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EYE ON THE MARKET OUTLOOK 2023

The End of the Affair

The affair with the market catalysts of the last decade is over now, and a new era of investing begins.

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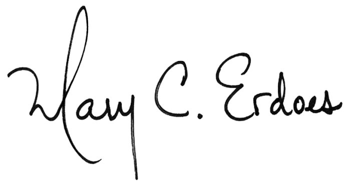
MARY CALLAHAN ERDOES
Chief Executive Officer
J.P. Morgan Asset & Wealth Management

For the past 20 years, my investment partner Michael Cembalest has kicked off the new year with our best thinking to help investors better position portfolios. What we value most is his independent, and often non-consensus, opinions on many topics—*The End of the Affair* is no exception.

On behalf of all my partners at J.P. Morgan, thank you for your continued trust and confidence in all of us. We are privileged to serve as your trusted advisor.

Most sincerely,



The End of the Affair

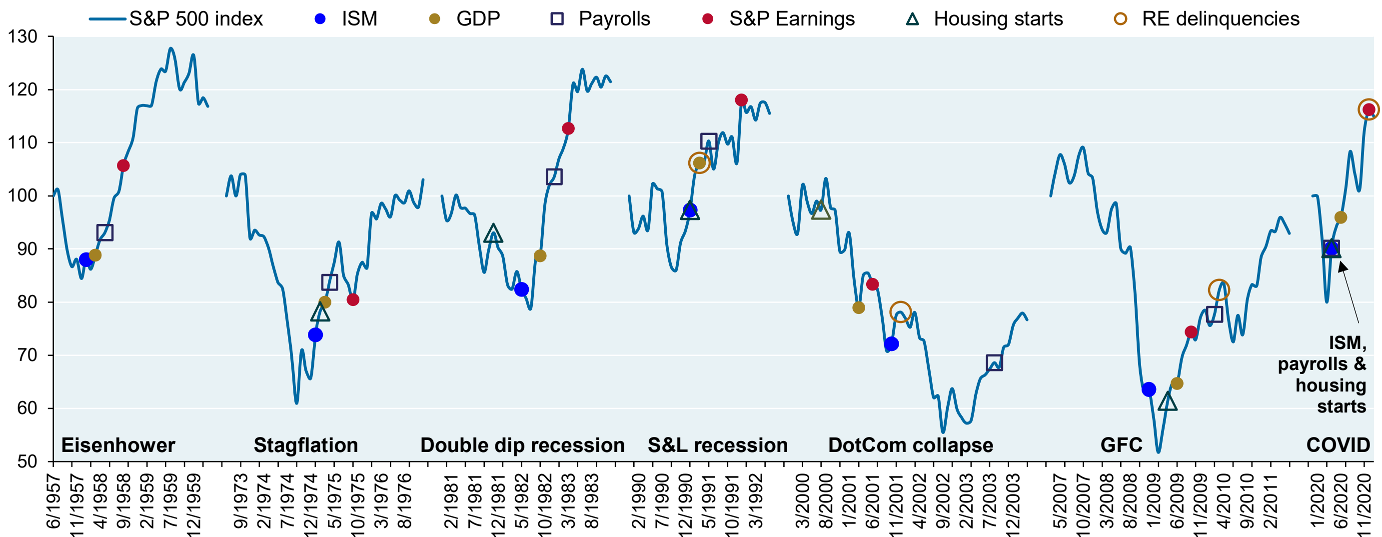
It was nice while it lasted. The tattered posters on the cover show the remnants of some equity market catalysts over much of the last decade and in particular 2020-2021: profitless innovation, the Fed's quantitative easing, the discredited Western conceit of "geopolitical change through trade", the cocktail napkin appeal of Modern Monetary Theory and massive fiscal stimulus, unsustainable negative real interest rates and "TINA" (there is no alternative to equities), the dream sequence of a rapid transition to renewable energy, the Potemkin village of many metaverse/fintech narratives and the pseudo-libertarian gibberish of unregulated crypto.

The largest combined monetary and fiscal experiment in history is ending now, and a major growth slowdown is coming to the US and Europe. But: avoid the trap of becoming more bearish the lower the market gets, and be prepared to take advantage of selloffs when/if they occur. As shown below, in the history of US recessions (with the exception of the dot-com collapse of 2001), equity markets bottomed well before the bottom in GDP, payrolls, S&P 500 earnings and housing starts and the peak in household/corporate delinquencies. The ISM survey has been the most reliable coincident indicator of a bottom in equities, which is why we pay so much attention to it. If history is any guide, the equity bottom would also coincide with the end of Fed hikes. I expect equity markets to bottom sometime in the first half of next year, and for the October 2022 lows to hold.

Our outlook begins with a discussion of leading indicators and what equity markets are pricing in already. The sections that follow examine US inflation which we believe will cool enough for the Fed to pause at 5% in the spring; the decline in globalization and implications for investors; how the end of negative real rates may usher in a period of improved stock picking by value-oriented managers; how a regulatory wave is coming to the Fintech/crypto world; where we see value in global fixed income now that Central Bank financial repression is ending; and the latest news on mRNA vaccines and the 1969 moon landing.

Michael Cembalest
JP Morgan Asset Management

When recessions occur, the ISM survey has been the best coincident indicator of a bottom in equities
S&P 500 indexed at 100 at start of each period, dots show when each indicator bottomed



Source: BEA, Census, NAR, Shiller, Bloomberg, S&P Dow Jones, JPMAM. 2022.

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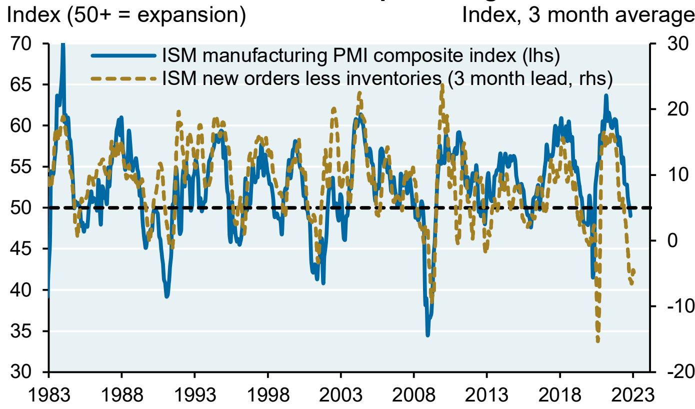
A quick look at declining leading indicators and US banking system resilience

Leading indicators suggest that a major growth slowdown is coming to the US and Europe. Whether a recession technically occurs or not is beside the point; for equity investors, the slowdown ahead is likely to drag corporate profits down with it. We track manufacturing surveys closely since they're good coincident indicators of a bottom in equity markets when recessions do occur. The first two charts predict where these surveys are headed given rising inventories and falling new orders. We expect a bottom in these manufacturing surveys in Q1/Q2 of 2023, and at levels that are above 2008 and 2020. In other words, if there is a recession, we expect it to be a milder one than the last two. The third chart projects the decline in S&P 500 earnings[1]; our best guess is a 10%-15% y/y decline in S&P earnings in 2023.

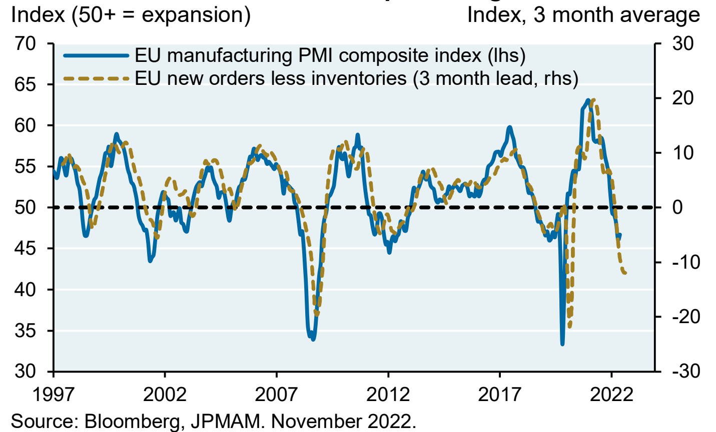
In Europe, consumer spending is declining as energy crowds out other forms of consumption. While European governments are shielding consumers from peak gas and electricity prices (p.14), households will still face substantial energy bill increases in 2023, negatively impacting employment, housing and production. Core inflation in Europe is still running at 5%, forcing the ECB to tighten into economic weakness.

US new orders less inventories predicting ISM downturn
Index (50+ = expansion) Index, 3 month average



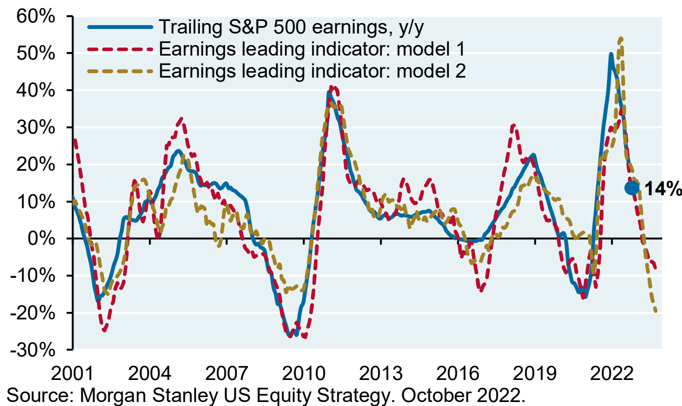
Source: Bloomberg, JPMAM. November 2022.

EU new orders less inventories predicting PMI downturn
Index (50+ = expansion) Index, 3 month average



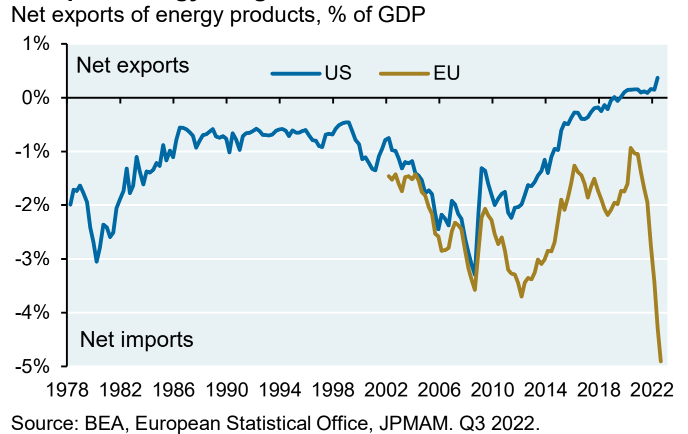
Source: Bloomberg, JPMAM. November 2022.

Leading earnings indicators point to S&P 500 earnings decline, Percent



Source: Morgan Stanley US Equity Strategy. October 2022.

Europe's energy bill goes off the rails
Net exports of energy products, % of GDP



Source: BEA, European Statistical Office, JPMAM. Q3 2022.

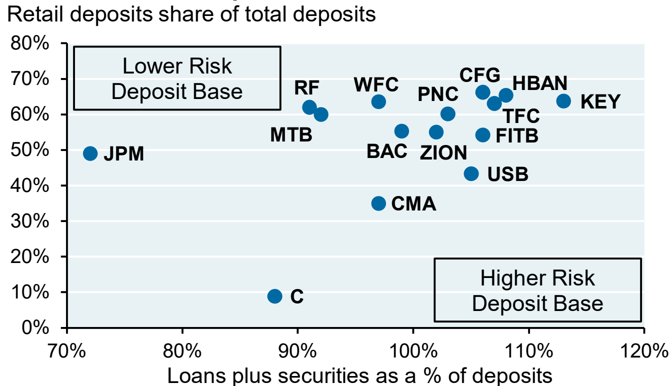
[1] The first model includes the manufacturing PMI, business surveys, credit spreads and housing starts. The second includes business surveys, supplier deliveries, wage trackers, inflation and a cyclical GDP indicator.

Whenever growth slows materially, we examine the effects on the **banking system** since that's where losses are magnified due to leverage and depositor risks. To us, the situation looks much better than 2008. US bank tier 1 capital ratios have risen substantially; a lot of risky lending migrated from banks to capital markets and private credit lenders; US bank wholesale funding is now 7.5% of bank liabilities, down from 17.5% in 2000; and loan-to-deposit ratios fell from 1.00x in 2008 to ~0.65x, the most liquid the US banks have been since the 1970's.

Here's the "but". Due to rising rates, a lot of deposits fund high-quality bonds that trade below par, designated as "Available for Sale" or "Hold to Maturity". According to the FDIC, unrealized losses on these securities at US banks have ballooned to ~$700 billion. As a result, we also look at loan-to-deposit ratios by adding these securities to loans, and compare the ratios by bank to the "stickier" retail share of its total deposits (first chart).

US bank loan-to-deposit ratios

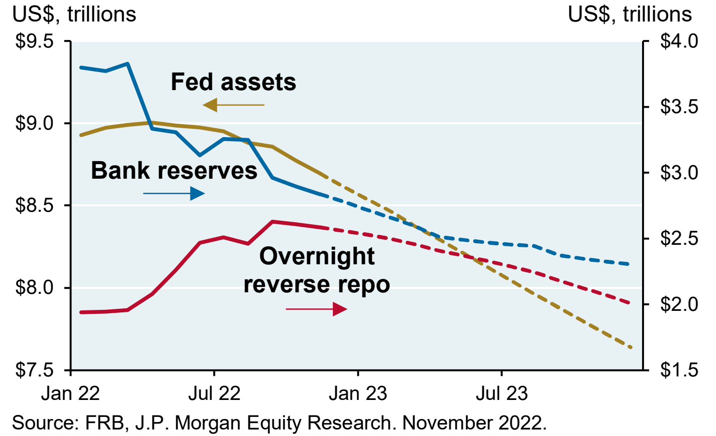
Retail deposits share of total deposits



Source: JPMAM. Securities include Hold to Maturity and Available for Sale categories. Q3 2022.

Fed assets and liabilities

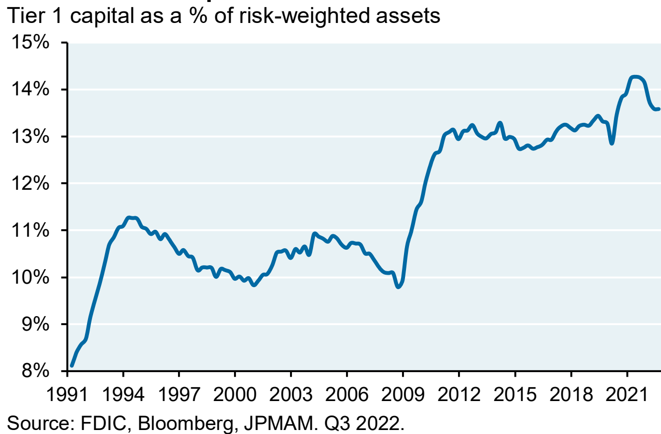
US$, trillions



Source: FRB, J.P. Morgan Equity Research. November 2022.

US bank tier 1 capital ratios

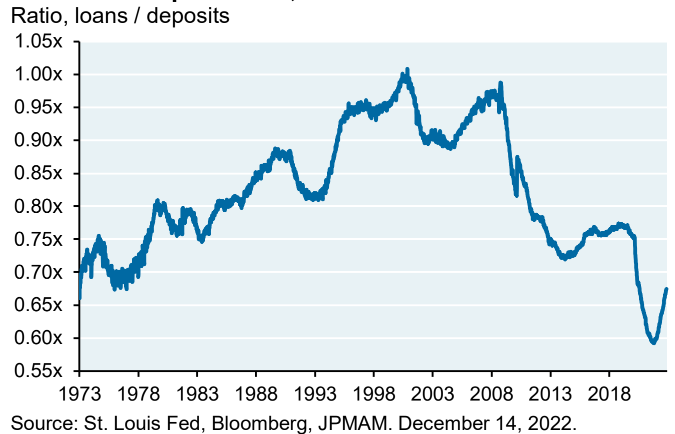
Tier 1 capital as a % of risk-weighted assets



Source: FDIC, Bloomberg, JPMAM. Q3 2022.

