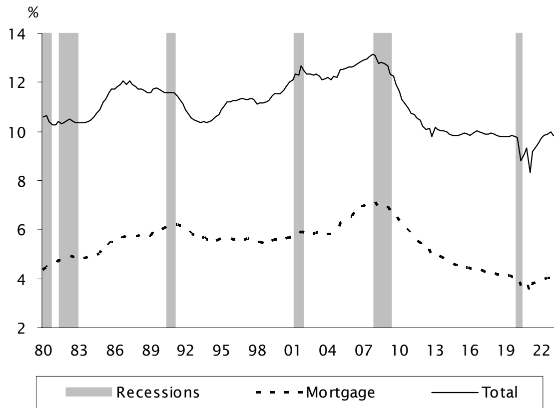
Less Rate Sensitivity: Bond Market Schizophrenia

This year bond investors have reached the conclusion that the economy is less rate sensitive and more resilient than they had thought, and at the same time the forecasts and rhetoric of the Fed have suggested both higher for longer and some rethinking of what constitutes the neutral rate of interest. Their change of heart is consistent with our work on the subject, that dates to several years ago.[1]

[1] *Portfolio Strategy* July 2021. "Addicted? Gauging the Rate Sensitivity of the Economy;" *Portfolio Strategy* November 2021. "Interest Rate Sensitivity: The Trillion Dollar Question;" *Portfolio Strategy* May 2023. "Real Rates: Higher or Lower Ahead;" *Portfolio Strategy* September 2023. "Yield Curve as Seer: Fallible?"

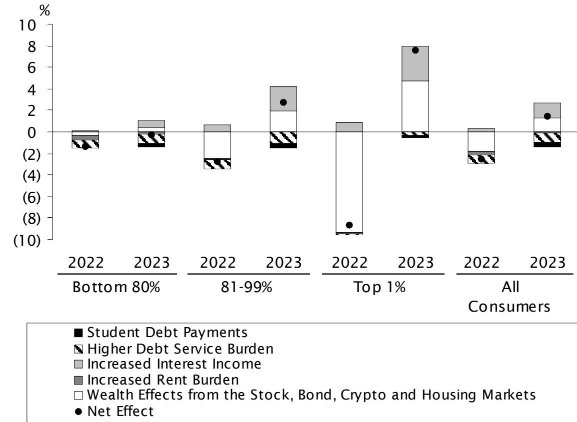
Both consumers and corporations refinanced their debt long near the bottom in rates and thus far the rise in them has produced relatively small effects on their spending power (see Exhibit 9). Moreover, households' fixed income portfolios are predominantly invested short, while they're financed long. As illustrated by the grey bars in Exhibit 10, the boost to interest income from higher short rates has been material for those in the top-fifth of the income distribution, a group that sources nearly 40% of consumption.

Exhibit 9: U.S. Households
Debt Service Ratios
1980 Through Q2 2023



Source: Federal Reserve Board, National Bureau of Economic Research, Empirical Research Partners Analysis.

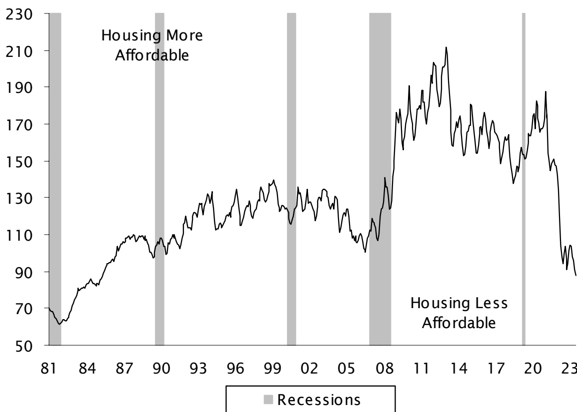
Exhibit 10: U.S. Consumers
Wealth Effects and Changes in Rents, Debt Service Burdens, Student Debt Payments and Interest Income By Income Level Measured Relative to 2022 Spending[1]
2022 and 2023E



Source: Federal Reserve Board, Investment Company Institute, The Vanguard Group, Empirical Research Partners Analysis.

[1]Wealth effects range from 1.5% to 3.5% for stocks and bonds and 3% to 6% for housing. Rent growth is assumed to be +4.2% in 2023. Wealth effects from the stock, bond, crypto and housing markets are through Early-October 2023.

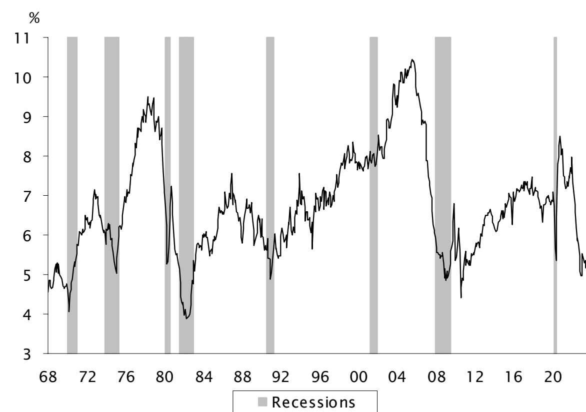
Exhibit 11: Housing Affordability Index[1]
1981 Through September 2023E



Source: Bloomberg L.P., National Association of Realtors, National Bureau of Economic Research, Empirical Research Partners Analysis and Estimates.

[1]A value of 100 indicates the qualifying income based on median home prices and 30-year fixed mortgage rates equals the median income throughout the U.S. A 20% downpayment and 25% of income devoted to mortgage interest and principal are assumed.

Exhibit 12: New and Existing Home Turnover
Measured as a Share of All Owned Homes[1]
1968 Through August 2023

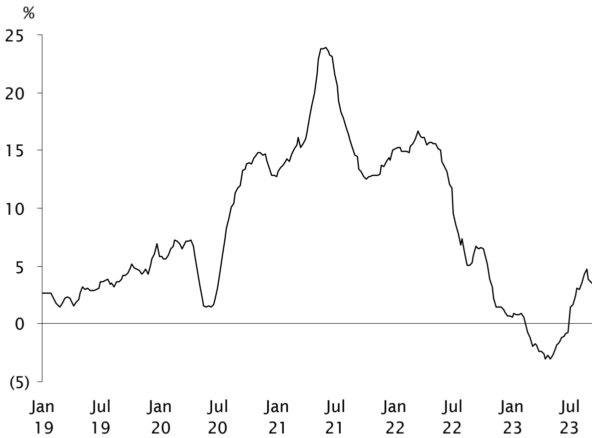


Source: Census Bureau, National Association of Realtors, Empirical Research Partners Analysis.

[1]Includes occupied and vacant homes and those used occasionally.

