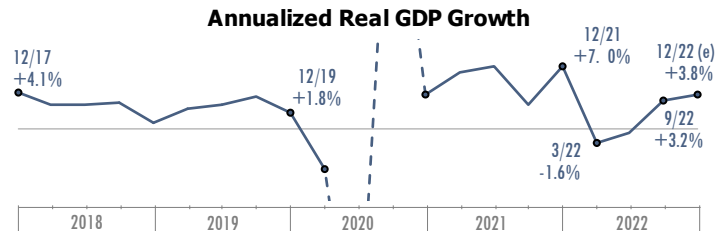
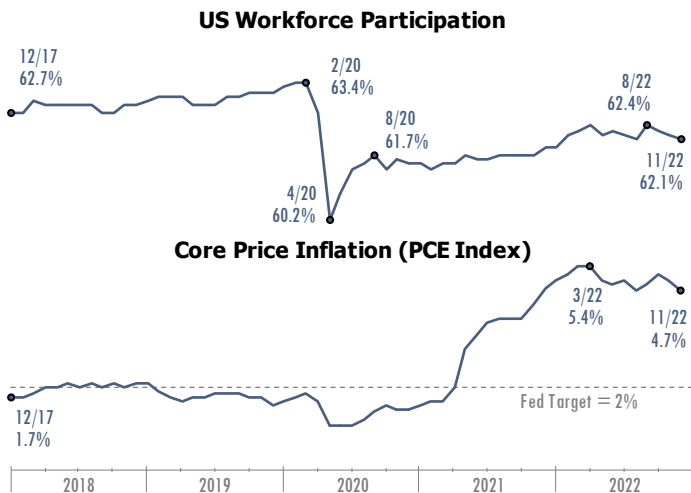


MARKET Recap

The US Economy: “All About Wages”

Real economic growth for Q3 turned positive and accelerated to a 3.2% annualized pace, surprising to the upside. Q4 GDP is forecast to show continued healthy levels of growth, despite the rising interest rate environment. Consumer spending came in strong, particularly for services as opposed to goods, which have been more impacted by inflation. Only residential fixed investment and imports detracted significantly.

Resilient consumer spending buoyed by rising disposable personal income was top of mind for the Federal Reserve at their key December 14th press conference. As expected, the Fed slowed its pace of interest rate hikes to 50 basis points at this meeting. However, the message was decidedly mixed. Chairman Powell painted a picture of concern as to the potential stubbornness of inflation. Notwithstanding the recent GDP surge, the median projection for growth stands at 0.50% for 2023, as higher rates work their way into fixed investment by businesses and, eventually, weigh on consumer spending.



The labor market remains very tight. Chairman Powell broke inflation into three components: goods inflation, housing services, and non-housing core services. Inflation on goods is moderating, in part due to improving supply chains, and housing-related inflation is subsiding with a lag due to the slow nature of lease renewals. However, the primary concern is non-housing services, which composes 55% of the core Personal Consumption Expenditures index (the Fed’s preferred measure of inflation). Here, inflation is being driven by wage growth, and there is little to indicate that wage pressure is subsiding. Workforce participation peaked at a post-COVID high of 62.4% in August and has declined since, in part due to layoffs in more impacted industries.

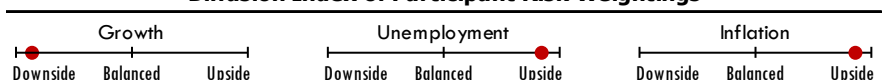
Chairman Powell made the priority clear: “Price stability is the responsibility of the Federal Reserve and serves as the bedrock of our economy. Without price stability, the economy doesn’t work for anyone.” Problem is, the Fed cannot simply wave a wand to create more workers. Interest rates are likely to have a delayed and muted impact on wage growth. Policies which would address the current structural shortfall in the labor force, such as further delaying Social Security eligibility or liberalizing immigration, would originate from Congress and appear to be non-starters. So, the Fed may find itself “pushing on a string” again, this time trying to reduce rather than stimulate inflation. This suggests to us that the balance of risk is now skewed toward inflation stalling out well above the 2% target, leading to further rate hikes and downward pressure on asset prices. It may work out, but views currently priced into the market seem to anticipate too much progress, too fast.

Fed projections indeed show expectations of inflation at 3.5% next year - with unemployment rising to 4.6% - each increased compared to the September projection. However, survey participants were nearly unanimous in their assessment of risk surrounding the projections, with 17 of the 19 participants assessing the risk of inflation and unemployment as weighted to the upside and GDP growth as weighted to the downside.