US loan-to-deposit ratio, all commercial banks

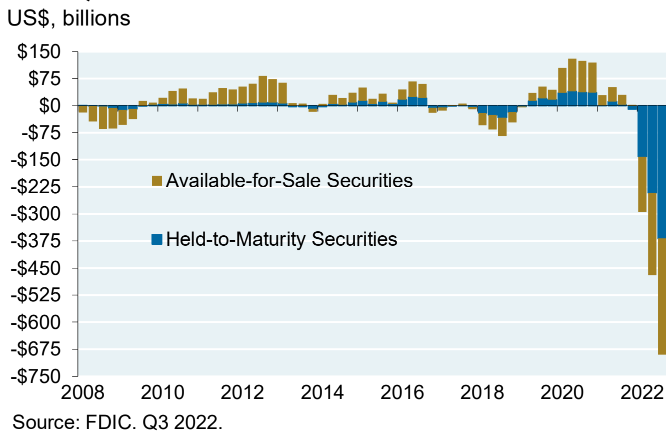
Ratio, loans / deposits



Source: St. Louis Fed, Bloomberg, JPMAM. December 14, 2022.

FDIC Q3 unrealized bank losses on investment securities

US$, billions



Source: FDIC. Q3 2022.

Table of Contents

Topic #1: Tracking the repricing of financial assets 5
The latest valuations in US equities; the decline of the YUCs and the MUCs; deep value pricing and the China reopening; the mysterious stability of leverage loan prices after a decade of collapsing covenant protection and rising leverage

Topic #2: Tracking the Fed, and where inflation goes from here 10
There's enough evidence in the pipeline for the Fed to pause at ~5% but there's little room for easing in 2023; the long term inflationary impact of the renewable transition and reshoring of critical supply chains; Europe tackles energy inflation through price caps in power markets

Topic #3: Tracking the gradual decline of globalization....................15
The unwinding of maximum globalization is underway, driven in part by intensifying US restrictions on China. Regional trade and cross-border investment is alive and well, and some industrial processes like semiconductors will be difficult to dislodge from existing producers

Topic #4: Tracking the performance of active managers 20
Negative real rates collapsed risk premia and created difficult stock-picking conditions for value oriented portfolio managers. Higher real interest rates could increase asset price dispersion and be a tailwind for stock picking

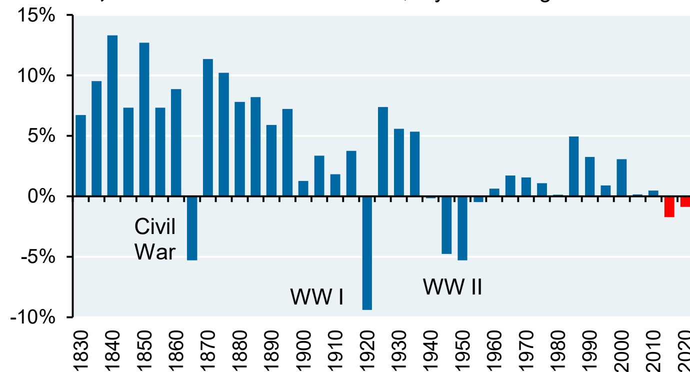
Topic #5: Tracking the regulatory wave coming to Fintech/crypto, and JP Morgan's crypto footprint 21
The Treasury and SEC are ramping up efforts to address Fintech/crypto customer protections, regulatory arbitrage, pricing transparency and financial stability; comments on JP Morgan, blockchain and crypto

Topic #6: Tracking global fixed income for yield oriented investors 23
Focus on intermediate duration US municipals, conforming mortgage bonds, US-Europe-China government bonds, asset backed paper, floating rate notes/CP, Mexico local bonds and high-quality US/European preferred stock

Topic #7: Just the Vax and nothing but the Vax 25
Closing thoughts on mRNA vaccines, the CDC and the 1969 moon landing

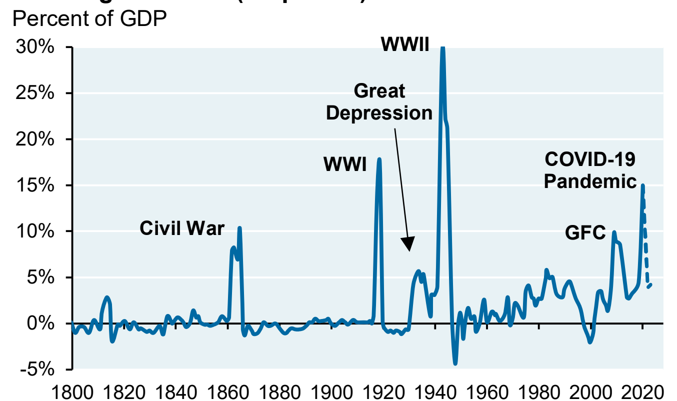
The end of an era: the largest peacetime monetary and fiscal experiment in US history is ending now

Lowest real yields on cash since 1830, other than during wartime, T-bill/Funds rate less inflation, 5-year average



Source: FRB, Robert Shiller, GFD, BLS, JPMAM. 2020.

US budget deficits (surpluses)
Percent of GDP

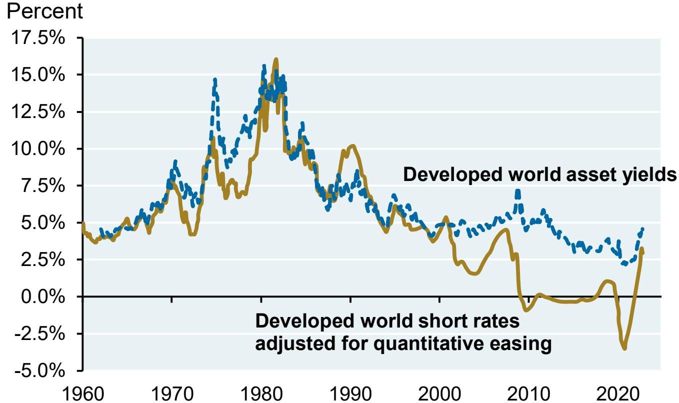


Source: Peterson Foundation, CBO projections, JPMAM. 2021.

Topic #1: Tracking the repricing of financial assets

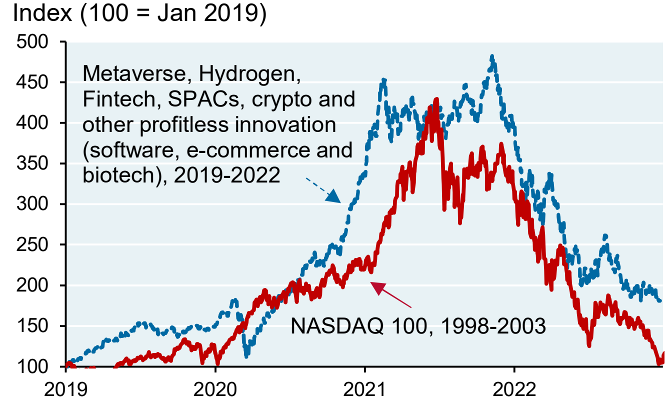
The extraordinary gap between asset yields and policy rates is finally closing. This was the catalyst for the repricing of profitless innovation, and which then spread broadly to the entire equity market. As 2023 begins some public valuations are back to pre-COVID levels, while many private equity and private credit markets have yet to reprice. I suspect we will see a modest correction early in 2023 that brings valuations closer to long-term averages as the growth slowdown gets closer. Other trends we expect to continue: physical assets outpacing digital assets, and traditional energy outpacing renewable energy. Also: Fintech returns have now given up their entire outperformance vs traditional banks since 2019 (see p.21).

Gap between asset yields and short rates is finally closing
Percent



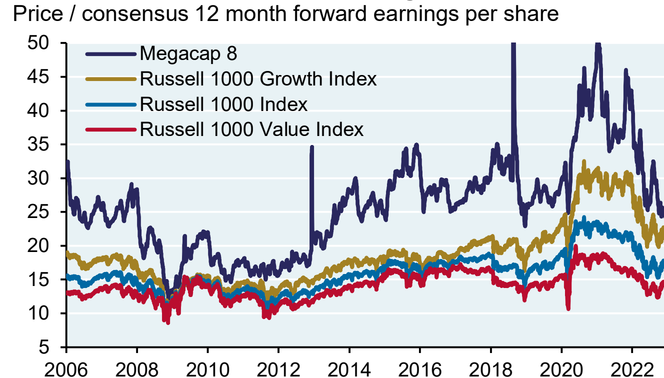
Source: Bridgewater. December 7, 2022.

Dumb and Dumber
Index (100 = Jan 2019)



Source: Bloomberg, JPMAM. December 27, 2022.

Forward PE ratios: Russell 1000, growth & value
Price / consensus 12 month forward earnings per share

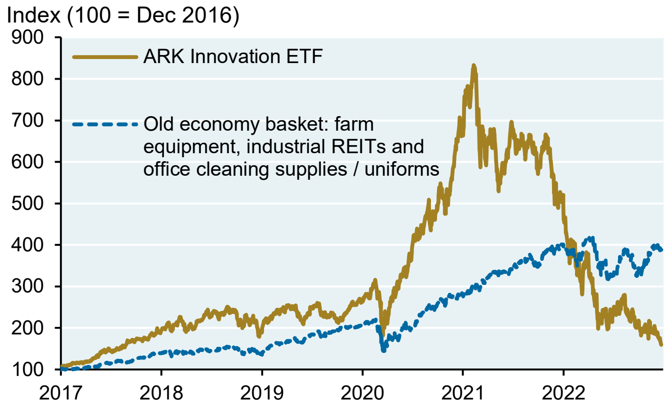


Source: Bloomberg, JPMAM. December 27, 2022. Megacap 8 includes GOOGL, AMZN, AAPL, FB, MSFT, NFLX, NVDA, TSLA.

S&P 500 price to earnings ratio
Price / 12 month forward earnings

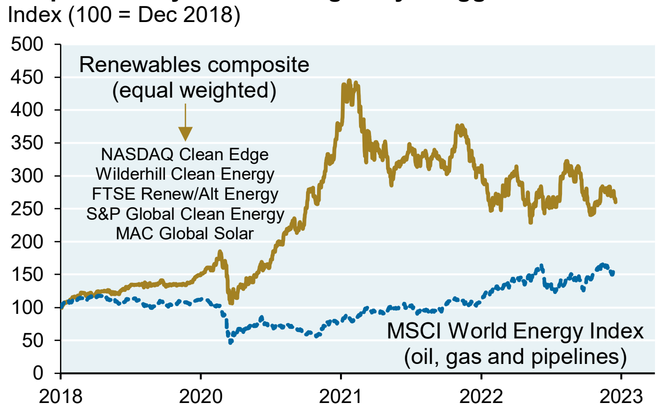
Source: Bloomberg, JPMAM. December 27, 2022.

The Tortoise and the Hare
Index (100 = Dec 2016)



Source: Bloomberg, JPMAM. December 27, 2022.

"Reports of my death were greatly exaggerated"
Index (100 = Dec 2018)



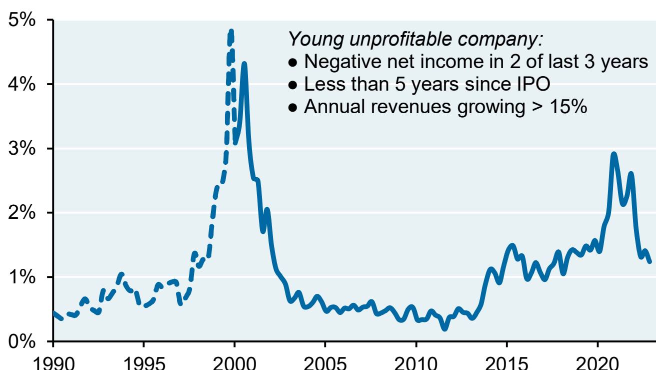
Source: Bloomberg, JPMAM. December 27, 2022.

I began writing about the YUCs (young unprofitable companies) early in 2020[2] when their valuations started to soar. After last year's selloff, **we're much closer to the end of the YUC/MUC repricing than the beginning**. By the time Peloton is priced at 1x sales rather than its peak level of 19x sales at the end of 2020, it's time to start thinking about whether unprofitable companies like Peloton, Carvana, Shopify, DoorDash, Spotify, Roku and Roblox can become profitable or not.

Many unprofitable companies are in that position since the market did not *require* them to be profitable. With the benefit of ample pre- and post-IPO capital, they forged ahead with enormous customer acquisition costs in an effort to gain scale. Many cannot do that anymore, but **some will figure out how to become profitable** in this new era. The aftermath of the 2000-2002 dot-com crash is interesting in this regard:

- The third chart shows performance of tech companies from 2000 to 2004 based on their initial and subsequent profitability. Companies that remained unprofitable continued to languish
- However, unprofitable companies that became profitable by 2004 rallied sharply, catching up to companies that had been profitable all along
- This chart of course incorporates the benefit of **perfect hindsight**; still, it does indicate that for stock pickers that sift through the wreckage to try and identify survivors, there may be attractive opportunities. The size of this unprofitable-> profitable cohort was roughly 50% of the "unprofitable in 2000" universe

The YUCs: Young Unprofitable Companies
% of equity market capitalization

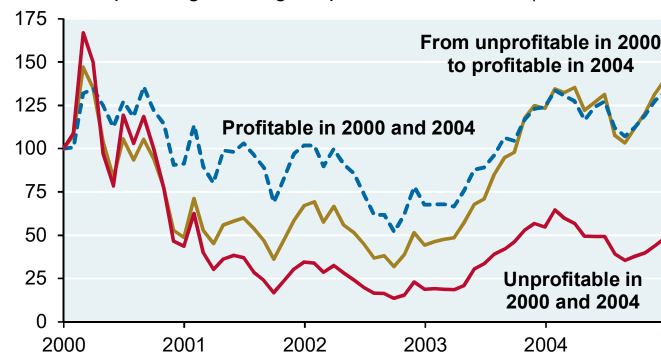


Source: Factset, JPMAM. December 27, 2022.

The MUCs: Megavalued (P/E >50x) or Unprofitable Companies, % of total US market capitalization

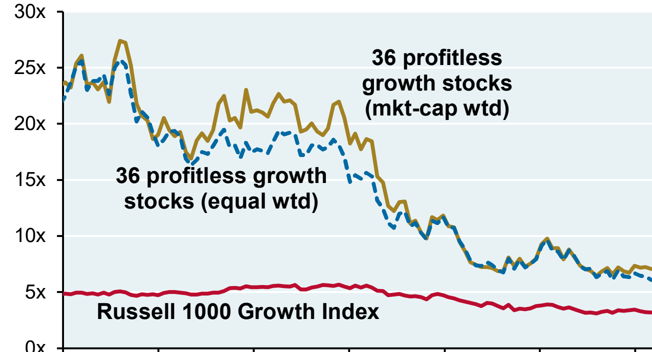
Source: Factset, JPMAM. December 27, 2022.

The survivors: some companies will figure it out
Index of equal weighted large cap tech stock returns (100 = Jan 2000)



Source: Factset, JPMAM. 2022. Profitability measured as positive or negative net income in Q1 2000 and Q4 2004. Stocks with market cap > $400mm.

The price for profitless revenue growth
Price to sales ratio



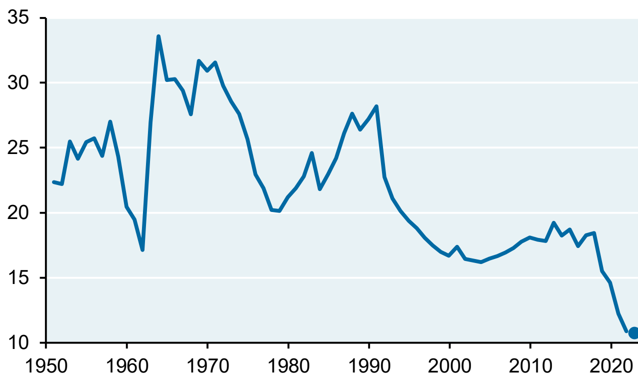
Source: Bloomberg, JPMAM. December 23, 2022.