Housing, usually the most rate-sensitive part of the economy, is among the things that have been different this time. Even though affordability and home turnover predictably collapsed as the cost of financing more than doubled, home prices and starts have held up (see Exhibits 11 through 14). One reason for that is household formation accelerated, boosting demand, and investors remained a part of the equation, representing more than a quarter of purchases (see Exhibits 15 and 16). Even now vacancy rates for owner-occupied homes are at record lows, and more importantly so too is the inventory of them listed for sale (see Exhibits 17 and 18). The supply effect subsumed the demand shock. Auto sales held up too despite the run-up in prices during the Pandemic (see Exhibits 19 and 20).

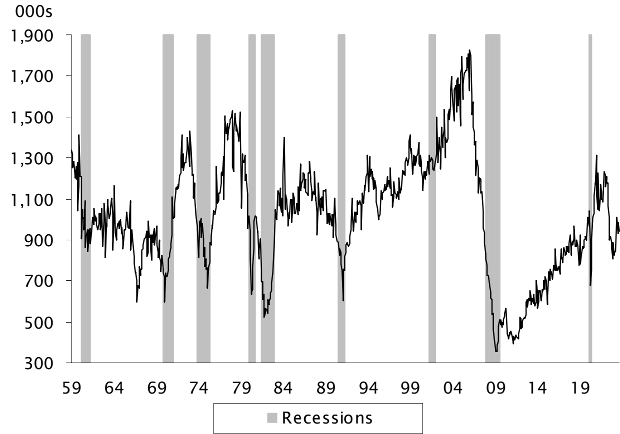
Exhibit 13: Home Prices[1]
Year-over-Year Changes
2019 Through Mid-September 2023



Source: Redfin.

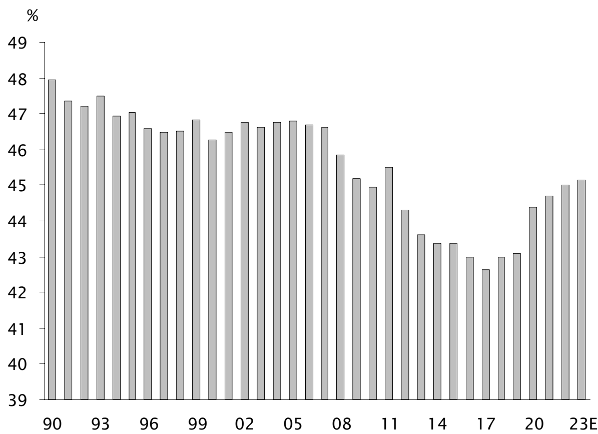
[1]Weekly series for prices of homes sold.

Exhibit 14: Single-Family Homes
Total Starts
1959 Through August 2023



Source: National Bureau of Economic Research, Empirical Research Partners Analysis.

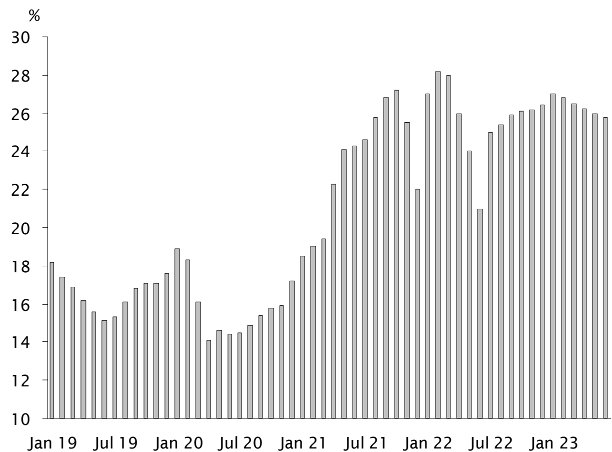
Exhibit 15: U.S. Population Aged 25-to-34
Headship Rates[1]
1990 Through August 2023E



Source: U.S. Census Bureau, Empirical Research Partners Analysis.

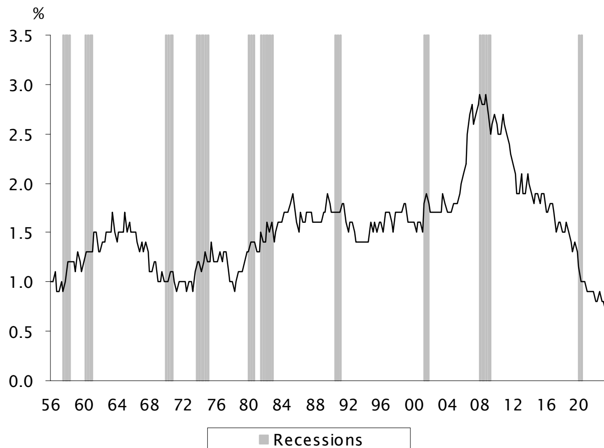
[1]Households compared to the total population.

Exhibit 16: Investor Share of Single-Family Home Purchases
2019 Through June 2023



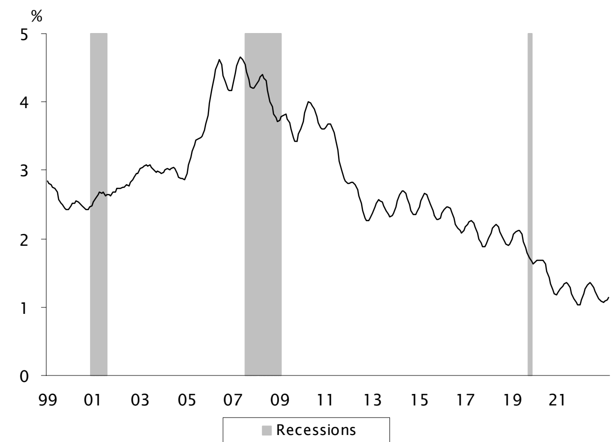
Source: CoreLogic, Empirical Research Partners Analysis.

Exhibit 17: U.S. Housing
Owner-Occupied Vacancy Rates
1956 Through Q2 2023



Source: National Bureau of Economic Research, U.S. Census Bureau, Empirical Research Partners Analysis.

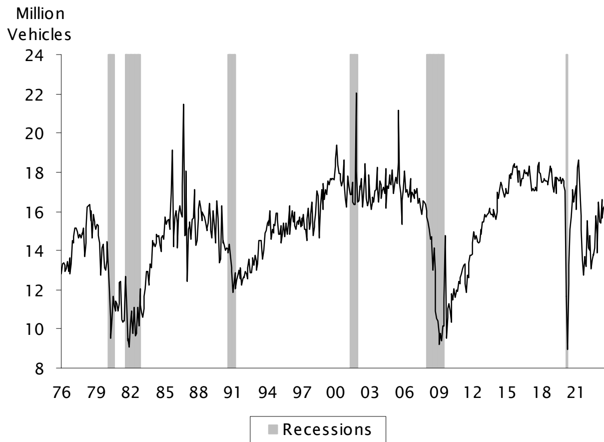
Exhibit 18: Existing Listed Homes for Sale
as a Share of the Stock of Owned Homes[1]
1999 Through August 2023



Source: Bloomberg, L.P., Census Bureau, National Bureau of Economic Research, Empirical Research Partners Analysis.

