

# Global Insights

5 Questions  
for 2023

If 2022 was the year of the “[policy boomerang](#),” 2023 seems likely to bring the long-awaited adjustment in real activity.

With the lowest interest coverage ratios and highest share of floating rate debt in the U.S. economy, the tech sector again looks likely to bear the brunt of higher interest rates. Much of the rest of the economy should weather the storm relatively well, with many management teams eager to boost capex and build more robust logistics and production networks.

China’s emergence from “Zero Covid” seems likely to be similarly focused on resilience and self-sufficiency, with more investment (re)directed towards science and technology. Policy shifts may also become apparent in Europe, where the economy has performed far better than many feared largely because of a policy response to energy shortages that raises difficult questions about the efficacy of past efforts to reduce carbon emissions.

Overall, 2023 could be a year that crystallizes the importance of diversification and risk management in the minds of investors singularly focused on upside, as portfolios (over)weighted towards pandemic-era winners take on more water.

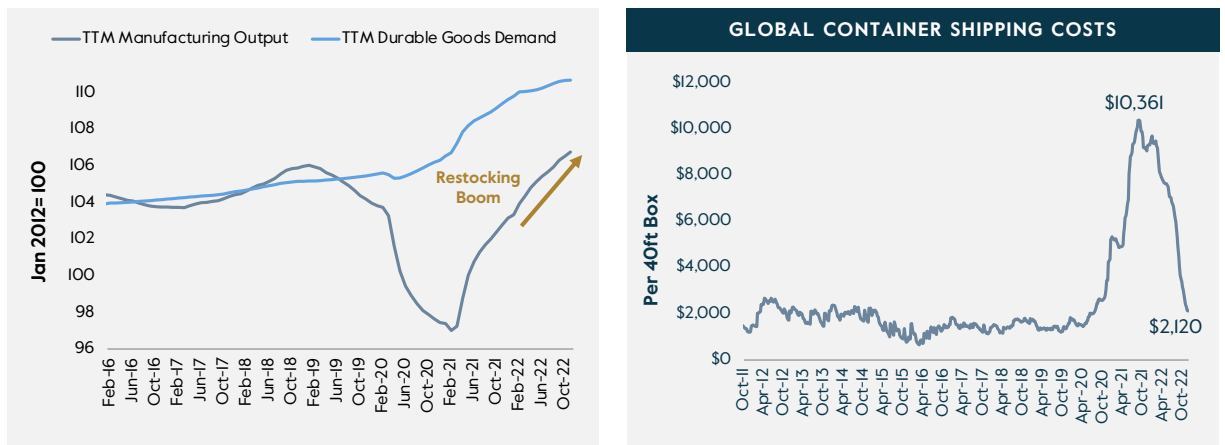


## Can the U.S. economy avoid a recession in 2023?

The U.S. economy held up reasonably well in 2022. The reported contraction in first-half GDP proved largely illusory. These spending-based activity measures were not designed to capture the massive post-pandemic restocking of components, parts, semiconductors, and other inputs that eventually brought the “supply chain

crisis” to an end (Figure I). As the year went on, the rebound in travel, tourism, and other “experiences” spending kept payrolls expanding despite a retrenchment in sectors that boomed when people stayed at home and spent from home (Figure 2).