[2] I followed up in Feb 2021 with a "**Hydraulic Spacking**" Eye on the Market that was published at the peak of the SPAC boom. The piece highlighted how management estimates were shown to investors instead of actual earnings, the unequal distribution of returns by investor class, the disastrous post-merger returns of most SPAC targets and the increasingly poor quality of companies being brought public via SPACs.

China equities. Pandemic restrictions, falling consumer spending and a collapsing property market have hit China hard. This year is expected to be the first time in three decades that most Asian economies will grow faster than China. **I remain puzzled** as to why China never made an arrangement with Moderna or Pfizer for their mRNA vaccines, which have higher efficacy (see p.25) than China's attenuated virus vaccines. China reportedly informed Moderna that they would only arrange a distribution license if Moderna provided China with its vaccine intellectual property, which Moderna refused to do[3]. As of December 2022, one-third of China's 267 million people over age 60 hadn't received their third Sinovac or Sinopharm vaccine booster dose. In any case, China is now reopening[4] and accepting greater health risks in the process. An issue that may have affected the decision to reopen: the collapse in Chinese births and implications for future growth, illustrated below.

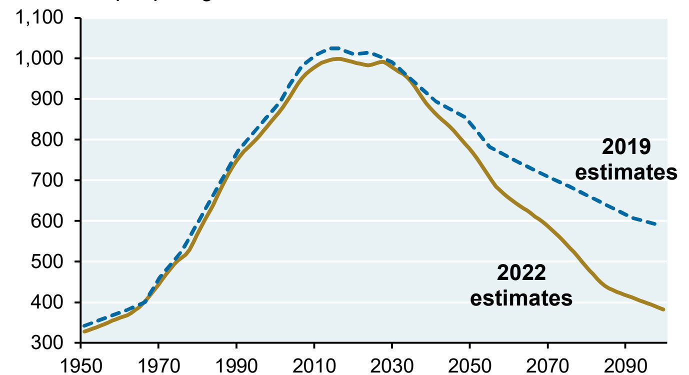
A recovery cannot come soon enough for investors in China. After years of market-friendly policies, MSCI increased China's weight in the Emerging Markets Equity Index to 40% by 2020, which drew in more foreign capital. Shortly thereafter, Xi's "progressive authoritarianism" campaign began, ushering in the largest underperformance of Chinese vs world equities on record (-50%). Despite China's underperformance vs world markets, the "overweight US/Emerging Markets, and underweight Europe/Japan" equity barbell we have been writing about for over a decade is still thriving.

China total births
Millions of births



Source: United Nations. 2022. Dot represents 2022 estimate.

China working age population projections
Millions of people ages 15 to 64

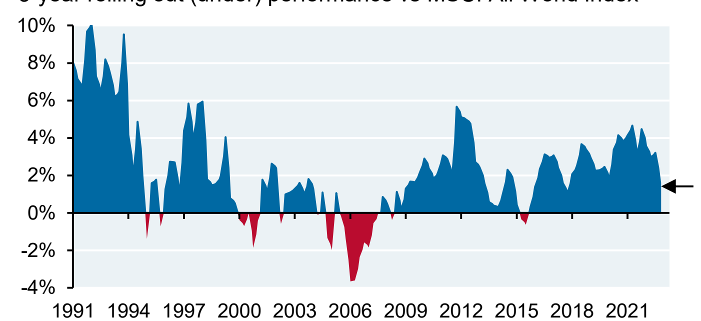


Source: United Nations, BCA Research. 2022.

China's index weight, performance and policy changes
China outperformance, 28 day smooth
China index wt

Source: Bloomberg, JPMAM. December 27, 2022.

Overweight US & EM, underweight Europe & Japan
3-year rolling out (under) performance vs MSCI All World Index



Source: Bloomberg, JPMAM. December 2022. All equity portfolio, rebalanced quarterly. 10% OW to US, 10% UW to Europe, 5% OW to EM, 5% UW to Japan. Assumes no currency hedging.

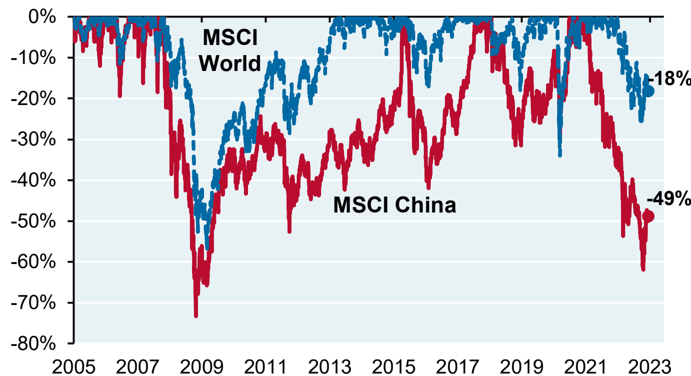
[3] "*Moderna refused China request to reveal vaccine technology*", Reuters, October 1, 2022

[4] On December 26, 2022 **China accelerated its reopening** by removing quarantine for domestic infections, abandoning contact tracing and risk district classification systems, eliminating frequent testing/quarantine for inbound travelers and allowing people that test positive to go to work.

China was close to deep value pricing by November of last year. Equity earnings yields ranged from 11%-12% (close to Global Financial Crisis levels), and China banks still trade at less than 0.5x book value. On property markets, there's an enormous amount of bad news priced in as shown in the fourth chart: only 5%-10% of China's high yield property bond universe is priced above 60% of par value, and a startling 85% of the universe is trading at or was exchanged at less than 20% of par value. I began my career at JP Morgan in 1987 in emerging markets and worked on the Brady bond exchanges; I don't remember any default or restructuring episode as bad as this across an entire sector.

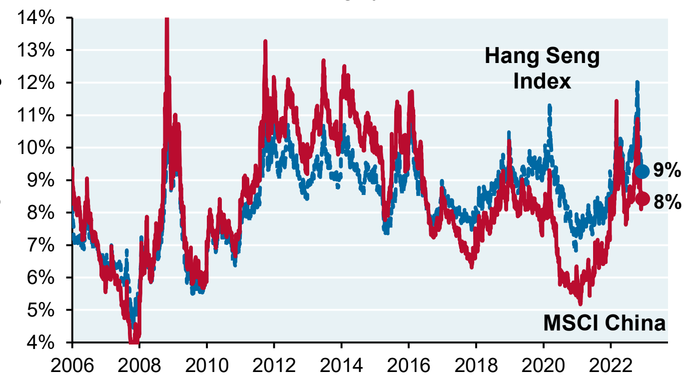
Once markets reach the "how much worse can it get" phase, marginal improvements in policy or macro can lead to a sharp improvement in asset prices. The latest measures for the Chinese property market include a central bank relending program and the lifting of restrictions on equity market and shadow finance fundraising. And while the connection between household conditions and spending is not as clear as in the US, Chinese households are flush with cash: deposits are up 60% vs pre-COVID levels, and mortgage rates are back down to where they last were in 2017. **In other words, the US-EM equity barbell may outperform again next year if China recovers after the intense COVID wave it is now experiencing**.

Equity index drawdowns: China vs World
%, decline from prior peak



Source: Bloomberg, JPMAM. Dec 27, 2022. Dot represents latest drawdown.

China earnings yields
Percent, 12 month forward earnings yield

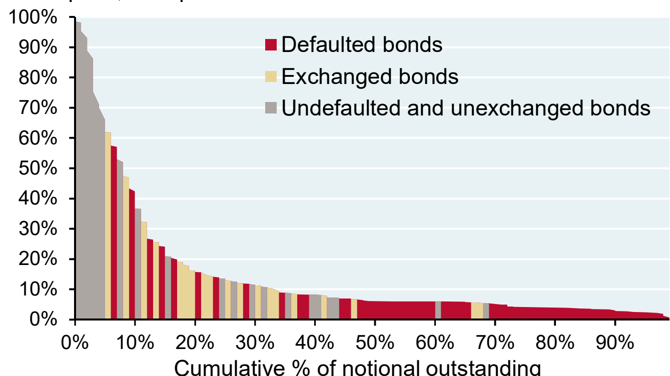


Source: Bloomberg, JPMAM. December 27, 2022.

Chinese bank valuations
Average price to book ratio

Source: Bloomberg, JPMAM. December 27, 2022.

China property high-yield bond price distribution
Bond price, % of par value

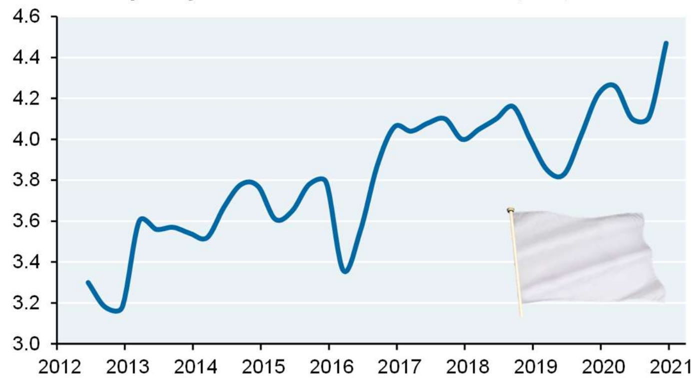


Source: GS. November 10, 2022.

One concern as we head into a possible recession: the minimal repricing of leveraged loans after a decade of declining investor protections and rising leverage. I first wrote about this in July 2019. Areas of deterioration include a laundry list of measures designed to prevent issuers and their counsel[5] from diminishing lender rights and protections (see box). Loan investors have surrendered at a record pace, a sacrifice I would hold the Fed partially accountable as financial repression caused people to lose their investment bearings. Many of the same concerns relate to the private credit market, which at $1.2 trillion is the same size as US high yield.

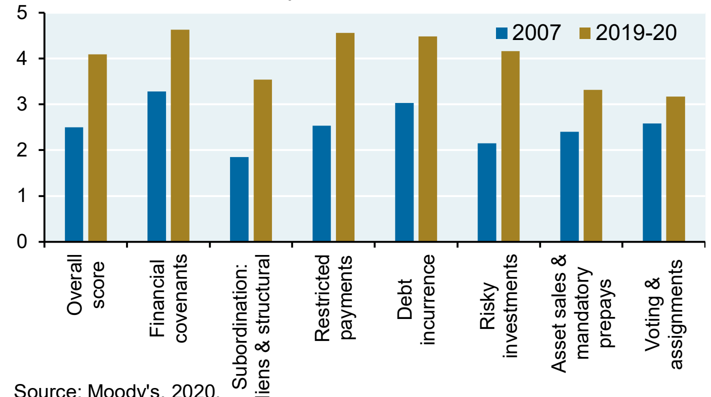
Lender surrender. Loan investors relaxed criteria regarding leverage and interest coverage maintenance tests, most-favored-nation provisions, mandatory prepayments from asset sales, exceptions to negative covenant restrictions, restricted payments clauses, definition and scope of allowable EBITDA adjustments, leakage of assets from the collateral pool, caps on investments in or transfers to unrestricted subsidiaries and affiliates, the ability to add senior pari-passu or priority debt, lien dilution by non-guarantor subsidiaries, etc. EBITDA adjustments refer to the practice of companies adding back non-recurring expenses and assumed merger synergies/cost savings to earnings, thereby enhancing coverage ratios. According to S&P, the use of EBITDA add-backs increased from 10% of all deals to ~30% by 2019. In terms of magnitude, S&P reports that such add-backs range from 10%-15% of unadjusted EBITDA. However, according to Moody's, some deals allow add-backs up to 20%-30% of unadjusted EBITDA, and some deals have no caps at all.

Loan investors waving the white flag: Moody's loan covenant quality score, 5 = weakest covenant quality



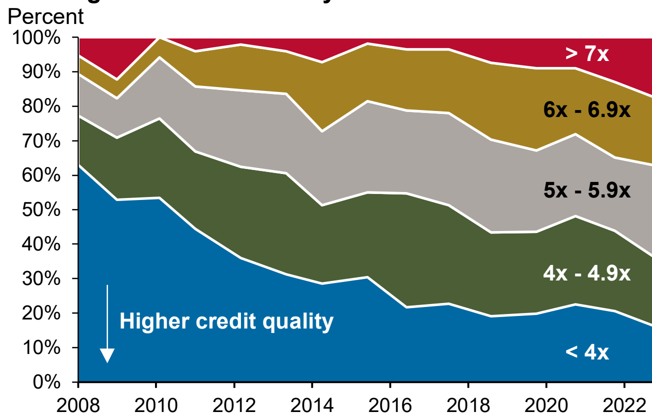
Source: Moody's. 2020.

Loan covenant quality scores: 2007 vs 2019-2020
5 = weakest covenant quality



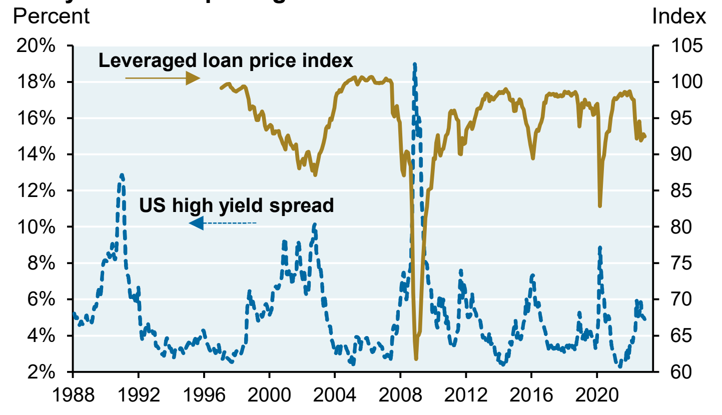
Source: Moody's. 2020.

Leveraged loan issuance by debt-to-EBITDA ratio
Percent



Source: DB Research, IMF. November 17, 2022.

Risky credit not pricing in recession
Percent



Source: Bloomberg, JPMAM. December 27, 2022.

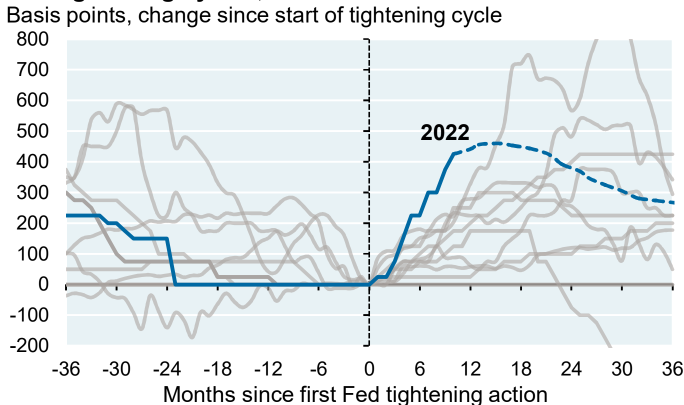
[5] One reason for declining protections: on some transactions, financial sponsors instruct banks arranging their syndicated leveraged loans as to which law firm the *bank* should use as its own counsel, a practice known as "**sponsor-designated counsel**". You get what you pay for.

Topic #2: Tracking the Fed, and where inflation goes from here

I expect inflation pressures to subside in 2023 and allow the Fed to pause at 5% to see where things go from there, and expect the 10 year US Treasury to remain below 4%. Inflation expectations derived from 10 year TIPS markets are back down at 2.25% from their 3% peak, so the Fed should be able to claim victory on that front after the fastest tightening cycle on record. If inflation cools as much as markets expect, it would be quite unusual: as shown in the second chart, the average developed market inflation spike takes longer to recede.