[1]Data smoothed on a trailing six-month basis.

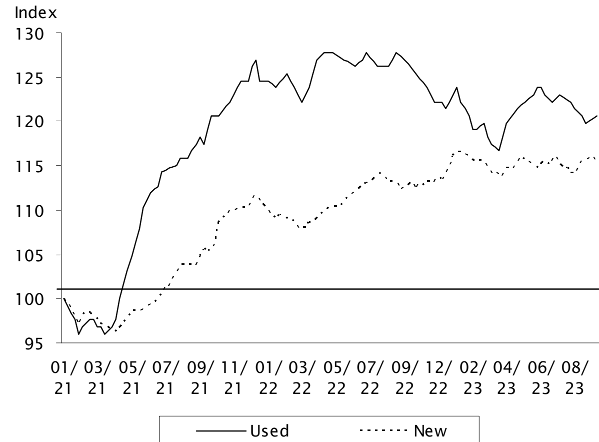
Exhibit 19: U.S. Auto Sales¹
1976 Through August 2023



Source: Bureau of Economic Analysis, National Bureau of Economic Research, Empirical Research Partners Analysis.

¹Data seasonally-adjusted.

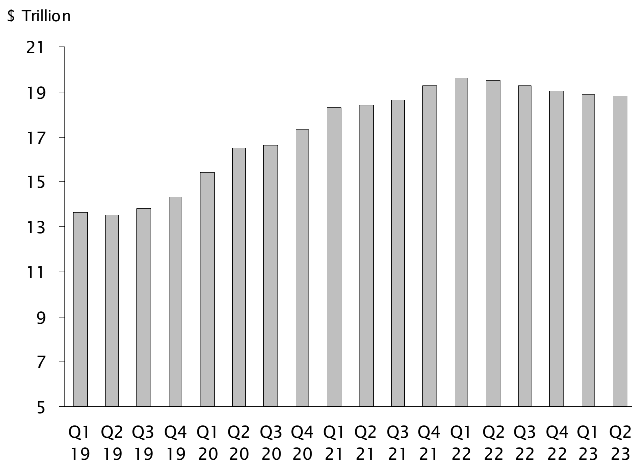
Exhibit 20: New and Used Car Prices
Cumulative Changes
2021 Through Late-September 2023



Source: Cox Automotive, Empirical Research Partners Analysis.

Some of the resilience in consumer spending is attributable to the enormous build up in savings that occurred during the Pandemic. There's a debate about how much of it remains. The aggregates suggest that lots of liquidity is still in place, $4 trillion more than at the beginning of the decade (see Exhibit 21). We estimate that roughly a third of the "excess" savings of the Pandemic period has yet to be spent (see Exhibit 22).

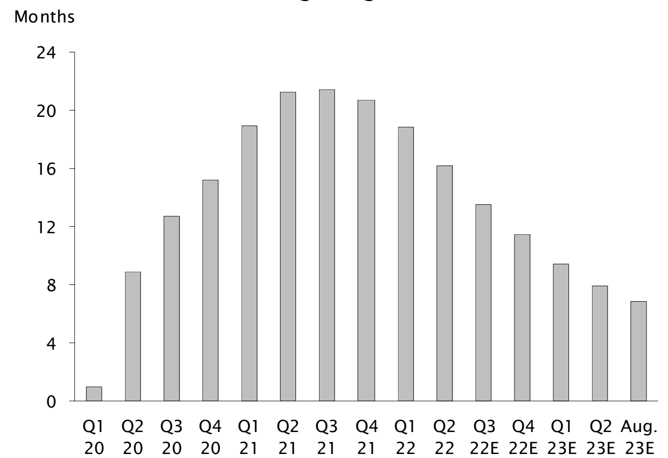
Exhibit 21: U.S. Consumers
Liquid Fixed Income Assets¹
2019 Through Q2 2023



Source: Federal Reserve Board, Empirical Research Partners Analysis.

¹Checking accounts, savings and time deposits, money market funds and brokerage sweep accounts.

Exhibit 22: U.S. Consumers
Cumulative "Excess" Savings
Measured in Months of Typical Savings
Q1 2020 Through August 2023E



Source: Aladangady, A., Cho, D., Feiveson, L., and Eugenio Pinto, 2022. "Excess Savings During the COVID-19 Pandemic," FEDS Notes, U.S. Department of Commerce, Empirical Research Partners Analysis and Estimates.

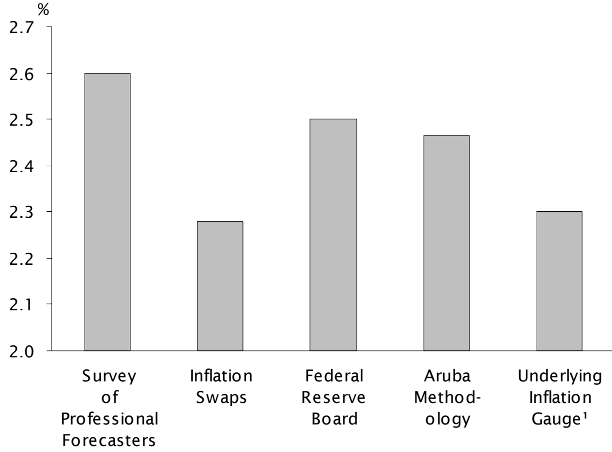
Inflation: The Main Event

Monetary policy still seems to depend mostly on the stickiness of inflation. The forecasts for next year are clustered around 2.5%, and the latest reading from the Underlying Inflation Gauge, that tries to extract the primary trend from the data, was 2.3% (see Exhibit 23). Both tails of the distribution are coming down, a positive (see Exhibit 24).

In normal times the swaps have a better record in predicting inflation than do the forecasts of economists, and they're expecting 2.3% a year from now (see Exhibit 25). Ten-year expectations lie between 2.2% and 2.6% (see Exhibit 26). That would put real rates on ten-year Treasury bonds in the range of 2.2% to 2.6%.

The labor market figures large in the inflation outlook and we seem to be in the midst of a gradual normalization process (see Exhibit 27). In fact, quit rates in most parts of the economy are back to their 2019 level (see Exhibit 28).