12/22 Survey of Fed Board Members & Bank Presidents

	Median				Range			
	2023	2024	2025	Longer Run	2023	2024	2025	Longer Run
Change in Real GDP	0.5	1.6	1.8	1.8	-0.5-1.0	0.5-2.4	1.4-2.3	1.6-2.5
Unemployment	4.6	4.6	4.5	4.0	4.0-5.3	4.0-5.0	3.8-4.8	3.5-4.8
PCE Inflation	3.1	2.5	2.1	2.0	2.6-4.1	2.2-3.5	2.0-3.0	n/a
Fed Funds Rate	5.1	4.1	3.1	2.5	4.9-5.6	3.1-5.6	2.4-5.6	2.3-3.3

Diffusion Index of Participant Risk Weightings



The US Bond Market

Fed rate hikes pushed the short end of the yield curve higher by 100 basis points over the course of the fourth quarter. Despite little change in yields beyond the 2-year key rate quarter-over-quarter, rates markets remained volatile. The 10-year yield traveled up and down, ranging more than 80 basis points as investors' appetites for risk churned with the vicissitudes of economic news.

In late October, the 10-year key rate peaked at a post-2008 record high of 4.25% after Philadelphia Fed President Patrick Harker commented, "Given our frankly disappointing lack of progress on curtailing inflation, I expect we will be well above 4% by the end of the year." A few weeks later, the CPI print came in 0.2% below expectations, fueling the biggest 1-day rates rally since 2008.

Credit spreads, in contrast, mostly moved one way – lower. Despite a spurt of tech layoffs and the likelihood of an impending recession, investor confidence increased in companies' ability to maintain healthy balance sheets and cash flows for the foreseeable future. High yield spreads started the quarter at 543 basis points, directly on top of the long-term average. Spreads tightened more than 100 basis points through mid-December before widening back out to 481 basis points at year end due to more hawk-speak from the Fed.

US Bond Indices - Total Returns		
Bloomberg Idx	4Q22	2022
Aggregate	1.87%	-13.01%
Short Gov't	0.71%	-1.30%
Interm. Gov't	1.01%	-7.73%
Long Gov't	-0.59%	-29.19%
TIPS	2.04%	-11.85%
Municipal	4.10%	-8.53%
Interm. Credit	2.52%	-9.10%
Long Credit	5.30%	-25.29%
High Yield	4.17%	-11.19%
(CS) Lev. Loan	2.33%	-1.06%
MBS	2.14%	-11.81%

Even in the face of the Fed stuffing investors' stockings with unwelcome rate-hike anxiety, the fourth quarter gifted an exit from negative returns for most fixed income sectors. Long government bonds, the worst performing sector for the year, was the only Q4 loser. However, every sector ended in the red for the year.

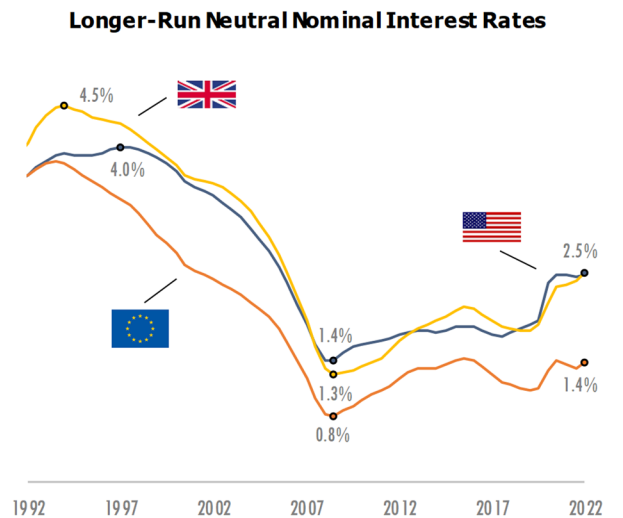
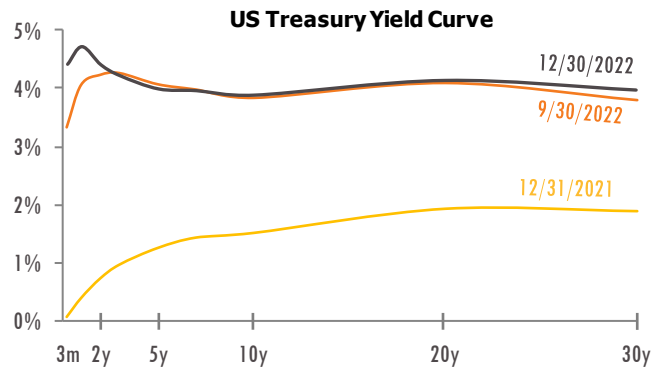
2022's double-digit losses on TIPS may seem at odds with a year dominated by inflation headlines. While TIPS do protect against inflation, it is over the maturity horizon of the bond; during the life of the bonds, they are susceptible to duration risk. And, though TIPS are now trading at real yields of around 150 bps, they started the year at negative real yields.

MBS, despite having less duration risk, also posted double-digit losses for the year. Mortgage spreads have reached decades-long highs as demand for the paper dried up from banks, foreign investors, and the Federal Reserve. The spread between a 30-year fixed rate mortgage and the 10-year US Treasury key rate peaked around 3.25% right before the favorable CPI print came out in November. This spread has averaged 1.80% in the trailing 10-year period.