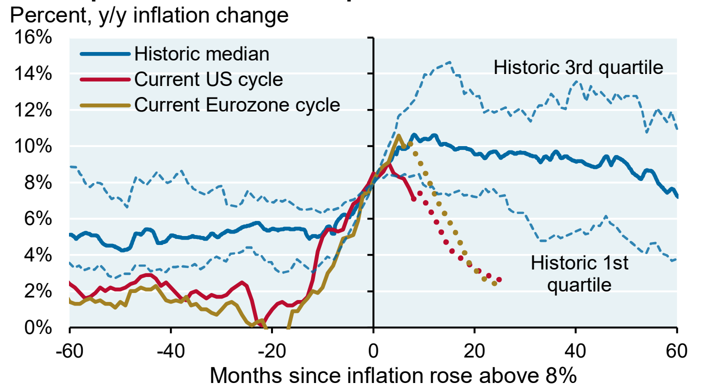
The challenge for the Fed is more related to wages than prices. By some measures, the US has been facing the tightest labor market on record: the highest job shortages in the post-war era, the lowest "job fill" rate, the largest premium for job switchers vs job remainers, etc. Wage growth is beginning to roll over based on measures we look at[6]. So far, the largest layoffs have been in tech and homebuilding; layoffs ex-tech and homebuilding are still at the lowest level in 20 years [according to Challenger data].

Fed tightening cycles, 1958-2022
Basis points, change since start of tightening cycle



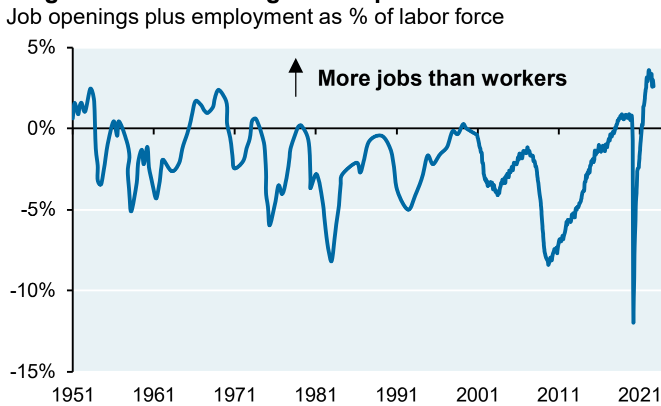
Source: Bloomberg, Factset, Fed, JPMAM. December 2022.

Developed market inflation episodes since 1970
Percent, y/y inflation change



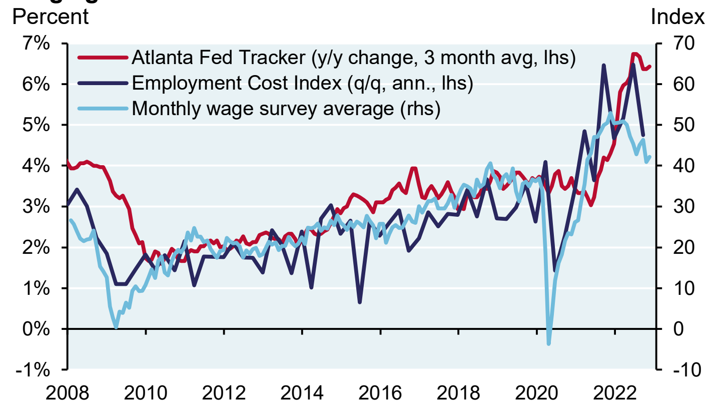
Source: Jim Reid, Deutsche Bank, Bloomberg, JPMAM. November 2022. Dotted lines indicate Bloomberg consensus.

Largest worker shortage in the post-war era
Job openings plus employment as % of labor force



Source: BLS, JPMAM. October 2022.

Wage growth measures
Percent



Source: Bloomberg, BLS, NFIB, regional Federal Reserves. November 2022.

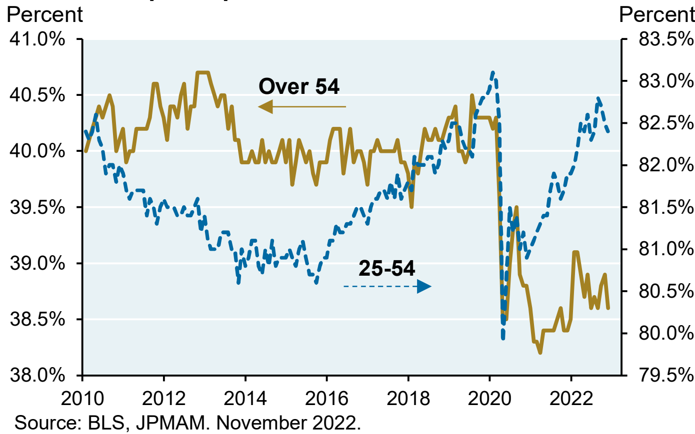
[6] You may be used to seeing charts on Average Hourly Earnings. Since COVID, we have been monitoring other wage measures since AHE can be heavily impacted and distorted by changes in the composition of the labor force (i.e., when a disproportionate number of low wage workers are furloughed).

As we've discussed before, the labor shortage is a consequence of COVID, above-average rates of retirement and a slowdown in immigration. Labor force participation rates are actually back to pre-COVID levels for people under the age of 55. It's mostly the 60+ cohort that hasn't come back to work, and there are few signs that they are planning to return. On immigration: while there was an increase in visa issuance in late 2022, the US economy is still affected by the trough in immigration that occurred during COVID.

The goods inflation picture has improved dramatically: supply chain pressures in warehousing and transport have cooled, and used car prices have further to fall. After surging to 15% y/y increases during COVID, US durable goods inflation is now roughly 0% with the potential for deflation in early 2023. US new car inventories reached 1.6 mm units in December 2022 according to Cox Automotive, up ~80% from 0.9 mm units in September 2021 but still well below the 2019 average of ~3.7 mm.

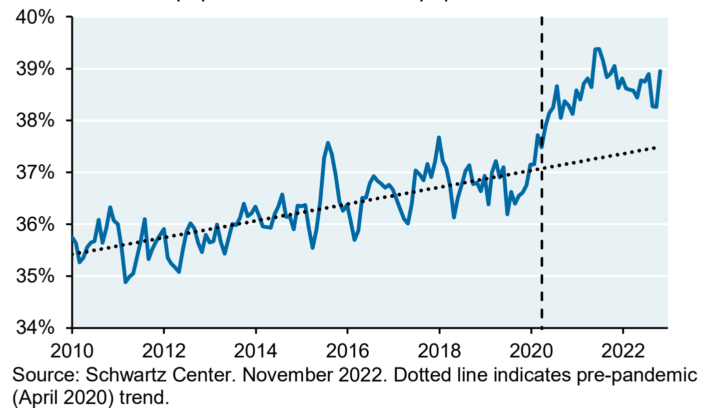
We also expect the household demand impact on inflation to slow given further depletion of US excess savings, which peaked at ~$2.1 trillion in the middle of 2021. These savings have been drawn down to around $1.1 trillion, and should be fully depleted by mid-year[7].

Labor force participation rate
Percent



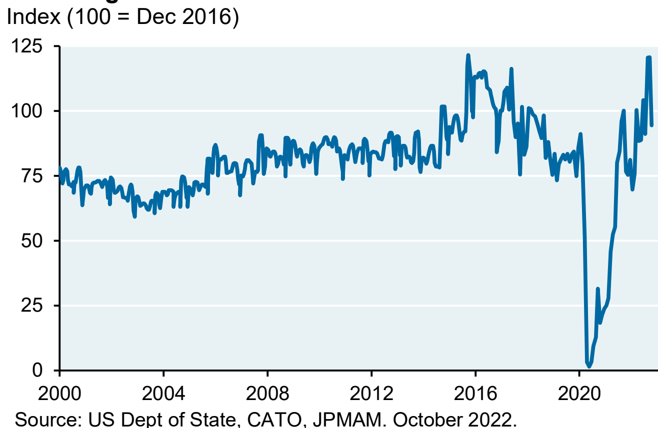
Source: BLS, JPMAM. November 2022.

Retirement rate for workers 55-74 years old
%, 55-74 retired population as a share of population



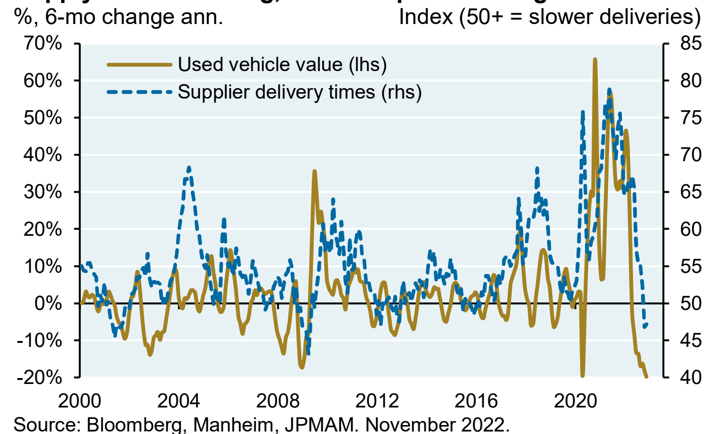
Source: Schwartz Center. November 2022. Dotted line indicates pre-pandemic (April 2020) trend.

US Immigrant Visa issuance
Index (100 = Dec 2016)



Source: US Dept of State, CATO, JPMAM. October 2022.

Supply chains cooling, used car prices falling
%, 6-mo change ann. Index (50+ = slower deliveries)



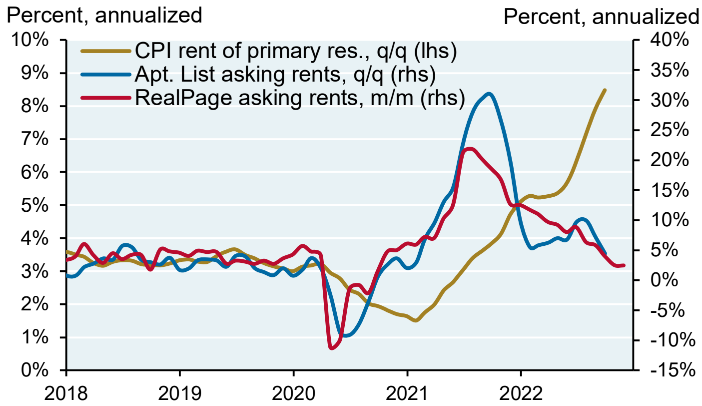
Source: Bloomberg, Manheim, JPMAM. November 2022.

[7] See "*Pandemic savings cushion looks less cushy*", Dan Silver, JP Morgan North America Economic Research, October 7, 2022 and "*Excess savings during the COVID pandemic*", Federal Reserve Notes, October 21, 2022

The elephant in the room on inflation in the short term is housing, which represents the largest component of core inflation. Housing costs in the CPI data are lagged: home price and rental increases of the last couple of years are showing up now in the CPI data. However, current measures such as apartment asking rents are slowing significantly. This makes sense given the sharp rise in mortgage rates and the largest percentage increase in multifamily units coming online since the 1970's. In other words, the collapse in housing (whose speed now rivals the housing decline during the double dip recession of the 1980's) should dampen inflation substantially in 2023.

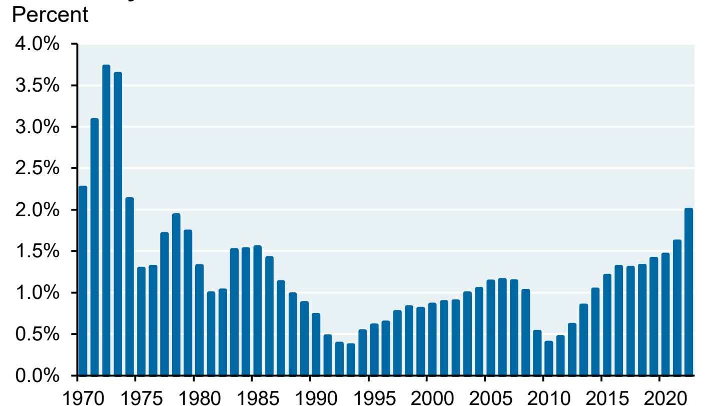
Bottom line: inflation should cool enough for the Fed to pause at 5%. Remember, it's not just the policy rate that's changing; the Fed's balance sheet is shrinking as well. The SF Fed computes a "proxy rate" that takes into account the impact of QE unwinding and related market impacts. **This proxy rate is now higher than the Funds rate by the highest margin on record** (fifth chart), another reason why we believe that inflation will slow meaningfully in 2023.

US new rents
Percent, annualized



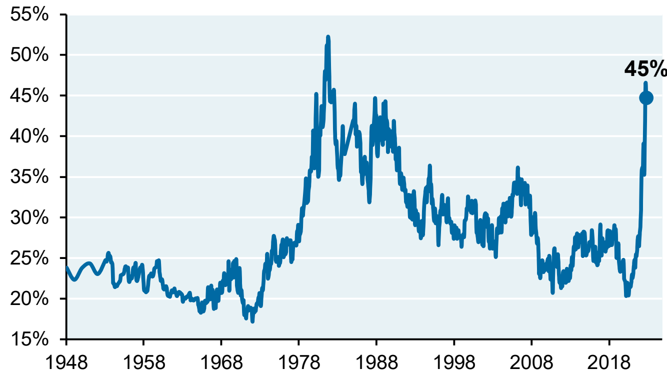
Source: Apartment List, RealPage, Bloomberg, JPMAM. November 2022.

Multifamily units under construction relative to rental stock
Percent



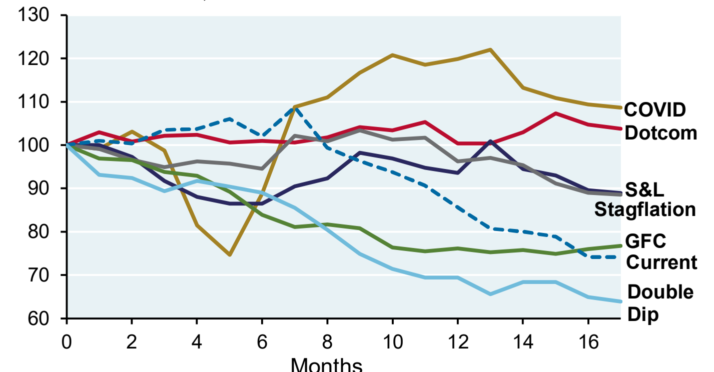
Source: Census Bureau, JPMAM. Q3 2022.

Annual mortgage cost as a percentage of household income, Percent



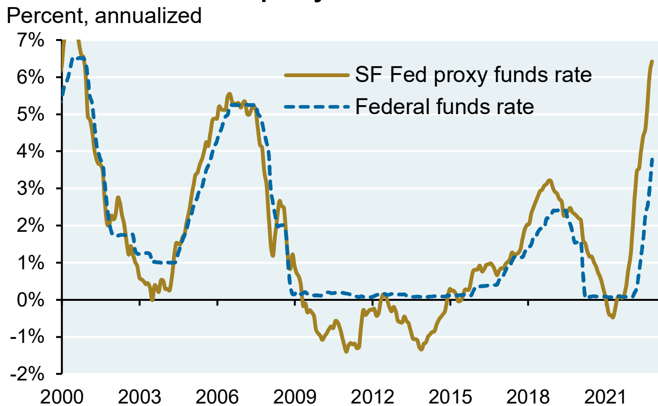
Source: Census, Shiller, Freddie Mac, Bloomberg, JPMAM. November 2022.

Housing activity decline mirrors GFC and Double Dip recession so far, Existing home sales, Index = 100



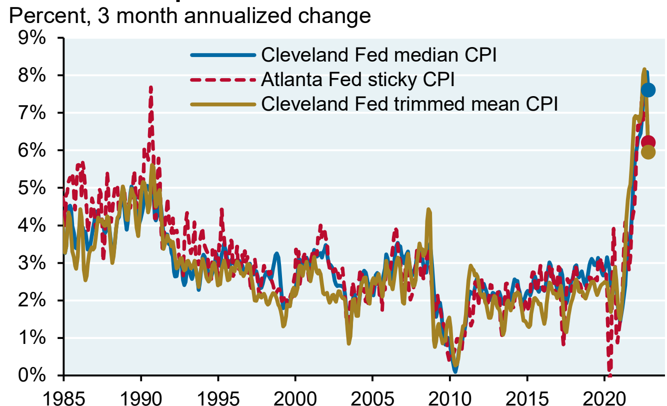
Source: National Association of Realtors, JPMAM. 2022.