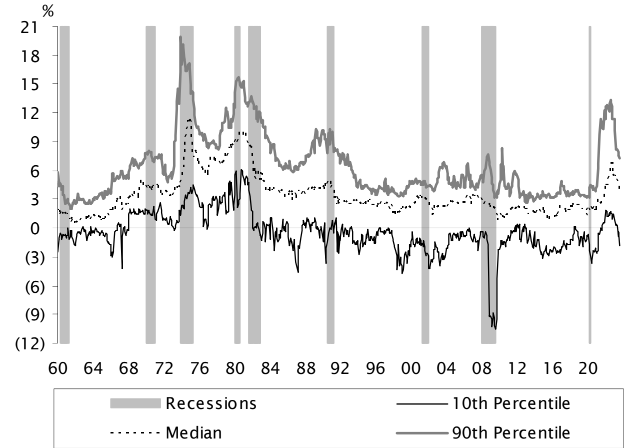
Exhibit 23: One-Year Inflation Expectations
As of Early-October 2023



Source: Federal Reserve Board, Federal Reserve Banks of Philadelphia, Cleveland and New York, Bloomberg L.P.

[1]Measure of trend inflation.

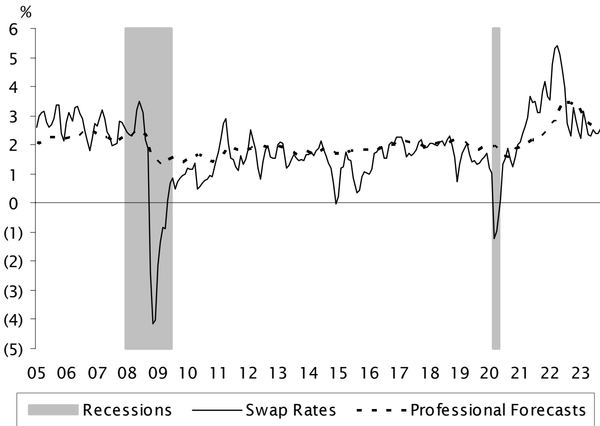
Exhibit 24: The PCE Inflation[1]
Median, 10th and 90th Percentiles
1960 Through August 2023



Source: Federal Reserve Bank of San Francisco, National Bureau of Economic Research, Empirical Research Partners Analysis.

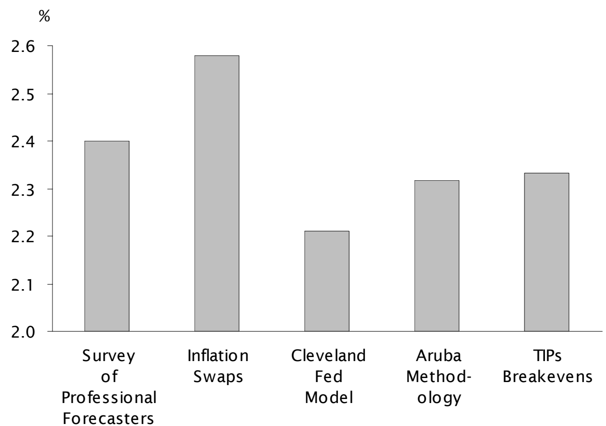
[1]Based on level 4 PCE aggregates; year-over-year data.

Exhibit 25: One-Year-Forward Inflation Expectations
Inflation Swaps and Professional Forecasts
2005 Through Early-October 2023



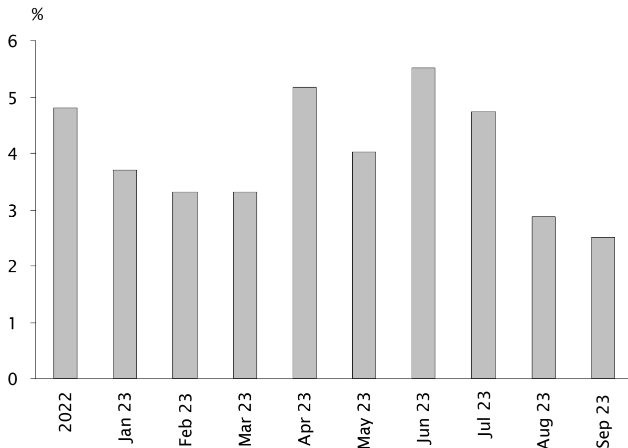
Source: Bloomberg L.P., Federal Reserve Bank of Philadelphia, National Bureau of Economic Research, Empirical Research Partners Analysis.

Exhibit 26: Ten-Year Inflation Expectations
As of Early-October 2023



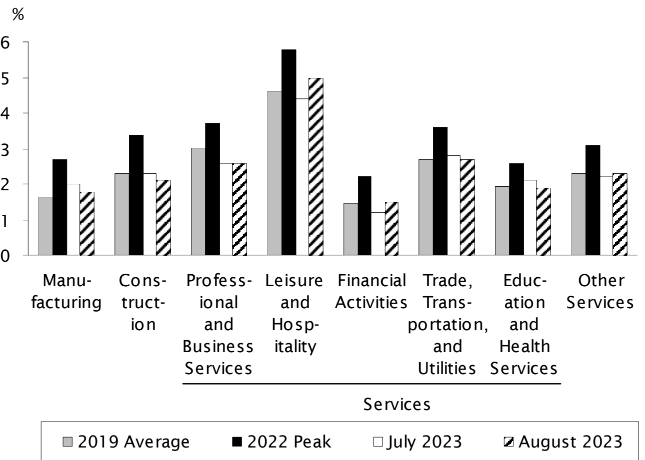
Source: Federal Reserve Banks of Philadelphia and Cleveland, Bloomberg L.P.

Exhibit 27: Private Sector Employees
Average Hourly Earnings
Monthly Changes Annualized
2022 Through September 2023



Source: Bureau of Labor Statistics, Empirical Research Partners Analysis.

Exhibit 28: Quit Rates by Industry
2019 Through August 2023



Source: Bureau of Labor Statistics, Empirical Research Partners Analysis.

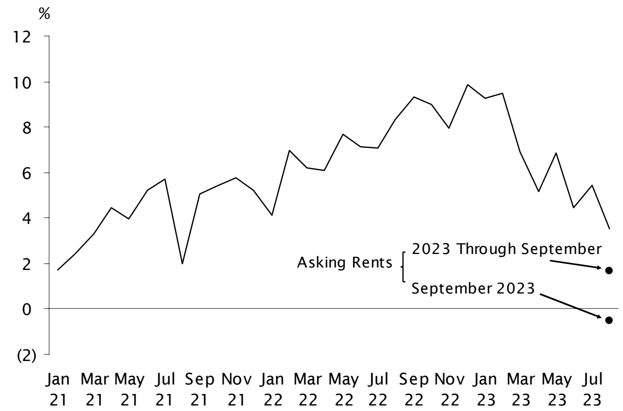
Our read of the inflation data is that it's improving, and should be helped along by the surging supply of new apartments (see Exhibit 29). That's producing deflation in rents, a big change from what's been going on in the last couple of years (see Exhibit 30).