**Figure I.** End of Supply Chain Crisis



**Figure 2.** Carlyle Travel, Tourism & Live Events Index

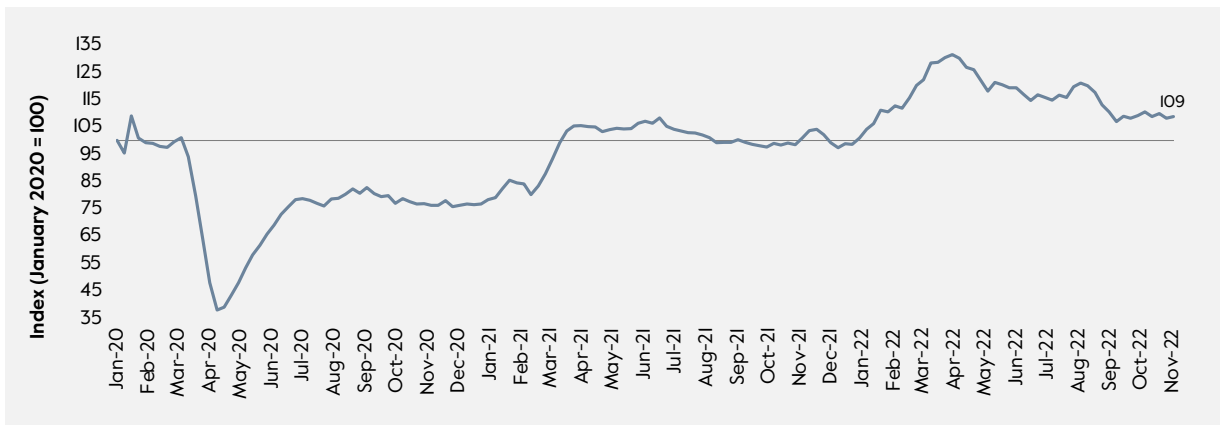
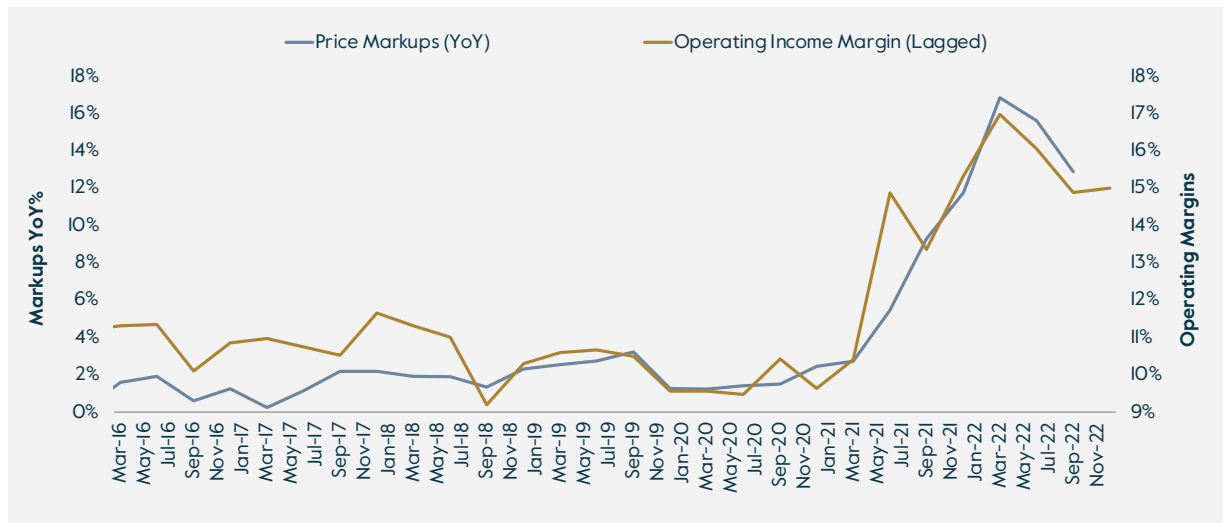


Figure I. Source: Carlyle Analysis; BEA, Bloomberg, December 2022. There is no guarantee any trends will continue.  
 Figure 2. Source: Carlyle Analysis of Portfolio Company Data.

This run of good fortune may not last. Not every interest rate increase is created equal. Taking rates from 1% to 2% matters very little for anyone not working at a fixed income trading desk. But when rates are already 4%, that same 100bp increase consumes all of what remains of many companies' operating cash flow. At this point, businesses are not only deterred from borrowing, but also forced to cut existing spending and expansion plans. Measured relative to June 2022, Q1-2023 debt service costs are likely to be 50% higher for floating rate borrowers.<sup>1</sup> And the Fed is not done.

Though goods inflation has reversed as sellers discount inventories they had accumulated in recent months, what central banker would confidently assert that price stability is at hand, particularly after the embarrassment of labeling 2021 inflation "transitory"? After 30 years of assuming price increases would be self-defeating, management teams discovered that they could "push price through" to boost revenues without suffering offsetting declines in sales or market share (Figure 3). Why not keep going back to that well until it runs dry? Engineering a broad fall in demand is probably the only way for the Fed to deter that next round of price hikes.