Federal funds rate vs proxy funds rate
Percent, annualized



Source: SF Fed, FRED. November 2022.

US consumer price inflation measures
Percent, 3 month annualized change



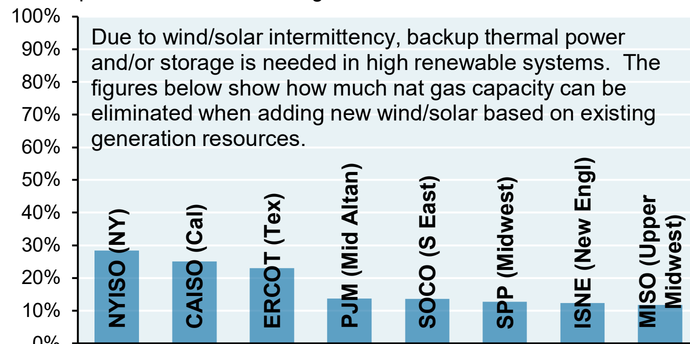
Source: Bloomberg, JPMAM. November 2022.

The longer-term elephant in the room: the impact of the energy transition on inflation. We'll go through the details in our 2023 energy paper in May, but for now consider this:

- As wind and solar penetration rises, a lot of capital will still need to be spent building and maintaining backup thermal power plants and utility-scale energy storage. The first chart shows that 1 MW of additional wind and solar capacity results in the decommissioning of just 0.1 to 0.3 MW of natural gas
- A lot of capital will also need to be spent on the transmission grid since wind and solar capacity is generally located further away from demand centers (second chart)
- It will be expensive to replicate the many renewable supply chains that China now dominates (third chart)
- Electric vehicles are more semiconductor-intensive than internal combustion engine cars, and the reshoring of semiconductor supply chains may increase chip component prices by 50% or more (fourth chart)

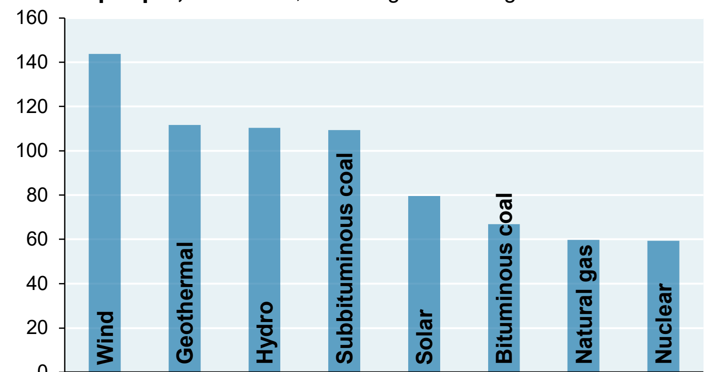
Bottom line: the energy[8], CHIPs and infrastructure bills are all part of a new US industrial policy, which on the margin will increase inflation and put upward pressure on real and nominal interest rates in the long run.

How much natural gas capacity can be reduced per MW of new wind and solar power?
%, computed for 2021, assuming new wind and solar = 10% of demand



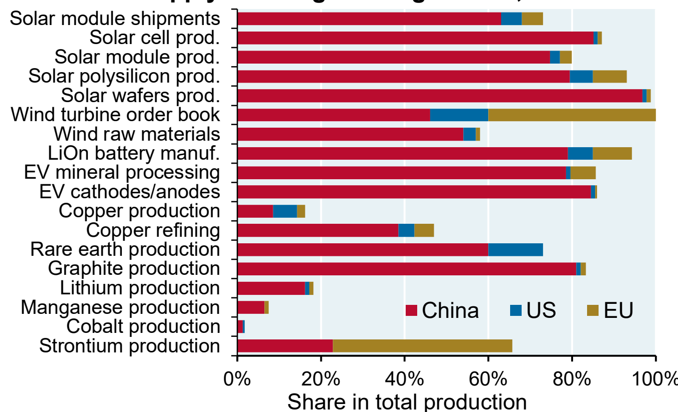
Source: EIA data, JPMAM computations. 2022.

Distance required for power generation facilities to reach 2 million people, Kilometers, MW-weighted average



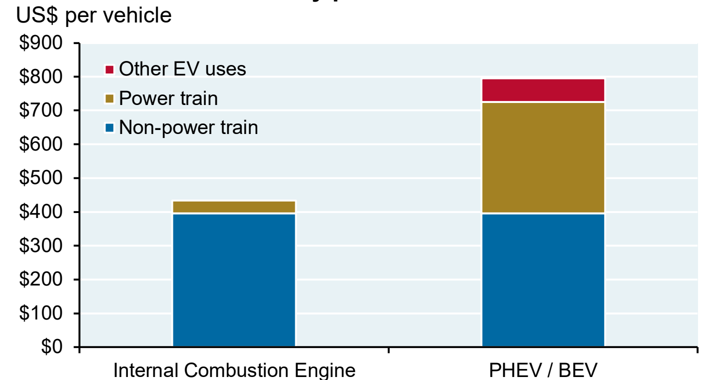
Source: EIA, Census Bureau, JPMAM computations. 2022.

Renewable supply chains go through China, for now



Source: IEA, BNEF, S&P, USGS, EC, Benchmark Mineral Intelligence, 2021.

Semiconductor content by power train
US$ per vehicle



Source: SIA, Infineon. 2021. Note: power train includes voltage regulators and integrated circuits; "other" includes sensors, motor control units, and memory.

[8] On that **nuclear fusion** experiment which generated more energy than it consumed: technically speaking it did, with 2 MJ of energy in, and 3 MJ of energy out. But it took 300 MJ of energy to power the lasers used to produce the 2 MJ of energy inputs. Another "fine print" caveat that clarifies how far away we are from commercialized nuclear fusion. The experiment also required equipment housed in a building that's the size of three football fields, and generated enough energy to boil a tea kettle. Energy Secretary Granholm stated a goal of commercial fusion reactors in the next decade; yet another unrealistic energy target from the Biden administration.

As for Europe, energy inflation dynamics are a bit different. Europe is paying the price for its pre-war energy reliance on Russia, and for a pricing mechanism in which wind, solar, hydro and nuclear power producers are paid the same price for electricity as power producers relying on natural gas. The problem: fossil fuel power producers set marginal prices most of the time in Europe (see table), and when natural gas input prices soar, that marginal price for electricity gets paid to *all* power producers. Europe is trying to sort this out with household subsidies and caps on prices paid to non-gas power producers that could offset around 60% of the price shock. Electricity price caps per MWh on solar/wind/hydro/etc: UK €245, Germany €150, France €100, Italy & Spain €67, compared to uncapped December 2022 prices that have ranged from €100 - €350 per MWh.

More on inflation: Germany just completed its first of five LNG import regasification facilities, and the combined cost estimate has tripled from the original budget to around $10 billion. On top of that, France's nuclear power industry has been operating at ~50% of capacity. If this continues through the winter, additional gas and electricity price strains may appear in France and surrounding countries reliant on its nuclear power exports.

As for the price spikes in **California** shown in the bottom charts, what do you expect from a state that shut down PG&E natural gas storage, shut down nuclear power, is experiencing urban outmigration to rural and suburban areas with greater per capita energy demand, is experiencing pipeline maintenance delays and will be facing greater competition for natural gas in the future due to Canadian and Mexican exports?

Euro Area energy inflation
Percent, y/y change

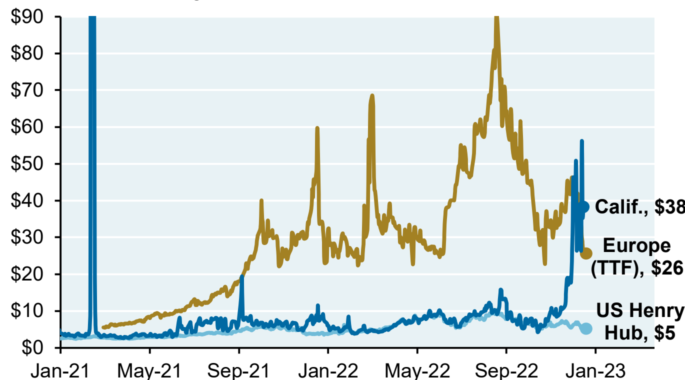
Source: Bloomberg, JPMAM. November 2022.

How marginal electricity prices are set in Europe
% of all hours

Country	Fossil fuel	Non-fossil	Imports
Germany	91%	7%	2%
Denmark	25%	13%	62%
Spain	89%	6%	5%
France	7%	93%	0%
Ireland	61%	1%	38%
Italy	86%	11%	3%
Greece	77%	0%	23%
Portugal	87%	13%	0%
UK	84%	1%	15%

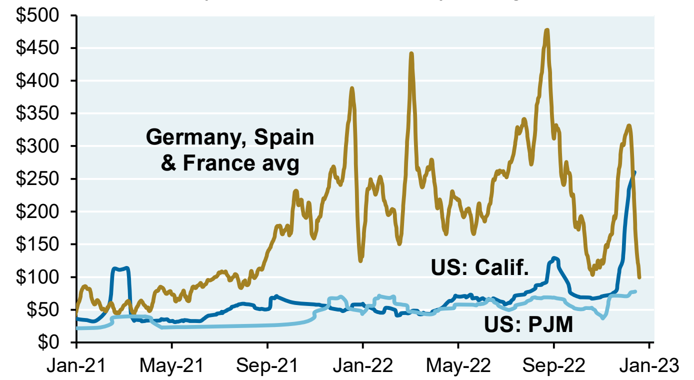
Source: *"Energy Transitions in Europe - Role of Natural Gas in Electricity Prices"*, Zakeri et al. July 23, 2022.

The US-Europe natural gas gap
Wholesale natural gas price, US$ per MMBTU



Source: Bloomberg, JPMAM. Dec 27, 2022. Dots represent latest daily price.

The US-Europe electricity gap
Wholesale electricity price, US$/MWh, 7 day average

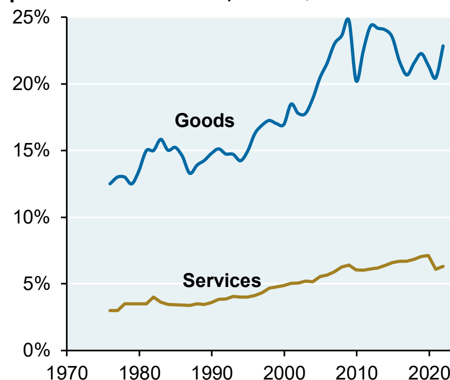


Source: Bloomberg, JPMAM. Dec 27, 2022.

Topic #3: Tracking the gradual decline of globalization

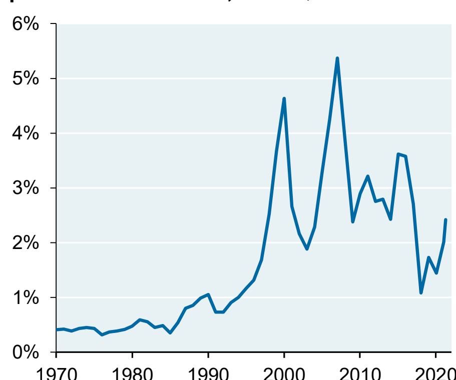
Globalization isn't collapsing, although it has receded from its peak. Globalization includes trade, foreign direct investment and cross-border portfolio flows. Trade and FDI rebounded after COVID, and within trade, services have room to recover with a resumption of global travel. Furthermore, part of the traded goods decline reflects declining commodity prices from 2011 to 2020 rather than declining trade volumes; only 40% of the decline in traded goods values since peak levels might be the result of reshoring international supply chains[9].

Global exports of goods and services as a percent of world GDP, Percent, FY 2021



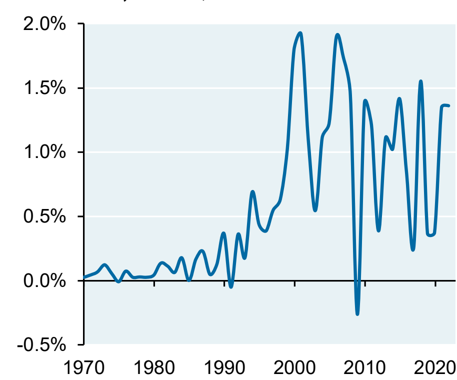
Source: World Bank. 2021.

Global foreign direct investment flows as a percent of world GDP, Percent, Q1 2022



Source: IMF, World Bank, OECD. Q1 2022.

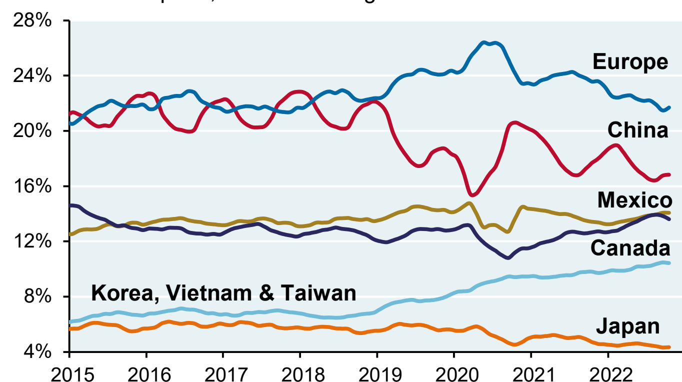
Global portfolio equity flows as a percent of world GDP, Percent, FY 2021



Source: IMF, World Bank. 2021.

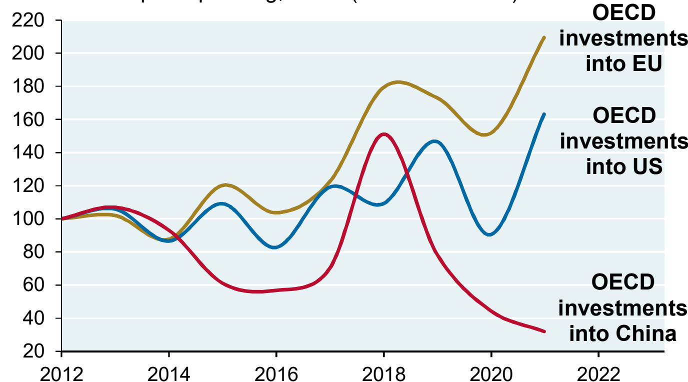
What is collapsing: the US and European conceit of "Change through Trade" or "Constructive Engagement". On page 19, we show Europe's financial and energy embargo on Russia now that its "Ostpolitik" approach has failed. Below, we show China's declining share of US imports, the collapse in new OECD direct investments into China, the increase in CFIUS investigations (Congressional oversight of foreign direct investment in the US), and the decline in portfolio flows into China. In October, we wrote in detail about US restrictions placed on artificial intelligence chip, equipment and component exports to certain Chinese entities. In late December, the US increased the number of Chinese companies on this restricted list to 500, including China's flagship flash memory producer. Some of these entities are also subject to the US Foreign Direct Product Rule, which means that the US will try and apply its export restrictions to non-US companies purchasing US semiconductors or IP. In AmCham's 2022 China survey, US companies now cite rising US-China tensions as their biggest problem. Next up: restrictions on US FDI *into* China[10], to mirror restrictions on inbound FDI *from* China.

Trade war impact on US import counterparties
Share of US imports, 6 month average



Source: US Census Bureau. October 2022.

OECD retreating from China
Greenfield capital spending, Index (100 = Jan 2012)



Source: fDi Markets. 2021.