Exhibit 29: Multifamily Units Under Construction Relative to the Size of the Rental Stock[1] and Household Formation 1970 Through August 2023

Source: Census Bureau, Empirical Research Partners Analysis.

[1]The rental stock is occupied units plus for-rent vacant ones.
[2]Through Q2 2023.

Exhibit 30: The Shelter Component of the CPI and Asking Rents Month-over-Month Annualized Changes 2021 Through August 2023

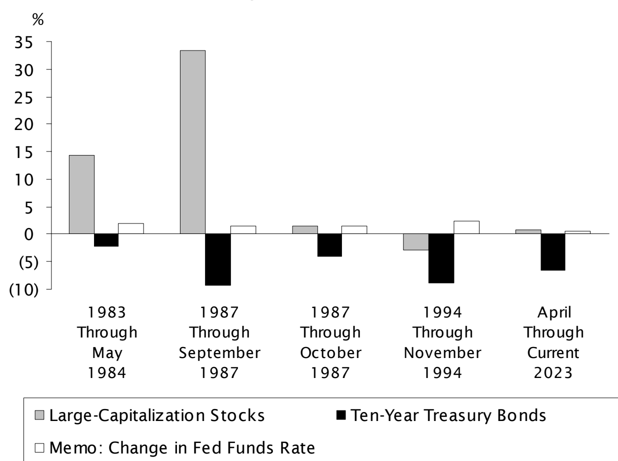


Source: Bureau of Labor Statistics, Apartment List, Empirical Research Partners Analysis.

The Tale of the Tape: The Precedents

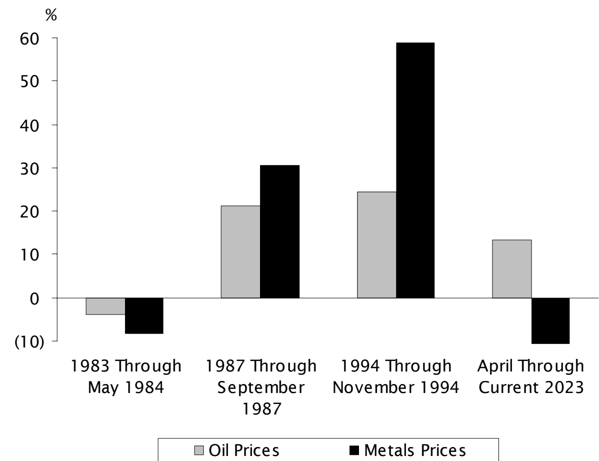
To get some perspective on the behaviors in the equity market we examined what unfolded in the modern-era episodes of rising real rates: 1983 through May 1984, the first nine (and ten) months of 1987, and in the first 11 months of 1994. We then compared those results to what's played out since April. Bonds have of course performed poorly and the equity market has been about flat, on a small change in the Fed Funds rate (see Exhibit 31). Of course the 1987 episode looks entirely different when October of that year is included in the analysis, the middle set of bars. In three of the four episodes rising oil prices contributed to the upward pressure on rates (see Exhibit 32).

Exhibit 31: Large-Capitalization Stocks and Ten-Year Treasury Bonds Total Returns 1983 Through Early-October 2023



Source: Federal Reserve Board, Empirical Research Partners Analysis.

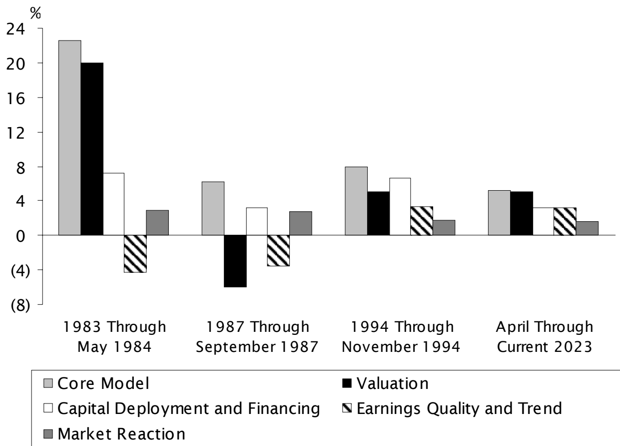
Exhibit 32: Oil and Metals Prices Cumulative Changes 1983 Through Early-October 2023



Source: Standard & Poor's, Empirical Research Partners Analysis.

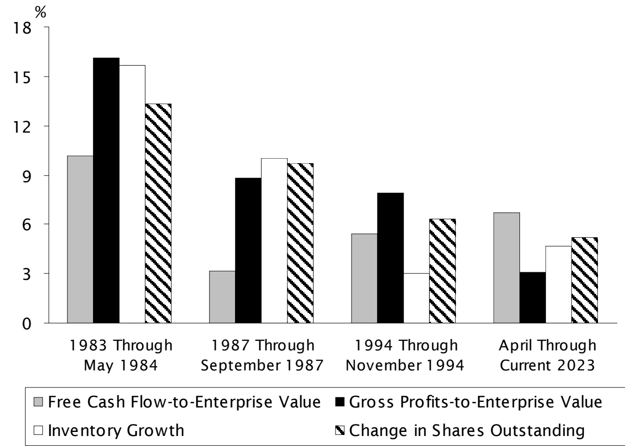
Our stock selection models performed well in all the episodes, as low valuation and the conservative deployment of capital turned out to be virtues (see Exhibit 33). The nominals were generally strong and the discount rate was rising, so buying free cash flow or even gross profits on the cheap has paid off (see Exhibit 34). Inventory drawdowns and shrinking share counts were also rewarded. Our core model has generated almost +10 points of alpha so far this year.

Exhibit 33: Large-Capitalization Stocks
Core Model and Super Factor Returns: Best Quintiles
Monthly Data Compounded
1983 Through Early-October 2023



Source: Empirical Research Partners Analysis.

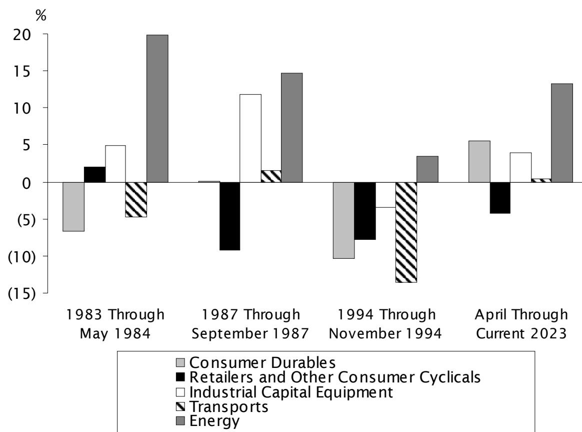
Exhibit 34: Large-Capitalization Stocks
Select Factor Relative Returns: Best Quintiles
Monthly Data Compounded
1983 Through Early-October 2023



Source: Empirical Research Partners Analysis.