Currently, the greatest challenge is divining meaning from the yield curve. Will inflation or recession rule the Fed's hand in 2023? Will the Fed return to a "neutral" rate near 4%, or will they revert to a "lower for longer" mantra should inflation subside?

Until recently, these questions might have been left for the Fed to worry about. Yet, the market seems to have lost confidence, or faith. A majority of Federal Open Market Committee ("FOMC") members expect the overnight policy rate to end 2023 in the range of 5% to 5.25%. The outliers tilt to the upside. Yet, Fed Funds futures prices imply just a 3.1% probability of the majority view coming to pass and a near-zero chance of anything higher.

The yield curve is under pressure from these major opposing forces across the short term and long term. When two immense forces push against each other, it can appear as though nothing is happening until a winner emerges – then the trajectory often turns quickly and violently.



Source: Federal Reserve

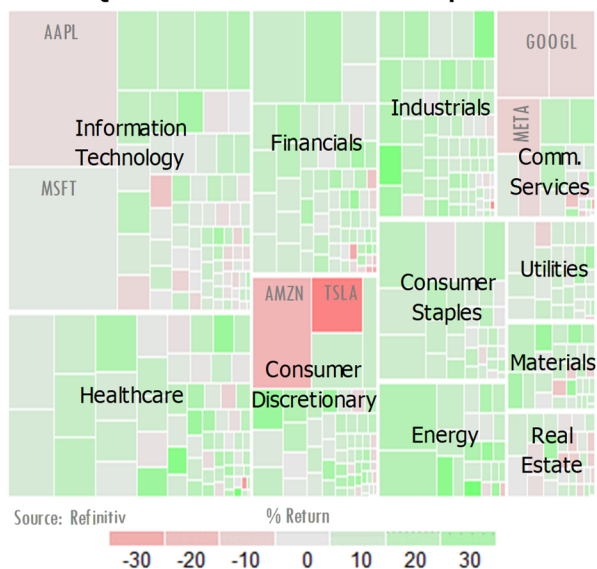
The US Stock Market

Taken as a whole, the fourth quarter saw a welcome turnaround in US stocks. All major benchmark indices posted Q4 returns in the black. A positive Q3 GDP reading, continued job growth, and the sense that the Fed would lessen the pace of rate hikes fueled positive investor sentiment in October and November. However, this dissipated in December. The traditional Santa Claus rally never materialized, and returns in the benchmark indices returned to negative territory.

US Stock Indices - Total Returns					
Largecap Stocks			Midcap Stocks		
	4Q22	2022		4Q22	2022
S&P 500	7.56%	-18.11%	S&P Midcap 400	10.78%	-13.06%
Russell 1000	7.24%	-19.13%	Russell Midcap	9.18%	-17.32%
Growth	2.20%	-29.14%	Growth	6.90%	-26.72%
Value	12.42%	-7.54%	Value	10.45%	-12.03%
Broad Markets			Smallcap Stocks		
S&P 1500	7.79%	-17.78%	S&P Smallcap 600	9.19%	-16.10%
Russell 3000	7.18%	-19.21%	Russell 2000	6.23%	-20.44%
Growth	2.31%	-28.97%	Growth	4.13%	-26.36%
Value	12.18%	-7.98%	Value	8.42%	-14.48%

The positive quarter did not overcome the experience of the first three, and 2022 closed as the worst year for the US stock market since 2008. The significant change in monetary policy by the Fed and other central banks along with persistently high inflation, the cascade effects of the Russian invasion of Ukraine, and continued uncertainty created by an evolving COVID-19 pandemic caused some outlets to characterize 2022 as a “generational shift for financial markets” [NY Times].

4Q 2022 Returns in S&P 500 Companies



The quarterly trends of value over growth and mid cap leadership held for the 12-month period as well. While the value-over-growth trend has been in place for some time, the outperformance of mid caps developed more recently. Industrials, where the airline industry sits, is the largest sector in the S&P Midcap 400 Index. In combination with materials, another sector benefitting in the re-opening environment, they represent over 26% of the mid-cap benchmark. Together they make up just 11% of the large-cap index and 22% of the small-cap index. In addition, the large-cap consumer discretionary sector was decimated by Amazon and Tesla, which fell -26% and -54%, respectively. Meanwhile, names like Service Corp International (SCI), Deckers Outdoor (DECK), and Five Below (FIVE) helped bring in a solid 14% return in the S&P midcap consumer discretionary index.

Still, the story that held everyone’s attention for Q4 and the year was energy. The disruption caused by the Russia-Ukraine conflict coinciding with increasing travel resulted in a 1-year return more than 100% over that of the worst performing sector, communication services. The enormous dispersion of sector returns created a challenging environment for active managers where even moderate sector tilts could have

outsized impacts on performance. Compounding this is the influence of commodity prices on the performance of energy firms, which forces active managers to extend beyond more typical fundamental analysis and incorporate macro views if they are going to be constructive on the sector.