[9] Richard Baldwin, University of Oxford, "*Peak Globalization Myths, Part 2*", September 2022

[10] In November 2022, US Secretary of Commerce Raimondo mentioned the need to mitigate risks to US national security from **outbound US investment in critical technology**. As an example, Raimondo cited the prohibition on companies receiving CHIPs funding from investing in advanced technology facilities in China for ten years.

From Jake Sullivan, US National Security Advisor

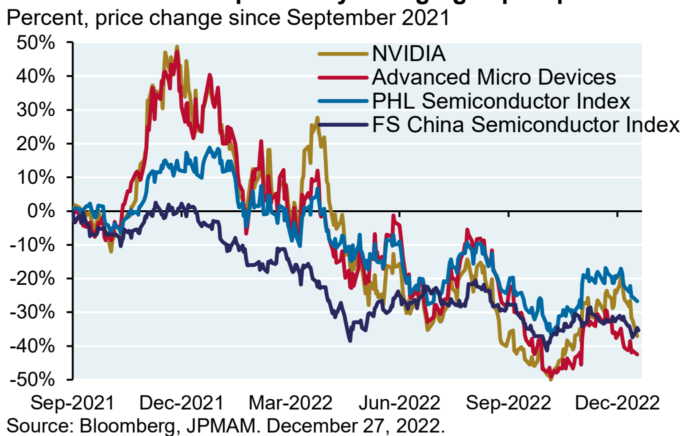
"The basic mistake of engagement was to assume that it could bring about fundamental changes to China's political system, economy, and foreign policy. Washington risks making a similar mistake today, by assuming that competition can succeed in transforming China where engagement failed." [Foreign Affairs Magazine, Oct 2019]

"China is the only competitor with both the intent to reshape the international order and the growing capacity to do it…This is a decisive decade for shaping the terms of competition, especially with the PRC". On foundational technology, "the fence has to be high, because our strategic competitors should not be able to exploit American and allied technologies to undermine American and allied security." [White House National Security Briefing, Oct 2022]

Geopolitics and changing domestic policies are not abstract concepts for investors. Note in the first chart how semiconductor stocks have been negatively impacted by US export control policies. The big picture: supply chains will no longer be optimized solely by cost. A 2022 EBRD Transition Report survey found that 75% of all firms have taken steps to make supply chains more resilient, either by increasing inventories from just-in-time to just-in-case, and by diversifying suppliers. On the margin, this increases costs and reduces profits.

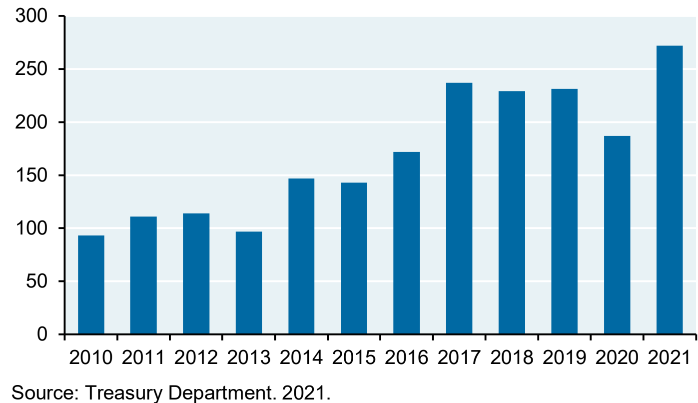
One interesting aspect of the US-China relationship: it's not as one-sided as it seems. Over the last decade, US companies made large investments in Chinese subsidiaries. As of 2020, the US trade deficit with China disappeared once sales of in-country subsidiaries were included. In other words, US companies were doing almost the same amount of business in China as Chinese companies were doing in the US, but through local subsidiary sales rather than exports. In addition to exports of rare earth elements, China has leverage regarding its domestic policies that affect large and profitable US multinational firms operating there.

Global investors impacted by changing export policies
Percent, price change since September 2021



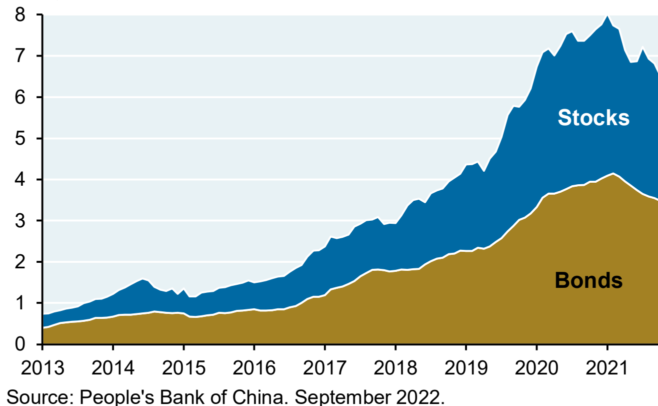
Source: Bloomberg, JPMAM. December 27, 2022.

Deal notices received by the Committee on Foreign Investment in the US, Number of notices



Source: Treasury Department. 2021.

Foreign portfolio investment in Chinese stocks and bonds
RMB, trillions



Source: People's Bank of China. September 2022.

The US does a lot of business in China, but through its in-country subsidiaries rather than via exports, US$, billions

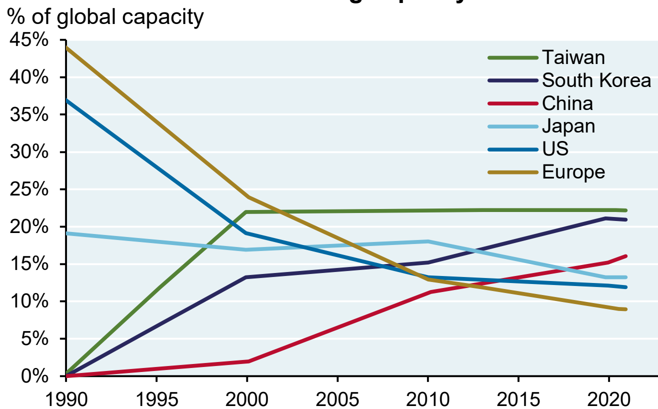
Source: Deutsche Bank, Census, JPMAM. 2021.

Semiconductor stickiness: onshoring will take a very long time. Try as they might, both the US and China face separate challenges on the road to semiconductor self-sufficiency. The next two pages explain why, and are a proxy for the slow pace of industrial reshoring even when incentives and subsidies are provided. Bottom line: it's not that easy to unwind 30 years of specialization in complex industrial manufacturing.

Semiconductor stickiness, Part 1: the US and the CHIPs bill

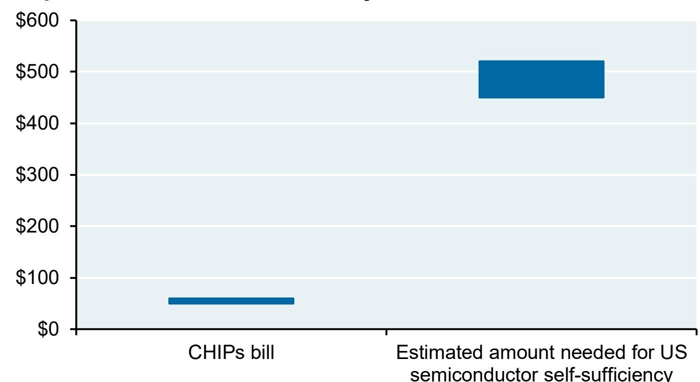
- When fully deployed, the $50-$60 billion in the US CHIPs bill would only bring the US to ~15% semiconductor self-sufficiency as per an analysis from BCG
- The Arizona-based plant that TSMC expects to open in 2024 to produce 4 nanometer chips may already be 2-4 years behind leading-edge technology that TSMC deploys in Taiwan. The first iPhone to substantially rely on US-made chips could be the iPhone 18[11]
- **TSMC has cited high operating costs, lack of trained personnel and construction snags in its efforts to bring the Arizona plant online**[12]. TSMC mentioned that the same plant would be less capital intensive to build in Taiwan, and that the all-in cost of its US chip production could be **50% higher** than in Taiwan. TSMC also had to ship clean room and chip-making equipment from Taiwan since American suppliers cost more or aren't available. On personnel, TSMC sends US engineers to Taiwan for 18 months of required retraining
- TSMC's US-based foundries are likely to require real-time supply and operational connections to Taiwan; if so, they might not really represent a milestone in US semiconductor independence. Similarly, these US-based foundries might not be designed to produce the multitude of chips that the US needs, and might focus more narrowly on production for Apple, Nvidia and AMD
- From a geopolitical perspective, one could speculate that TSMC agreed to produce chips at lower margins and at lower efficiencies in the US in order to boost US support for Taiwan itself

Semiconductor manufacturing capacity
% of global capacity



Source: SIA, Bloomberg. February 2021.

Semiconductor bill spending and estimated amounts required for US self-sufficiency, US$, billions



Source: BCG, JPMAM. April 2021.

[11] "*TSMC in Arizona, Arizona Challenges, Realities and Motivations*", Stratechery Research, Dec 7, 2022

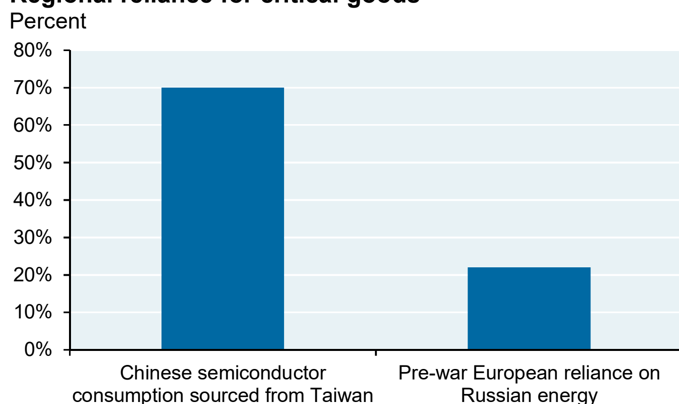
[12] "*TSMC's Arizona Chip Plant, Awaiting Biden Visit, Faces Birthing Pains*", WSJ, Dec 5, 2022

Semiconductor stickiness, Part 2: China, Taiwan and Faberge eggs

Only 10% of Chinese semiconductor demand is met via Chinese domestic production. The other 90% is met through imports and foreign firms producing chips in China. As of 2021, Taiwan accounted for a 70% share of Chinese chip consumption: TSMC produces 10% of China's chips in its factories in Nanjing and Shanghai, and exports the remaining 60% from Taiwan. **There may be no example anywhere in the world of one country so reliant on another for a specific high-value import;** China's 70% reliance on Taiwan dwarfs Europe's pre-war reliance on Russian energy. Most Chinese foundries are working on 14-28 nanometer chips while the global leaders like TSMC are already producing at 5-7 nanometers.

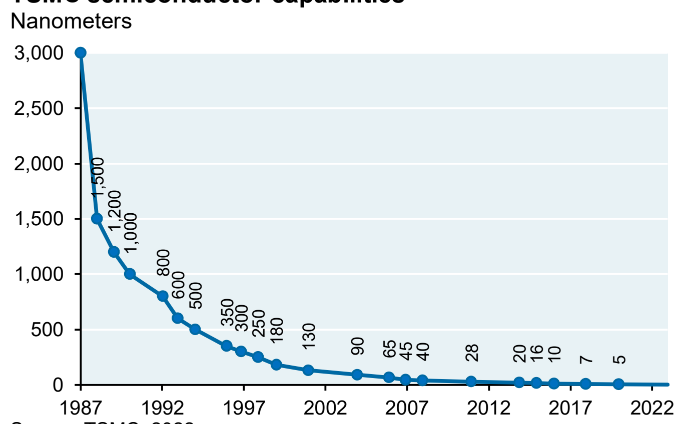
Over the last decade, China's National Integrated Circuit Investment Fund supported national champions through direct stakes and commingled investment funds. There are successes, such as SMIC (7 nm chips), YMTC (competitor to Samsung), San'an Optoelectronics (device manufacturer), AMEC (fabrication equipment) and JCET (assembly, testing & packaging). However, others filed for bankruptcy (Tsinghua, Wuhan Hongxin, Quanxin Circuits), leading to a series of investigations and arrests. As things stand now, China has fallen short of its domestic semiconductor production goals.

Regional reliance for critical goods
Percent



Source: Stimson Center, BP Statistical Review of World Energy. 2022.

TSMC semiconductor capabilities
Nanometers



Source: TSMC. 2022.

Bottom line for the US and China: semiconductors are among the most complex industrial products on earth[13]

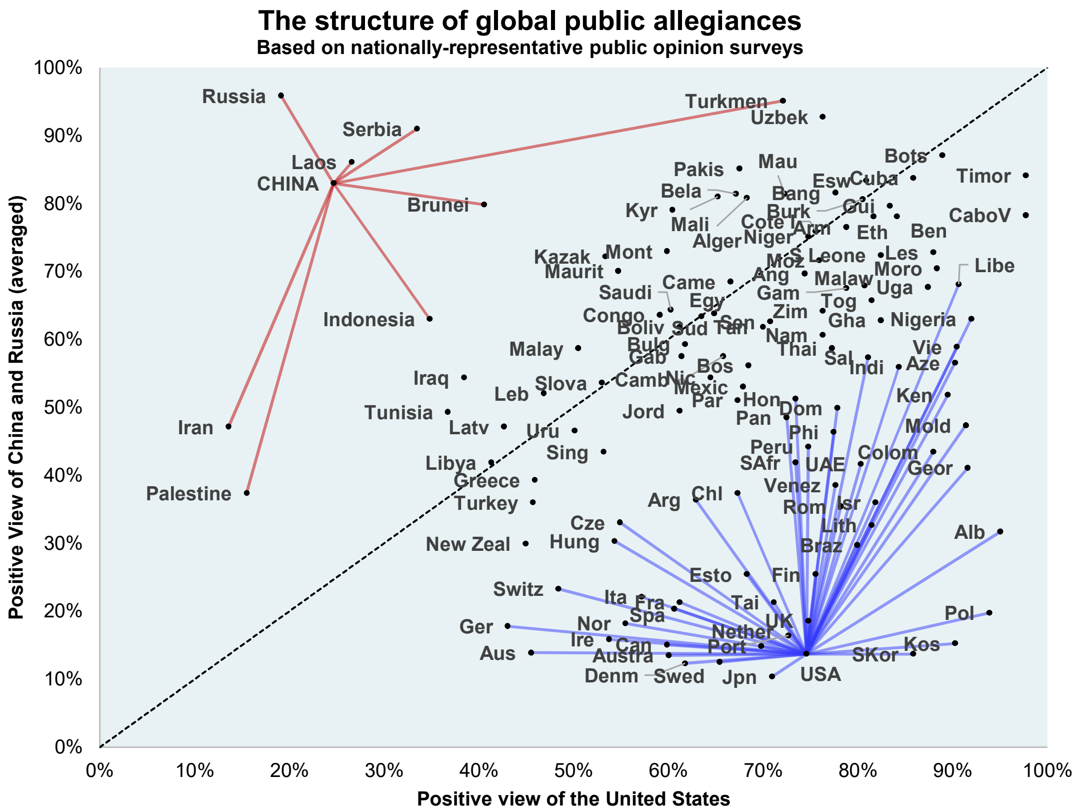
The most advanced and profitable chips of 10, 7, 5, and 3 nanometers are difficult and costly to fabricate and can only be made by machines designed and built by ASML (Netherlands) using extreme ultraviolet photo-lithography. Because of their complexity, ASML only produces 45-55 such machines per year. Advanced chip foundries require clean rooms that are 10,000x cleaner than a hospital surgical room. The chip etching process, parts of which are done in a pure nitrogen environment, can take weeks operating 24 hours a day and involve 700 separate steps, many of them repeated. Completing all necessary steps in the value chain may involve multiple air flights back and forth over thousands of miles to sites with specialized capabilities. These foundries require exotic chemicals, gasses, rare metals, materials and components from thousands of companies and dozens of countries. **In other words, advanced semiconductors are the Faberge eggs of industrial complexity.**

[13] "*Semiconductors and Taiwan's Silicon Shield*", Dr. Richard Cronin, Stimson Center, August 2022

US and China spheres of influence and the Western financial/energy embargo on Russia

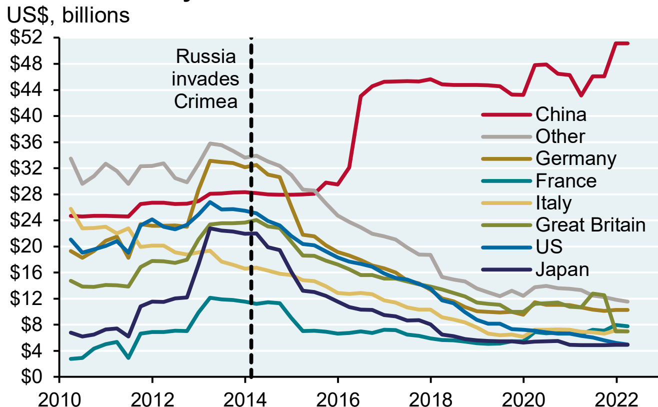
UK researchers aggregated public opinion surveys across 137 countries regarding views of China/Russia and the US, and used this data to illustrate spheres of influence. The lines connect China and the US with the countries whose populations are much more aligned with it than the other. While some countries straddle the middle, they are migrating away from the diameter: the researchers found an increasingly inverse relationship between positive perceptions of the US and of China/Russia.