The evidence on sector performance is less conclusive. Energy and the industrial capital equipment sector have the best records, while the stable parts of the market have the worst ones (see Exhibits 35 and 36). Software and semis have been the winners among the growth groups (see Exhibit 37). Of course we're looking at what's happened and real rates have already had a gigantic move.

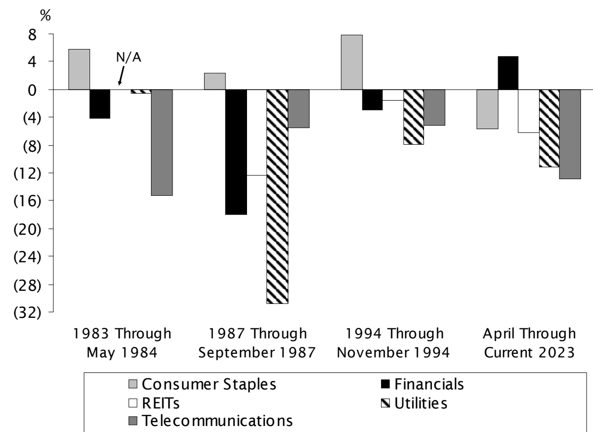
Exhibit 35: Large-Capitalization Stocks
Select Cyclical Sectors: Relative Returns[1]
Monthly Data Compounded
1983 Through Early-October 2023



Source: Empirical Research Partners Analysis.

[1]Equally-weighted data.

Exhibit 36: Large-Capitalization Stocks
Select Other Sectors: Relative Returns[1]
Monthly Data Compounded
1983 Through Early-October 2023



Source: Empirical Research Partners Analysis.

[1]Equally-weighted data.

Conclusion: What is Normal?

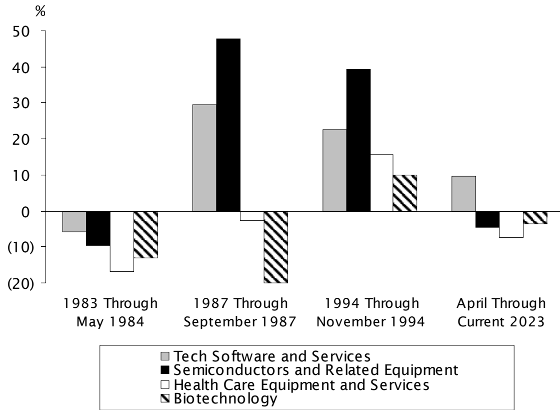
This year the macro has taken over from the micro, and 60% of the cross-market dispersion in the returns can be explained by changes in Treasury bond yields (see Exhibit 38). Readings of that sort have been a bullish signal, with double-digit returns in 9 of the 15 episodes since 1952 and no significant losses. In the last quarter or so real rates have taken center stage and the discussion has turned to what is the new normal might look like. When we examined the topic in depth last April and concluded the following:

> Our view is that the odds favor higher real rates in the 2020s than in the 2010s. We think that those built into ten-year Treasuries might fall about halfway in between the average of the 2000s, +2%, and that of the 2010s, +60 basis points, putting them in the +125 to +150 basis point range. Today's labor market looks to be structurally tighter than those of the last couple of decades, the budget deficit is up, and reserve accumulation in the emerging world and the upward skewing of the U.S. income distribution have both slowed. To the extent we see a meaningful reversal of globalization, that we haven't so far, that could prove inflationary. Green energy and the need to relocate production facilities around the world could raise the capital intensity of the system,

reducing excess savings. The growth of the internet, artificial intelligence and more broadly, the use of technology, works in the opposite direction, pushing down real rates.

We think a greater time value of money means that valuation should be part of the stock selection process, and it will be harder for a growth-at-any-price mindset to reemerge. A balanced approach, like that employed in our quantitative models, should generate alpha when companies' financial performance in the here-and-now, as well as their long-horizon stories figure into decisionmaking.

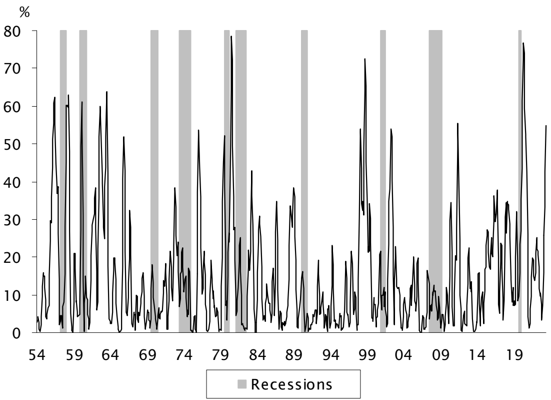
Exhibit 37: Large-Capitalization Stocks
Select Growth-Oriented Sectors: Relative Returns¹
Monthly Data Compounded
1983 Through Early-October 2023



Source: Empirical Research Partners Analysis.

¹Equally-weighted data.

Exhibit 38: Large-Capitalization Stocks
Share of the Return Dispersion Explained by Changes in the Ten-Year Treasury Bond Yields¹
1954 Through Early-October 2023

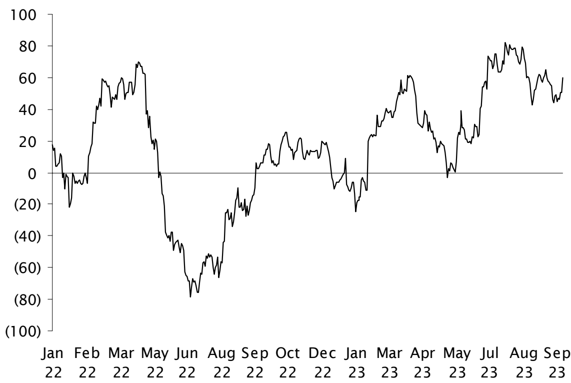


Source: Bloomberg, L.P., National Bureau of Economic Research, Empirical Research Partners Analysis.

¹Produced by the sum of squares explained by regressions over the trailing nine months. Data smoothed on a trailing three-month basis.