Fundamentals themselves, like corporate revenue and earnings, also have been top-of-mind. The slowing economy, elevated interest rates, and ongoing inflation are all expected to cut into corporate profits, and this appears to be materializing. As of December 15, companies in the S&P 500 as a whole were estimated to have a Q4 earnings growth decline of -2.8% YoY. This represents a -6.5% change from the view on Q4 earnings growth for this cohort from just 3 months prior. For the full-year, the S&P 500 is now expected to report overall earnings growth of 5.1% YoY. However, excluding the energy sector, the 2022 earnings growth rate for this group would be -1.8% YoY [FactSet].

Interestingly, despite all the bad news and consistently choppy markets in 2022, the Cboe Volatility Index, aka the VIX, finished the year close to its long-term average. Historically, a spike in the VIX has preceded a market bottom (e.g., in 2009 and 2020). The surprisingly suppressed reading has led to speculation about whether further lows are ahead for the US stock market with others suggesting that the index may no longer be an accurate reflection of investor sentiment.

S&P 500 Sector Components Total Returns		
Sector	4Q22	2022
Energy	22.81%	65.72%
Industrials	19.22%	-5.48%
Materials	15.05%	-12.27%
Financials	13.61%	-10.53%
Health Care	12.80%	-1.95%
Consumer Stpls	12.72%	-0.62%
Utilities	8.64%	1.57%
Info Tech.	4.74%	-28.19%
Real Estate	3.82%	-26.13%
Comm. Services	-1.38%	-39.89%
Consumer Discr.	-10.18%	-37.03%

Source: Morningstar

International Markets

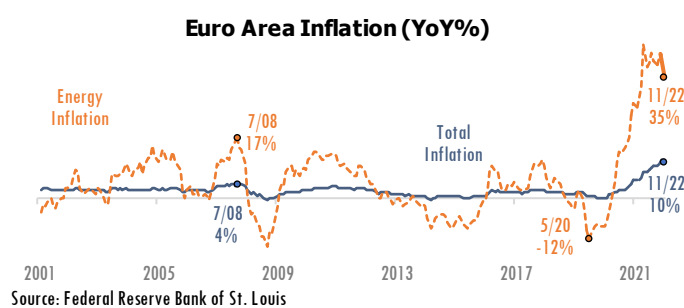
Global markets rallied in Q4, an up note capping a dreadful year. According to the IMF, global inflation is forecast to end the year at 8.8% before moderating next year. Most central banks continued tightening to combat inflation. While growth has been elusive, both developed and emerging markets posted strong performance to end the year.

Unhedged Foreign Markets Indices - Total Returns					
MSCI Stocks	4Q22	2022	Bloomberg Bonds	4Q22	2022
ACWI ex-US	14.28%	-16.00%	Global Aggregate	4.55%	-16.25%
EAFE (Developed)	17.34%	-14.45%	Pan-Euro	8.15%	-23.92%
Emerging Markets	9.70%	-20.09%	Asian-Pacific	5.99%	-12.81%
Europe	19.35%	-15.06%	Eurodollar	1.43%	-8.70%
Japan	13.23%	-16.65%	Euro-Yen	8.42%	-6.36%
China	13.52%	-21.93%	Other Currencies	6.46%	-6.80%
Latin America	5.73%	8.92%			

Europe

Tightening monetary policy, higher food and energy prices and the war in Ukraine continued to weigh on European markets. While many developed markets saw double-digit gains in Q4, most ended with double-digit losses for the year. The ongoing war proved to be a boon for many defense companies and rising interest rates boosted banks. European governments took steps to increase military preparedness in the face of Russia's invasion, and defense contractors benefitted.

Oil and mining companies also saw strong performance as the energy crisis resulting from Russia's curtailment of oil supplies fueled producers' profits. Shell and BP were up 13% to 15% in Q4 and 30% for the year. Analysts see continued upside into 2023 for the energy sector, although a global recession could weigh on oil prices and impact performance.



European banks also finished strong, with the sector gaining 19% in the fourth quarter, nearly reversing all of 2022's losses. Strong profits helped banks build capital reserves that could be returned to investors in the form of dividends. In addition, a number of banks including Banco Santander and UBS Group announced share buybacks.

Conversely, the rate-sensitive real estate sector posted its steepest decline since 2008, down 38% for the year. More pain may be in store for the sector as inflated property values fall and financing costs continue to rise. Stockholm listed SBB was

the worst performer in the sector, down 70% for the year even after bouncing back in Q4. Sweden is particularly susceptible to rising rates as it has some of the most leveraged properties in Europe. The retail sector also was hit hard as inflation eroded consumer spending and rising prices raised input costs. The sector rose 21% in the quarter, but was down 31% for the year. Clothing retailers, especially in Britain, were significantly impacted. Marks & Spencer Group fell over 50% for the year after being up in the fourth quarter. Similarly, e-commerce fashion company Zalando also fell 50%.