This chart might explain the speed with which Chinese banks replaced falling bank lending from the West after Russia's invasion of Crimea in 2014, and the more recent rise in Chinese purchases of Russian energy (see bottom two charts). These are components of the "no-limits" partnership announced by Russia and China just before the invasion of Ukraine.



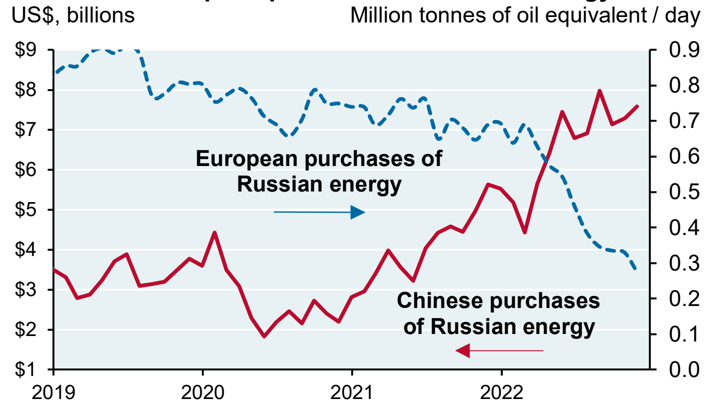
Source: From "*A World Divided: Russia, China and the West.*" Cambridge, United Kingdom: Centre for the Future of Democracy, October 2022, Roberto Foa et al. Lines plotted for all countries with more than a 20% relative public preference.

Cross-border syndicated loans to Russia
US$, billions



Source: BIS. Q1 2022.

Chinese vs European purchases of Russian energy
US$, billions
Million tonnes of oil equivalent / day

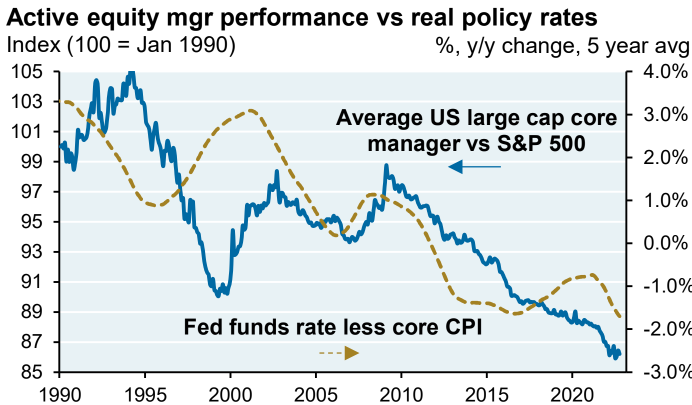


Source: CREA, EIA, GACC, Bloomberg, JPMAM. November 2022.

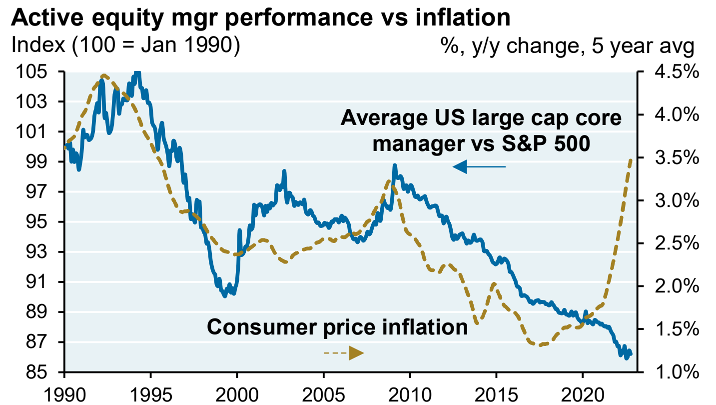
Topic #4: Tracking the performance of active managers

Financial repression by Central Banks began after the 2009 recession and led to collapsing risk premia and falling relative valuation spreads in equities and risky credit markets. This was particularly true in Europe where the ECB bought bonds on the edge of junk (split-rated), which narrowed credit spreads between good companies and bad, and where liquidity in all forms kept insolvent companies alive. **By 2018, the BIS had already found that "zombie" companies in the developed world had risen to 12% of market cap from just 1% in 1990**. This number likely rose further by the beginning of 2021.

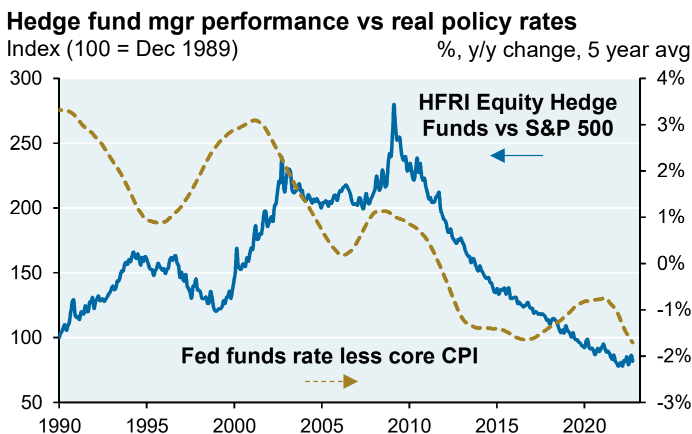
It's therefore no surprise that the average equity manager and hedge fund manager struggled to outperform during this decade of financial repression. The charts below illustrate this trend: the blue lines in each chart show the performance of large cap core equity managers and hedge fund managers compared to an S&P 500 benchmark. When the blue lines are declining, active managers are underperforming. On the left, we show performance vs the real Fed Funds rate, and on the right vs inflation. If we are in fact heading back to a world of positive real interest rates, value-oriented portfolio managers may be facing more positive stock-picking and bond-picking conditions than they have seen in some time.



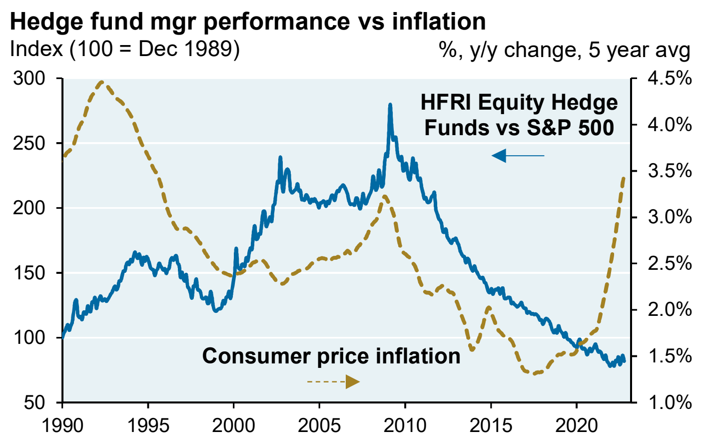
Source: Bloomberg, Lipper, JPMAM. October 2022. Note: US equity large cap core is an equal weighted average.



Source: Bloomberg, Lipper, JPMAM. October 2022. Note: US equity large cap core is an equal weighted average.



Source: Bloomberg, JPMAM. October 2022.

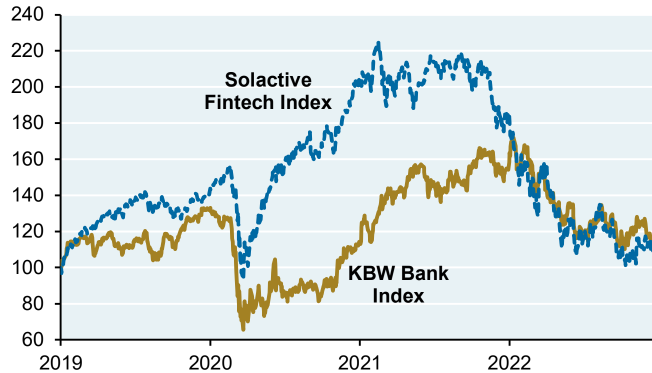


Source: Bloomberg, JPMAM. October 2022.

Topic #5: Tracking the regulatory wave coming to Fintech/crypto, and JP Morgan's crypto footprint

There's a regulatory wave coming to Fintech, which has given back all COVID-era gains vs traditional banks. In November 2022, the US Treasury released a 128-page report calling for greater oversight and enforcement of issues related to Fintech regulatory arbitrage, data privacy, risk controls, pricing transparency, mix of commerce & banking, fraud and predatory pricing. In addition, the OCC will establish a Fintech oversight unit early in 2023.

Fintech vs traditional bank performance
Index (100 = Jan 2019)



Source: Bloomberg, JPMAM. December 27, 2022.

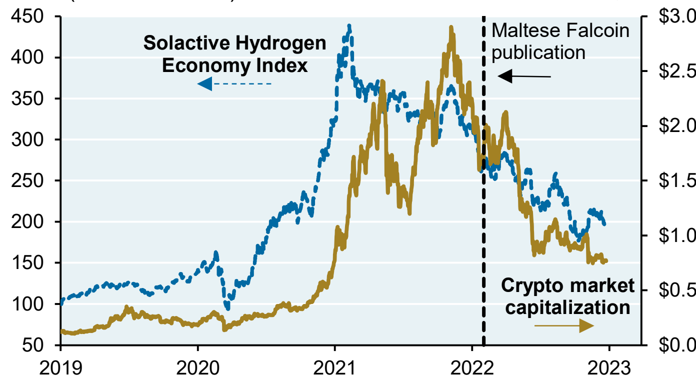
A renewed focus on Fintech risks and oversight
"*Assessing the Impact of New Entrant Non-Bank Firms on Competition in Consumer Finance Markets*", US Department of the Treasury Report to the White House Competition Council, November 2022:

"While new entrant non-bank firms appear to be contributing to competitive pressures, they are generally not subject to the same oversight for safety and soundness or consumer protection as insured depository institutions, which raises various public policy considerations" [Executive Summary]

As for crypto, our "Maltese Falcoin" paper from February 2022 identified the risks involved: parallels between crypto and hydrogen, collateral and hypothecation risks to investors holding crypto on unregulated exchanges, the mudding of crypto and blockchain value propositions which usually have nothing to do with each other, the unsustainability of DeFi smart contracts which are almost entirely contingent on crypto prices, etc.

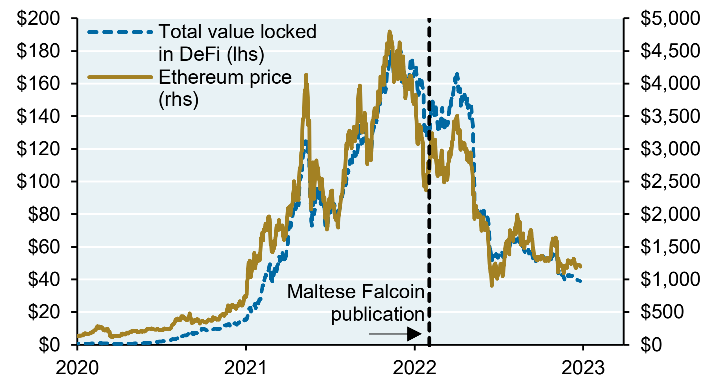
The crypto unraveling we expected is leading to a regulatory wave as well. The SEC press release on the FTX CEO indictment included an addition from the SEC Chair: a "clarion call to all crypto platforms" to come into compliance with US laws, to prepare for greater disclosure and regulatory examinations, and a warning that the SEC's Enforcement Division is ready to take action. The SEC Enforcement Director reiterated that the "runway is getting shorter" for exchanges to comply with US securities laws. The crypto winter is about to get colder still.

Hydrogen Economy Index vs cryptocurrency market cap
Index (100 = Jan 2019) US$, trillions



Source: Bloomberg, TradingView, JPMAM. December 27, 2022.

Total value locked in DeFi vs Ethereum prices
US$, billions US$



Source: DeFiLlama, Bloomberg, JPMAM. December 27, 2022.

What about JP Morgan? A client asked me about JP Morgan's involvement in crypto, alleging that despite our CEO's public comments (Jamie described crypto as pet rocks in an interview last month), that JP Morgan "has made major crypto investments, which is contradictory". I sent him the response on the following page.

On blockchain vs crypto. There are two nodes of the digital world when it comes to finance: (a) blockchain technology designed to try and improve efficiency and reduce execution costs in the trading, processing and custody of existing securities, and (b) "crypto", which refers to owning, trading, investing and lending in various speculative "tokens". JP Morgan has invested a little in the former, and almost none in the latter.

Blockchain

It can take days to settle certain security, currency and loan transactions due to paperwork and counterparty verification; some lending functions can only be settled at close of day. By digitizing security and counterparty info on a digital ledger, JP Morgan can now settle certain transactions intraday. This can lead to new processing capabilities, lower execution costs and less counterparty risk. In these narrow use cases, the blockchain simply results in an efficiency gain for the financial institutions using it. A critical distinction between the blockchain as used by JP Morgan and crypto: the former involves a closed, permissioned network with no speculation, verification rewards or risk related to token values (a $ is always a $, whether digitized or not). **And let's be clear: there are many applications where using a blockchain doesn't save any time or money at all** [14,15,16].

Crypto trading, investing, lending and speculation

The premise of crypto tokens is either as a store of value (digital gold), a means of exchange (digital alternative to the US$), or as an "investment" whose token value is based upon how many people use that public blockchain to transact or invest. A large bank/broker could get involved in the crypto world in four ways I can think of:

1. by investing in tokens for its own account
2. by building a large crypto sales, trading and research function which caters to institutions and individuals looking to invest either on a short-term or long-term basis
3. by taking crypto-denominated deposits and then lending them out to earn crypto-denominated income, part of which it would pay in crypto form to depositors
4. by laying the groundwork with its retailer clients for their customers to pay for goods and services with crypto as a means of exchange

JP Morgan has done very little of these four things. Our asset and wealth management business has over $3 trillion in assets under supervision, and we have historically allowed no more than a handful of clients to trade crypto funds for their own accounts at their own risk if they choose to do so. JP Morgan's Commercial Bank allows a few crypto companies to maintain fiat cash balances with it so that these companies can pay vendors and employees; each one is of course subject to full KYC/AML inspection.

That's about it, other than an "Alternative Investments Outlook" report from JP Morgan's Investment Bank in May 2022. The authors put a $38k fair value price target on Bitcoin and cited crypto assets as their preferred alternative asset over private equity, private debt, hedge funds and real estate. Their stated rationale: resilient venture capital funding for crypto after the Terra-Luna collapse, a bitcoin-to-gold volatility model, favorable technical conditions and the alleged emergence of crypto as an institutional asset class.