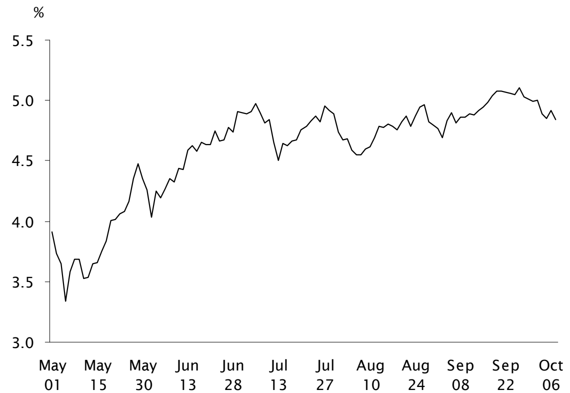
Those conclusions still seem sensible. In the intervening five months the economy has continued to surprise to the upside (see Exhibit 39). At the same time the Fed has endorsed the view that real rates will be higher than in the recent past and that guidance has been incorporated into the Fed Fund's futures (see Exhibit 40). Those two dynamics came together to change the psychology of the bond market.

Exhibit 39: U.S. Economic Surprise Index
2022 Through October 6, 2023



Source: Citigroup, Bloomberg L.P.

Exhibit 40: One-Year-Forward Fed Funds Futures Rates
May 1 Through October 9, 2023

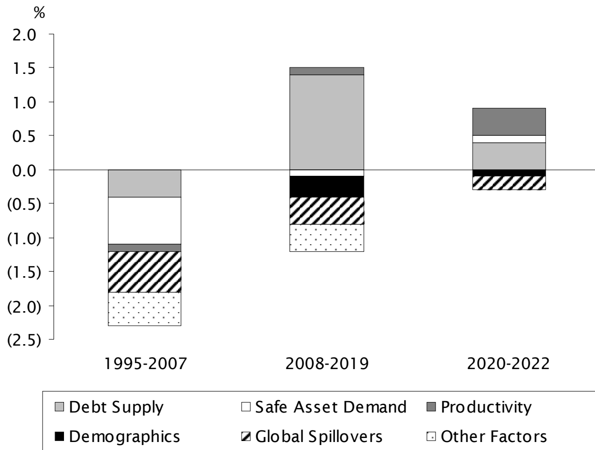


Source: Bloomberg L.P.

Of course real rates are an abstraction that's influenced by many factors, including the longstanding upward skewing of the U.S. income distribution that added to demand for bonds (see Exhibits 41 and 42). There's a wide range of estimates for where R*, the natural real rate of interest, lies. For example, an influential model maintained by the New York Fed puts that number at +57 basis points, while another developed at the Federal Reserve Bank of Richmond estimates it to be +228 basis points.[2] That's a wide spread.

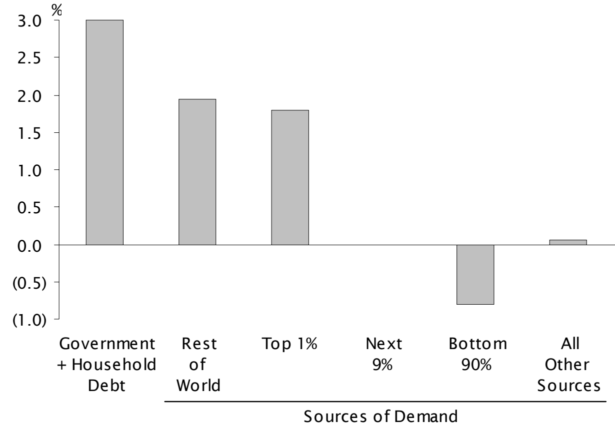
[2]Lubik, T. A. and Christian Matthes, 2023. "The Stars Our Destination: An Update for Our R* Model." *Federal Reserve Bank of Richmond Economic Brief*, No. 23-32.

**Exhibit 41: U.S.
Factors Underlying Changes in Neutral Interest Rates
1995 Through 2022**



Source: Ferreira, T. and Carolyn Davin, 2022. "Longer-Run Neutral Rates in Major Advanced Economies," *Fed Notes*, December 1st.

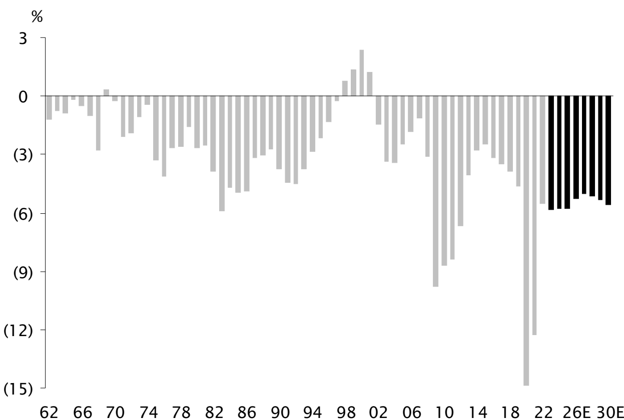
**Exhibit 42: Annual Growth in Government and Household Debt
and Sources of Demand
1982 Through 2016**



Source: Mian, A., Straub, L. and Amir Sufi, 2020. "The Savings Glut of the Rich," NBER Working Paper No. 26941.

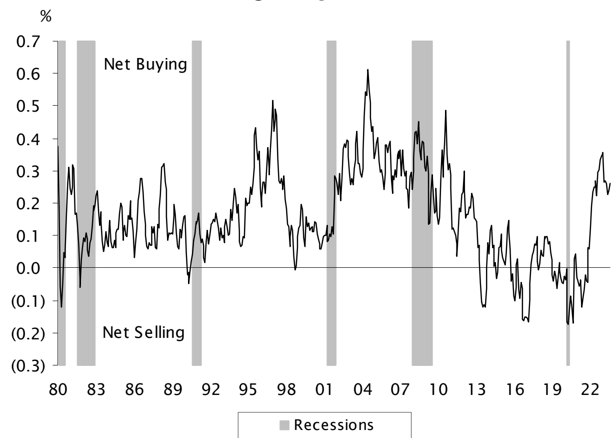
The discussions we've had with clients on this topic have usually centered on the enormity and persistence of the budget deficit and the ability of the global system to finance it (see Exhibits 43 and 44). While we think that's part of the story we think the larger factors at work have been strength of the economy and the rhetoric and forecasts of the Central Bank.

**Exhibit 43: U.S. Budget Surplus/(Deficit)
As a Share of GDP
Fiscal Years: 1962 Through 2030E**



Source: Congressional Budget Office, Empirical Research Partners Analysis.

**Exhibit 44: Net Purchases of U.S. Government Debt
By Foreigners[1]
As a Share of Outstandings[2]
1980 Through July 2023**



Source: U.S. Department of the Treasury, Federal Reserve Board, National Bureau of Economic Research, Empirical Research Partners Analysis.

[1]Comprises Treasuries and Government Agency Bonds; data smoothed on a trailing six-month basis.
[2]Excludes holdings of the Federal Reserve Board.