Asia

China's economy expanded by 3.9% in 3Q22 from a year earlier, beating the forecast of 3.5%. The performance was an improvement from the 0.4% year-over-year GDP increase recorded in the second quarter when lockdowns in major cities shuttered businesses and kept millions stuck at home. The growth was mainly fueled by manufacturing and industrial output. Domestic demand, however, diminished as a flare-up in coronavirus cases led to lockdowns.

The slowdown continued in the 4Q22. Retail sales tumbled in November from a year earlier as locked-down consumers cut back on spending. Industrial production lost momentum as factories struggled with tight Covid restrictions and slowing overseas demand for their products. Unemployment in big cities rose. The lockdowns also led to sharp declines in inflation. Consumer prices were up from a year earlier, the slowest pace since March. Producer prices fell, a reflection of weak spending at home as well as fading demand for Chinese exports, which also fell at the steepest pace in more than two years. The plunge comes amid weakening factory activity and a sluggish recovery in the property sector.

Key components of the country's zero-Covid strategy were abruptly removed in December. Easing Covid controls will hopefully revitalize the economy, but the months ahead will probably be tough. The country's recovery will depend on how quickly consumers start spending again since the usual drivers of growth, investment, and exports, have been hurt by a

China's Economy			
Y/Y Statistics (%)	6/2022	9/2022	11/2022
Manufacturing PMI	50.2	50.1	48.0
Non-Manufacturing PMI	54.7	50.6	46.7
Industrial Output	3.9	6.3	2.2
Unemployment	5.5	5.5	5.7
Producer Price Index	6.1	0.9	-1.3
Consumer Price Index	2.5	2.8	1.6
Retail Sales	3.1	2.5	-5.9
Exports	17.9	5.7	-8.7
Imports	1.0	0.3	-10.6

Source: National Bureau of Statistics of China

continuing real estate slump and fading Western demand for Chinese goods. However, consumers are likely to be more cautious about spending than their Western counterparts who received much more generous government support.

China may see a messy exit from its zero-Covid policy as a surge in cases is already disrupting supply-chain and consumer activities. Pharmacies have begun reporting shortages of ibuprofen, paracetamol, and other fever-reducing medication as the country struggles with the sudden rise of Covid cases. In December, the manufacturing PMI index fell to its lowest level since February 2020, when the country was first seized by the virus. The nonmanufacturing PMI did far worse, plunging to 41.6 from 46.7 in November. That level also marks the worst showing since the historic lows of February 2020.

At the annual Central Economic Work Conference in December, government leaders called on officials to stabilize the economy by stimulating domestic demand. They also signaled further easing of regulations that have triggered a downward spiral in the property market and hurt private business investments. The leadership also pledged to promote employment among youth, as the jobless rate among young workers remains elevated after hitting a record of nearly 20% this July.

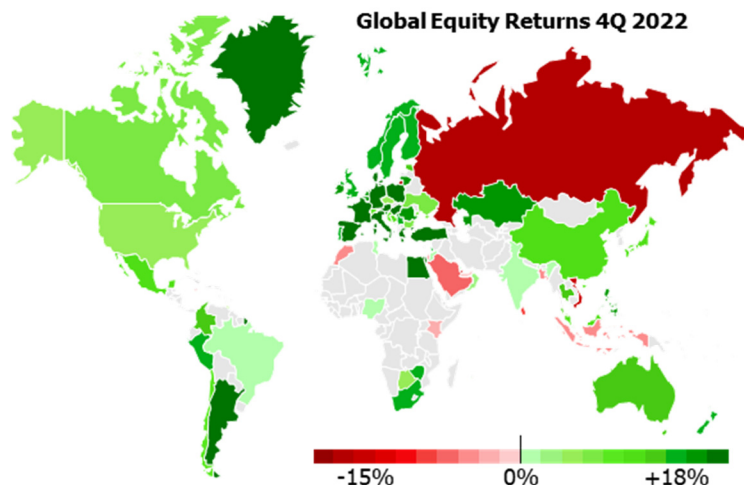


In the fourth quarter, the CSI 300 index realized a 1.75% return, a significant improvement after the third quarter's return of -15.2%. The index reached its bottom in October with Chinese chipmakers leading declines after the White House unveiled export controls

cutting off Chinese companies from certain semiconductor chips made with US equipment. However, the country's major stock indexes rose after Cosco Shipping Holdings and Contemporary Amperex Technology, a battery maker, forecast strong earnings, which helped improve market sentiment, even as China's economic prospects have been disappointed.

In December, the Bank of Japan said the yield on the 10-year Japanese government bond could rise as high as 0.50% from a previous cap of 0.25%. It set a target range around zero for the benchmark government-bond yield since 2016 and uses that as a tool to keep overall market interest rates low. The 10-year yield, which had been around 0.25% for months because of the central bank cap, quickly moved up to 0.40% in afternoon trading. The yen rose in tandem.