[14] **Australia's primary securities exchange announced in Nov 2022 that it will write off $250 mm** after a failed 7-year effort to replace its system with blockchain technology. It also may have to reimburse firms that spent $100 mm on blockchain upgrades. Accenture identified multiple problems with the project including uncertain timelines, communication issues with vendor Digital Asset and excessive complexity.

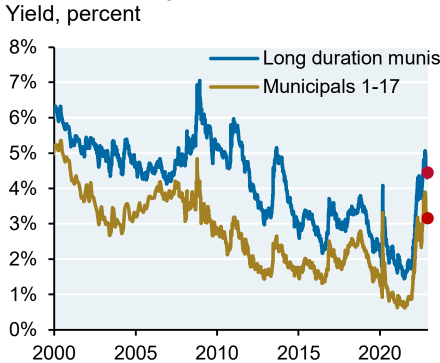
[15] **A Google engineer examined 34 actual blockchain projects. His conclusion was grim**: "Looking into all 34, I found that 13 are already dead (including one killed by the SEC), 6 are only useful within the crypto & NFT ecosystems and not in the real world and 14 use blockchain in a way where removing it would not impact functionality at all, or make the product better. The remaining project is Chainalysis, which has real-world impact by helping law enforcement de-anonymize blockchain users".

[16] In "***Case for Blockchain in Financial Services Dented by Failures***" on December 30, the Financial Times cited terminated blockchain projects in insurance (premium and claims settlement: 15 insurance companies), banking (trade finance: HSBC, UBS, DB) and shipping (supply chains: Maersk and IBM).

Topic #6: Tracking global fixed income for yield oriented investors

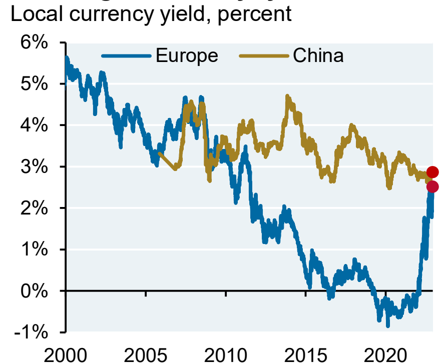
Given our outlook, the fixed income options below look interesting at the beginning of 2023. Some include categories whose spreads have widened but are nowhere near 2009 levels. For reasons I've written about before and reiterate on page 3, I don't think that financial sector solvency and systemic risks are comparable to 2009 even if growth slows more than we expect. While we see value in some fixed income markets, as we examined last year[17], market depth and liquidity are close to the lowest levels on record. As a result, we could see "flash crash" fixed income volatility in 2023, particularly as the Fed shrinks its balance sheet or if there's a replay of the disruptive 1995 & 2011 "GOP House / Democratic President" debt limit negotiations. Congress appears to have until the fall to raise the debt limit based on budget deficit and tax revenue projections.

US Municipal yields
Yield, percent



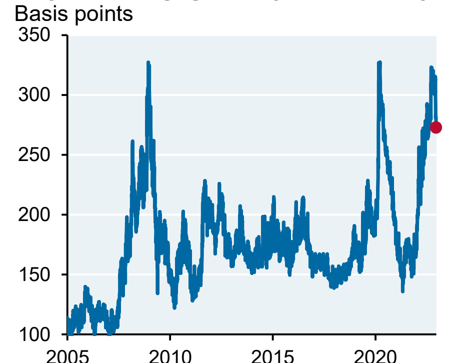
Source: Bloomberg, JPMAM. December 27, 2022.

Sovereign bond 10 yr yields
Local currency yield, percent



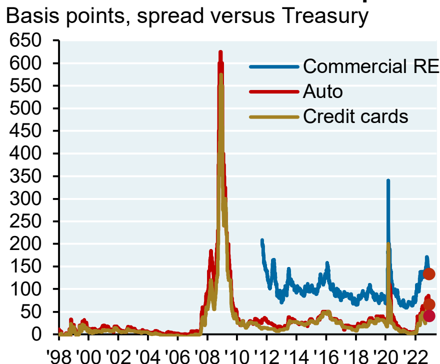
Source: Bloomberg, JPMAM. December 27, 2022.

30 year mortgage - 10 year Treasury
Basis points



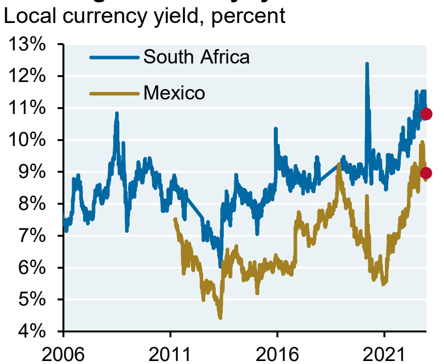
Source: Bloomberg, JPMAM. December 27, 2022.

AAA asset backed securities spreads
Basis points, spread versus Treasury



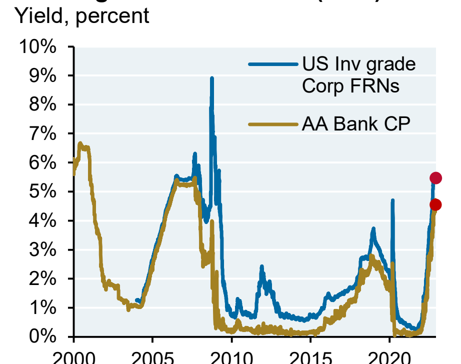
Source: Bloomberg, JPMAM. December 27, 2022.

Sovereign bond 10 yr yields
Local currency yield, percent



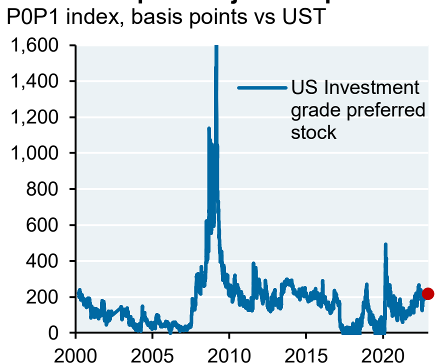
Source: Bloomberg, JPMAM. December 28, 2022.

Floating rate instruments (USD)
Yield, percent



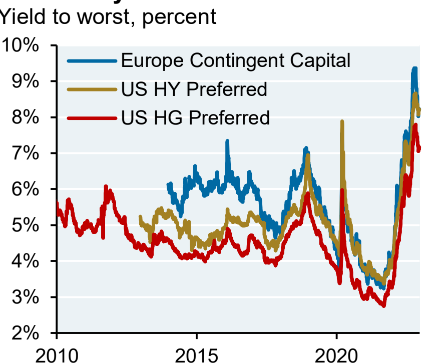
Source: Bloomberg, JPMAM. December 26, 2022.

Preferred option adjusted spread
P0P1 index, basis points vs UST



Source: Bloomberg, JPMAM. December 27, 2022.

Preferred yields
Yield to worst, percent



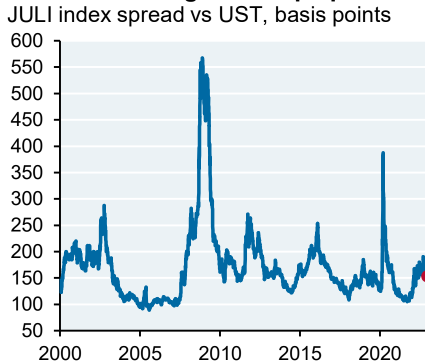
Source: Bloomberg, JPMAM. December 27, 2022.

European Contingent Capital securities typically trade at higher yields than US preferred stocks. This reflects a lower credit rating of the CoCo market as a whole relative to US bank preferred stock, and explicit writedown and payment triggers in Contingent Capital prospectuses linked to capital ratios. The European Contingent Capital series shown in the chart also contains 10%-15% in EM bank securities.

[17] "No Free Lunch: the liquidity tradeoffs resulting from increased capital adequacy and deposit coverage", Eye on the Market, June 2022

These fixed income categories do not look interesting, since their spreads/yields are too tight relative to our economic outlook, and/or there's not enough spread or yield to justify the risk. I don't think there's a big problem laying in wait for investors in high grade corporate bonds; I just don't think 150 bps is really good value. I explain more about our concerns on the leveraged loan market at the end of Topic #1 on page 9.

US investment grade corp spreads
JULI index spread vs UST, basis points

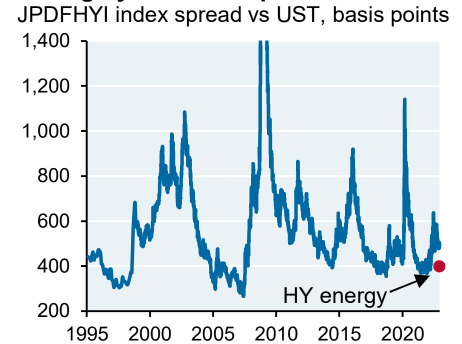


Source: Bloomberg, JPMAM. December 27, 2022.

Emerging markets dollar bonds
Spread vs US Treasuries, basis points

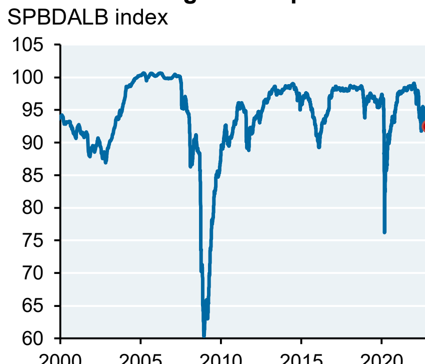
Source: Bloomberg, JPMAM. December 27, 2022.

US high yield bond spreads
JPDFHYI index spread vs UST, basis points



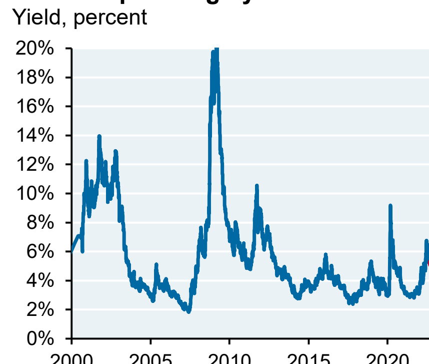
Source: Bloomberg, J.P. Morgan HY Team. December 27, 2022.

S&P 500 leveraged loan price index
SPBDALB index



Source: S&P/LSTA, Bloomberg. Dec 27, 2022.

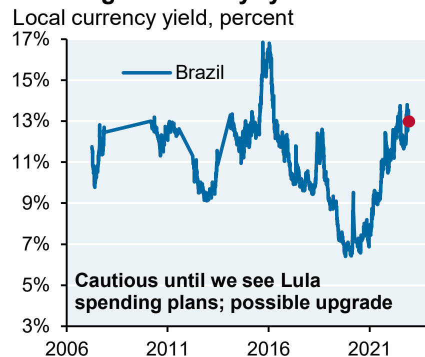
Pan European high yield
Yield, percent



Source: Bloomberg, JPMAM. December 23, 2022.

The jury is out on Brazil. Our Emerging Markets Debt portfolio management team is waiting to see the full impact of the new Lula administration's fiscal framework before adding to Brazil local bonds. Catalysts include tax reform and the plans for some large state-owned enterprises. Until there is more clarity on this front they are being very tactical on Brazil (i.e., not adding to long-term positions), even though Brazil now offers one of the largest risk premiums among EM local bonds.

Sovereign bond 10 yr yields
Local currency yield, percent



Source: Bloomberg, JPMAM. December 27, 2022.

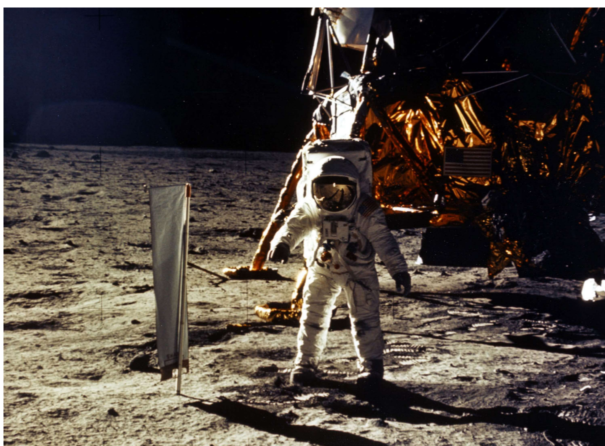
Topic #7: Just the Vax and nothing but the Vax

Over the last three years, I did a lot of work on COVID. I never wrote anything to clients on the costs and benefits of lockdowns, testing, social distancing, school opening policy, mask rules, employee spacing standards or government vaccination requirements. Evaluating these kinds of policies requires assessments of their broader impacts on employment, small business creation, birth rates, household formation, medical treatment for non-COVID diseases and mental health. They also take time and require the benefit of hindsight.

I do however have a view on the continued efficacy of mRNA vaccines, particularly for older people:

- The CDC released data for Sep-Nov 2022 on efficacy of the new bivalent mRNA vaccines. For immunocompetent people over 65, **mRNA vaccine efficacy ranges from 73%-84%** with respect to the risk of hospitalization, and when measured against no vaccination or just the original monovalent shot. The lower end of the range refers to people with no vaccination or the monovalent shot more than a year ago, and the higher end refers to people with a monovalent shot within the last 2-5 months. This period of time covers variants BA.5, BQ.1 and BQ.11.
  - Next step: assessments of how bivalent boosters perform vs the XBB variant, which is now outcompeting other variants in the Northeast US; see chart below. XBB is the first "recombinant" variant (joining of two genetically distinct variants rather than the result of individual mutations). Recombinant strains have greater potential resistance to vaccine or acquired immunity; early indications suggest this is the case with XBB
- According to the CDC, COVID mortality per 100,000 people was ~14x higher for unvaccinated people compared to fully vaccinated people from April to September of 2022
- However: while 94% of those over 65 in the US completed the original vaccination series, **only 36% of those over 65 have received the updated bivalent booster vaccine**. That may explain why seniors now comprise the greatest share of hospitalizations since the pandemic began[18]
- Despite the continued efficacy of mRNA vaccines, Florida's governor is now reportedly recommending that vaccine manufacturers be investigated for fraud/conspiracy and held accountable for false statements[19]. Undermining the confidence in mRNA vaccines seems like an odd position to take as the governor of the state with the second oldest population in the US (behind Maine)
- One in ten Americans reportedly believe that the 1969 moon landing was faked. So, I would not be surprised to learn that a large number of people simply do not believe or trust CDC data. But I do, and have vaccinated accordingly. I also believe the moon landing was real since I watched it live on TV when I was 7

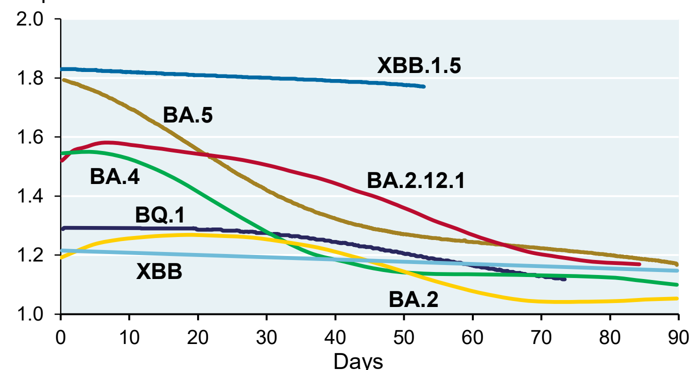
That's the end of the 2023 Eye on the Market Outlook. I hope to see many of you in person this year.



Edwin "Buzz" Aldrin Jr. photographed by Neil Armstrong on the actual moon, July 1969

The XBB variant

Reproductive rate



Source: Trevor Bedford (FHCC/BBI) and JP Weiland. December 2022.

[18] "*A quick update on the bivalent boosters*", Eric Topol (Scripps Research), December 16, 2022

[19] "*DeSantis reverses himself on coronavirus vaccines*", Washington Post, December 17, 2022

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