Real rates are a foundation of the financial markets and they've been trending lower for decades, even centuries, coloring perceptions of how things work. We're concerned that the tail risk is up. The compression in the multiple of the market that we've experienced since June is only about a third of what we'd theoretically expect to occur given the spike in the cost of capital that's occurred. On the other hand a reversal of this year's move would be bullish for risk assets and would in all likelihood stall the momentum of the market's seven-largest issues.

Clearly equity investors believe this is a transitory phenomenon, and so do we, but the confidence one can have in that point of view is far from complete. Our valuation spreads aren't very far from their long-term average and our Regime Indicator is close to neutral for the first time in 15 months. Given what still seems to be an undistinguished opportunity set in the equity market, our portfolios are more diversified than usual, with a tilt toward mega-cap free cash flow generators. Appendix 1 on page 13 presents a core portfolio we created a few months ago designed to outperform the S&P 500. It still represents our thinking.

Appendix 1: U.S. Large-Capitalization Stocks
Growth Stock Selection Model
Optimized Portfolio Versus The S&P 500
As of Early-October 2023

Symbol	Company Name	Price	Recommended Weight	Benchmark Weight	Market Capitalization ($ Billion)
Consumer Cyclicals:					
Consumer Durables					
LEN	LENNAR CORP	$108.64	1.5 %		$30.9
NVR	NVR INC	5,951.68	1.5		19.4
TSLA	TESLA INC	260.05	1.0		825.4
	Consumer Durables Total		4.0 %	2.7 %	
Retail and Other Consumer Cyclicals					
MCD	MCDONALD'S CORP	$252.23	2.5 %		$183.8
BKNG	BOOKING HOLDINGS INC	3,018.76	2.5		108.8
AMZN	AMAZON.COM INC	125.96	2.5		1,299.0
WMT	WALMART INC	159.08	1.5		428.2
	Retail and Other Consumer Cyclicals Total		9.0 %	9.5 %	
Media and Entertainment					
GOOGL	ALPHABET INC	$135.07	5.0 %		$1,708.4
META	META PLATFORMS INC	304.79	1.5		784.3
	Media and Entertainment Total		6.5 %	8.1 %	
Industrial Cyclicals:					
Capital Equipment					
FAST	FASTENAL CO	$54.90	2.0 %		$31.4
BLDR	BUILDERS FIRSTSOURCE	119.97	1.0		15.0
	Capital Equipment Total		3.0 %	5.4 %	
Commercial Services and Supplies					
VRSK	VERISK ANALYTICS INC	$238.63	1.0 %		$34.6
MCO	MOODY'S CORP	313.99	1.0		57.6
	Commercial Services and Supplies Total		2.0 %	1.3 %	
Industrial Commodities					
STLD	STEEL DYNAMICS INC	$106.97	1.5 %		$17.8
SCCO	SOUTHERN COPPER CORP	71.69	1.0		55.4
RS	RELIANCE STEEL & ALUMINUM CO	258.44	1.0		17.0
	Industrial Commodities Total		3.5 %	2.4 %	
Transports					
EXPD	EXPEDITORS INTERNATIONAL WAS	$114.21	1.5 %		$16.9
CSX	CSX CORP	30.41	1.5		61.0
	Transports Total		3.0 %	1.5 %	
Technology:					
Technology Software and Services					
MSFT	MICROSOFT CORP	$319.36	8.0 %		$2,373.5
ADBE	ADOBE INC	516.44	2.5		235.5
MA	MASTERCARD INC	394.20	2.5		371.8
VRSN	VERISIGN INC	205.08	2.0		21.2
FTNT	FORTINET INC	58.02	1.0		45.6
PANW	PALO ALTO NETWORKS INC	236.78	1.0		73.1
	Technology Software and Services Total		17.0 %	14.5 %	
Technology Hardware					
AAPL	APPLE INC	$174.91	7.0 %		$2,737.0
CSCO	CISCO SYSTEMS INC	53.07	1.0		215.8
	Technology Hardware Total		8.0 %	8.9 %	

Symbol	Company Name	Price	Recommended Weight	Benchmark Weight	Market Capitalization ($ Billion)
Semiconductors					
AVGO	BROADCOM INC	$823.86	2.5 %		$340.3
LRCX	LAM RESEARCH CORP	625.83	2.0		83.4
KLAC	KLA CORP	461.08	1.5		63.1
AMAT	APPLIED MATERIALS INC	139.28	1.5		116.5
NVDA	NVIDIA CORP	446.88	1.5		1,103.8
	Semiconductors Total		9.0 %	7.5 %	
Health Care:					
Pharmaceuticals					
MRK	MERCK & CO	$103.60	2.0 %		$263.1
JNJ	JOHNSON & JOHNSON	157.14	2.0		408.3
LLY	LILLY (ELI) & CO	541.48	1.5		514.0
	Pharmaceuticals Total		5.5 %	5.5 %	
Biotechnology					
VRTX	VERTEX PHARMACEUTICALS INC	$355.14	2.5 %		$91.7
	Biotechnology Total		2.5 %	2.1 %	
Health Care Equipment and Services					
CAH	CARDINAL HEALTH INC	$89.82	2.0 %		$22.5
ISRG	INTUITIVE SURGICAL INC	290.09	1.0		101.9
	Health Care Equipment and Services Total		3.0 %	5.7 %	
Consumer Staples					
MO	ALTRIA GROUP INC	$41.99	2.0 %		$74.6
PG	PROCTER & GAMBLE CO	143.80	2.0		339.7
	Consumer Staples Total		4.0 %	4.8 %	
Financials:					
Banks, Consumer Finance and Other					
JPM	JPMORGAN CHASE & CO	$142.90	5.0 %		$415.3
WFC	WELLS FARGO & CO	39.30	2.0		144.1
	Banks, Consumer Finance and Other Total		7.0 %	5.1 %	
Capital Markets					
MSCI	MSCI INC	$498.13	1.5 %		$39.4
	Capital Markets Total		1.5 %	2.3 %	
Real Estate					
EQIX	EQUINIX INC	$720.99	1.5 %		$67.5
	Real Estate Total		1.5 %	2.3 %	
Energy:					
Integrateds, Oil Service, Refiners and Other					
XOM	EXXON MOBIL CORP	$108.99	3.0 %		$436.3
VLO	VALERO ENERGY CORP	127.48	1.0		45.0
	Integrateds, Oil Service, Refiners and Other Total		4.0 %	3.3 %	
Exploration and Production					
EOG	EOG RESOURCES INC	$118.46	2.0 %		$69.0
COP	CONOCOPHILLIPS	113.42	1.0		135.8
	Exploration and Production Total		3.0 %	1.1 %	
Utilities					
ED	CONSOLIDATED EDISON INC	$84.76	2.0 %		$29.2
	Utilities Total		2.0 %	2.3 %	

Source: Empirical Research Partners Analysis.