The Bank of Japan's statement on its decision didn't mention inflation as a reason to let the yield on government bonds rise as high as 0.5%. Instead, it cited the deteriorating functioning of the government bond market and dislocation between the 10-year government bond yield relative to other maturities. Shortly after the BOJ's decision, the released November inflation data showed prices rising at a pace of 3.7%, the fastest pace in nearly 41 years, fueling market speculation that the Bank of Japan would look to tighten monetary policy in 2023.



Americas

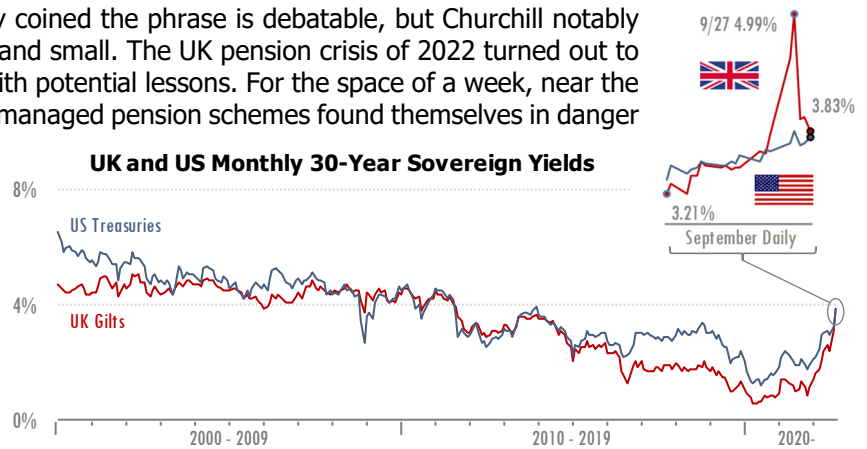
Canada's stock market was up over 7% in the final quarter, ending the year down 13% but faring better than many other developed markets. Soaring oil and metals prices lifted energy and mining stocks, which make up around 30% of the market. Technology stocks weighed on performance. The plunge in Shopify's stock price in 2022 was the largest detractor, losing around \$118 billion in market value and causing a drag on Canada's TSX index performance.

Brazil was one of the best performing global equity markets in 2022. Demand for stocks was driven by low valuations and an aggressive central bank rate hiking cycle that began in early 2021 that helped to lower inflation. Foreign investors bought a net \$19 billion in Brazilian stocks, snapping a four-year stretch of net selling. Shares of mining giant Vale rose 28% in the quarter and 31% for the year, rallying due to rising base metal prices resulting from Russia's invasion of Ukraine. Vale makes up nearly 20% of the Ibovespa. Vale's large weighting helped cover over losses seen by many other index constituents. About two-thirds of index members ended the year in the red, including the state-owned oil giant Petroleo Brasileiro, which fell due to concerns over political interference after the recent election.

Focus On: Regulating Pension Risk

“Never let a good crisis go to waste.” Who actually coined the phrase is debatable, but Churchill notably said it, and it should apply to financial crises large and small. The UK pension crisis of 2022 turned out to be on the smaller side but was, in hindsight, rich with potential lessons. For the space of a week, near the end of September, well-funded and otherwise well-managed pension schemes found themselves in danger of defaulting on payments. The culprit was liability-driven investing, specifically leveraged LDI, where derivatives are used to offset the considerable interest rate risk in UK defined benefit plans.

As coordinated central bank actions drove up interest rates around the world, many UK pension plans were caught in a liquidity trap, facing margin calls on their positions. To meet those calls, plans were forced to liquidate their most liquid holdings, chiefly long gilts – this intensified the problem by placing upward pressure on interest rates, generating more margin calls. With rates spiraling upward at an alarming rate, the Bank of England was forced to step in, committing to purchase any quantity of long gilts required to drive rates back down to tolerable levels.



Media coverage of the crisis in the US was relatively scant, as it did not fit the profile of a good public news story. No crimes were committed, no colorful billionaire was extradited from the Bahamas, and no pensioners faced eviction because their checks bounced. However, one of the largest central banks was forced to reverse course and loosen monetary policy at a time it needed to tighten in order to fight inflation. The stress further inflamed the UK mini-budget crisis, shaking out the remaining credibility of Liz Truss’s administration. She was forced to resign after only 7 weeks as Prime Minister.

Even within professional circles, there has been little discussion of the event. The role of “implemented consulting” in the UK bares scrutiny, as consulting firms figure prominently in the execution of these strategies. The use of commingled investment pools for implementation provided an avenue for smaller plans to participate and allowed consultants/managers to scale their fees. However, it aggravated the liquidity crisis and precluded additional support from plan sponsors.

But perhaps most noteworthy was the absence of regulatory oversight before, during, and after the event. When push came to shove and pension plans needed help it was the Bank of England -- not the Pension Regulator -- that rose to the occasion. That should not be surprising; this has happened before in the United States, multiple times. Consider the bailout of AIG by the Fed and Treasury in 2008, as the impending default of that insurer threatened to impair stable value funds commonly used in 401(k) plans. Consider this year’s \$36 billion bailout of the Central States Pension Fund. Or, more broadly, consider the continuous stream of funding relief granted to pension plan sponsors following the 2001 tech bubble collapse and the 2008 Great Financial Crisis.

Given the importance of investment outcomes for pension plans and the degree of systemic risk entailed, should the Department of Labor be the primary regulator of pension investments? Does the current hodgepodge of financial regulatory assignments increase the chance that critical, systemic risks are missed?

The Regulation of Financial Promises

We can divide the financial services industry into two broad categories – the provision of investment choice, and the provision of financial promises. Choice platforms are, for the most part, regulated by the Securities Exchange Commission (with the notable exception of 401(k) and other defined contribution plans). The regulatory objectives are to prevent fraud, maintain orderly markets, and ensure that investors have access to adequate information so their choices are informed. When it comes to financial promises, where a specific outcome is guaranteed, the water becomes a bit muddy.

Americans broadly turn to 4 different platforms with the expectation of risk-free wealth accumulation – banks, life insurance companies, money market funds, and pension plans. Of those platforms, 3 of them are truly guaranteed, backed both by a sponsoring organization and backstopped by a government agency. Also, 3 of them are regulated from the perspective of investment risk. However, the frameworks do not overlap. Corporate pension funds are unique in that an outcome is guaranteed, the taxpayer accepts the residual risk of default, but investment risk is, in fact, not regulated.

While we think of the Federal Reserve as the regulator of the US money supply, the organization also has regulatory authority over banks, along with the Treasury Department. Through the course of multiple financial crises, bank examiners have gained visibility to the otherwise secretive balance sheets of the nation’s banks. Ex ante regulation of bank holdings

from the perspective of credit quality pre-dates the Great Depression. Following that cataclysmic event, banking regulation has increasingly focused on asset-liability management and liquidity management. Following the 2008 Great Financial Crisis, banks have been subject to stress tests, using forward-looking simulations which measure their ability to maintain capital adequacy under a series of shocks developed from real-world scenarios. Banks that do not demonstrate the required level of capital adequacy are required to suspend dividend payments, forego share repurchase transactions, and raise additional capital to cure the deficiency. The European Central Bank maintains similar requirements for banking institutions across the eurozone.

Life insurance companies are similar to pension plans, in that they make long-term promises of future payments funded by a pool of current assets. A traditional pension plan is identical in form to a group annuity issued by an insurer, and it is no accident that group annuities are used to terminate pension plans. Life insurers are regulated at the state level, but there is a great deal of cooperation and coordination among insurance regulators, particularly through the National Association of Insurance Commissioners (NAIC). The NAIC establishes a risk-based capital framework for evaluating the solvency and long-term claims-paying ability of insurers, which is then adopted and enforced by the states. The framework requires insurers to maintain adequate capital, the level of which is determined through the quantitative assessment of specific risk factors. These factors address asset risk, underwriting risk, interest rate risk, business risk, and other risks stemming from affiliated businesses or off-balance sheet exposures. Insurers that fail to meet the required capital adequacy thresholds are subject to various levels of regulatory intervention, ranging from submission of action plans to address the deficiencies to the outright seizure of the insurer by their state insurance commission.

2021 NAIC Pre-Tax Risk-Based Capital Charges for Life Insurers

	C1 Factor Range
Investment-Grade Bonds	0.16% - 2.17%
B-BB Rated High Yield	3.15% - 12.43%
High Yield Below B	16.94% - 30.00%
Real Estate Equity	11.00% - 13.00%
Public Common Stock	22.50% - 45.00%
Private Equity	30.00%

Money market mutual funds are unique in the sense that no explicit guarantee is promised by the fund manager. In fact, all marketing materials for these funds are required to clearly state that the funds are not guaranteed and can lose money. In that sense, they are very short-term, high-quality bond funds and fall under the regulatory responsibility of the SEC. However, the regulator is well-aware that many investors ignore the warnings and that there is a strong expectation that money market funds will not generate losses. That is why the Commission established Rule 2a-7, which imposes special requirements for money market funds. The rule sets absolute requirements for interest rate risk (through maximum maturity limits), credit risk, and daily/weekly liquidity.

Key to each of these regulatory frameworks is that assets in the pool cannot be invested in just anything. Whether through absolute limits and prescriptions or enforcement of risk-based charges against capital, organizations which sponsor or manage the asset pools are limited in the risks they are allowed to take. Most importantly, limits are established and risk is monitored ex ante, before there is a crisis at hand. The analysis of risk is complex and technical in nature, particularly for banks and insurers, requiring teams of risk professionals to comply with the requirements.

Labor Approach to Pension Regulation

Corporate pension plans are regulated by the Department of Labor through the fiduciary standards of ERISA. Public pension plans, while not subject to ERISA, tend to follow similar standards of conduct which are often encoded into state law. In contrast to other regulatory regimes, ERISA takes aim at the conduct of fiduciaries making decisions for pension plans, without establishing a specific framework for measuring, evaluating, or limiting risk.

When it comes to fiduciary conduct, the standards of ERISA are quite high. However, nothing in ERISA, and little in the regulations, are aimed at measuring or limiting risk ex-ante. Rather, fiduciaries are held to the vague standard of "prudence," which is evaluated ex-post and by the very questionable technique of comparing the fiduciary's conduct to that of other fiduciaries. In a word, the regulation of pension plans is legalistic, whereas the regulation of other financial promises is technical in nature.

Why is that the case? In order to have technical regulation, you need to have a technical regulator – an agency that has the right tools, and the right talent, to perform that function. Prior to the enactment of ERISA, the Department of Labor had little need for financial technical talent. The organization's primary function was to regulate the relationship between labor and employers broadly. Since its inception in 1913, the agency has played a major role in mitigating labor disputes

		Investments Regulated?	
		Yes	No
Outcome Guaranteed?	Yes	Banks Life Insurers	Defined Benefit Pension Plans
	No	Money Market Funds	

and encouraging and enforcing compliance with bargaining, worker safety, and civil rights law. These functions are necessarily legalistic and involve resolving adversarial positions between entrenched parties. Spreadsheets are rarely needed.

Until the 1974 enactment of ERISA, the DOL did not have a specific role in regulating pension asset pools. However, at that time, there was little need for technical regulation. Most plans in the US were either unfunded or were funded through group annuity contracts regulated under state insurance regimes. The major issues in 1974 were not related to investment risk management; they were either related to structure (protecting plan assets from creditors) or plan design (ensuring fairness and limiting inflationary impact on wage growth). The DOL attacked those issues ably with good results.

It would be years before pension trusts would grow to levels that could easily bankrupt sponsoring companies or, worse, cause system-wide disruption to monetary policy and publicly-funded bailouts. When change occurs gradually, it is easy to lag behind. Lacking appropriate skill and talent for technical regulation, the DOL has come to rely on civil litigation by law firms against plan sponsors as a check and balance on risk-taking – much like the Coast Guard outsourcing maritime regulation to pirates. Not only is that an abrogation of responsibility, it is ineffective. The objective of pirates is plunder, not the regulation and management of risk.

Effective Regulation of Pension Risk

In our view, an effective regulatory regime for investments backing financial promises must satisfy three criteria: it must be objective-focused, forward-looking, and systemic in nature. The Fed, state insurance departments, and SEC may not be perfect regulators, but they strive to meet these criteria – the DOL does not.

To be objective-focused, the regime must seek to manage the probability of failing to meet the financial promises backed by the asset pool. In the case of pension plans, the objective is to maintain healthy pre-funding so that promised benefits will be paid regardless of what happens to the plan sponsor. Plans with healthy funding can be granted more flexibility; plans with funding problems should be regulated more stringently. It is ultimately the result that matters, more so than the conduct in arriving at that result. Similarly, effective regulation should seek to prevent serious problems, not to respond to them. It necessarily involves modeling and forecasting future events in order to assess the potential impact of market events on plan funding.

By systemic, we mean that the regulator must consider the collective positions taking by all plans, not just the individual actions of specific plans. No one understands this better than banking regulators – a small bank failure is of little importance, but a very large bank failure, or the failure of multiple banks, can lead to collapse of the system. The recent UK pension crisis illustrates the issue clearly. No test of prudent conduct would likely find fault with the investment decisions taken by plan sponsors. In fact, each individual plan could likely have met its obligations to raise collateral under rising rates, if it operated in a vacuum. However, when many plan sponsors are invested similarly, together their actions can move markets. A technical regulator with access to the balance sheets and derivative positions of all pension plans might have been able to foresee the problem. Would they have? Who knows, but a labor-focused pension regulator has no chance.

Finally, a good regulator aims to cooperate with the regulated party. Effective risk management is a joint effort between the regulator, who establishes an appropriate analytic framework and focuses on the evaluation of systemic risk, and the risk management function of the bank or insurer, who performs the bulk of the analysis on their specific portfolio. An effective regulator seeks to measure and manage risk, but within bounds where the regulated party can generate value and remain financially healthy.

Who Should Regulate Pension Investments?

A full regulatory regime overhaul would upset too many political apple carts. In our view, the existing bank and insurance regulators could do the job well. In the US, the state/federal divide between banking and insurance regulation seems unlikely to change. Further, ERISA is federal law, whereas the sizable public sector pension plans are state entities. Perhaps having the Fed take a role in pension investment regulation for corporate plans and state insurance commissions for public sector plans could work. The PBGC would be another potential candidate at the federal level. In any event, we should move the regulation of pension assets to an organization that is better equipped to handle the technical challenges.