Figure 3. Businesses Continue to "Push on Price"



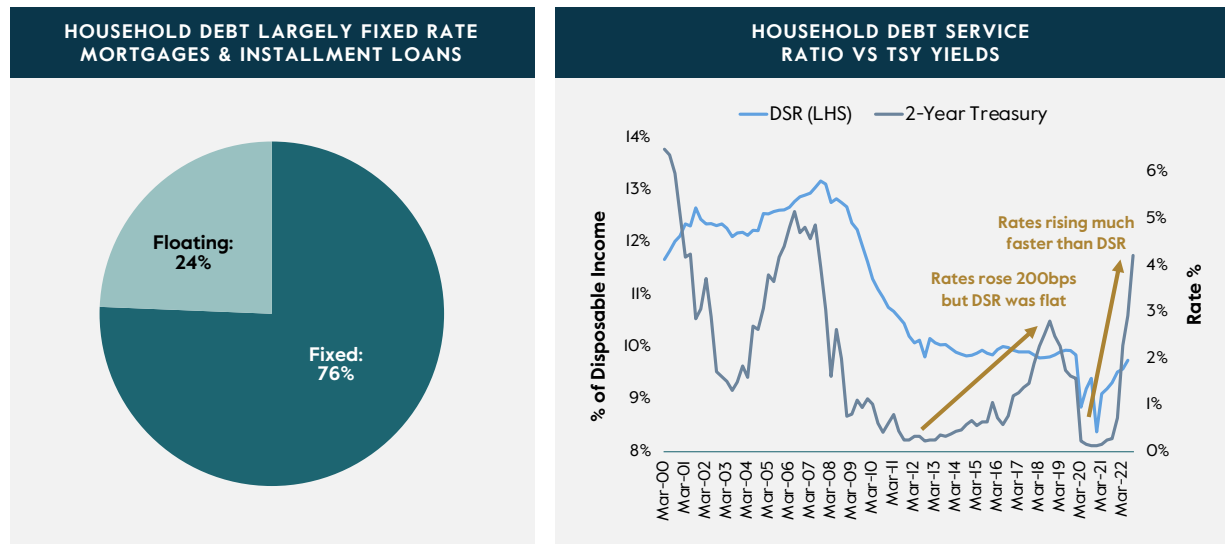
<sup>1</sup> Calculated based on the Q4-2022 International Money Market (IMM) benchmark, which increased from 1.2% in June 2022 to 4.32% in December 2022. Assuming a 500bps credit spread, the increase would be 50%. The lower the spread, the greater the percentage increase in financing costs.

Figure 3. Source: Carlyle Analysis; Bureau of Labor Statistics, Bureau of Economic Analysis, December 2022.

While official Washington views the 30-year fixed rate mortgage as a miraculous instrument whose perpetuation should be the main goal of U.S. housing policy, its existence actually makes the Fed's job much harder (Figure 4). In much of the rest of the world, mortgages are either adjustable rate or switch to floating after a relatively brief period. This allows for more efficient policy transmission, as higher policy rates immediately depress household cash flow.

By contrast, the effective interest rate on the stock of U.S. mortgage debt currently stands at 3.4%<sup>2</sup> and is not likely to move much over the next 12 months given the collapse in mortgage origination volumes. The Fed must therefore take rates to much higher levels to achieve the same diminution in demand, which comes mainly through financial distress in the corporate sector.

Figure 4. U.S. Household Debt Stock Mainly Fixed Rate



2 Bureau of Economic Analysis, National Income and Product Accounts, Supplemental Tables. December 2022. Figure 4. Source: Carlyle Analysis, Federal Reserve, December 2022. There is no guarantee any trends will continue.

The good news is that by raising rates so aggressively in 2022, the Fed has taken the risk of an exotic, stagflationary spiral off the table. Absent an unforeseen shock, any 2023 recession seems likely to prove relatively shallow, brief, and unremarkable. That's because genuine economic slumps tend to be the product of overcapacity. The past few years revealed the opposite problem: underinvestment since the Global Financial Crisis

(GFC) left the economy too dependent on fragile, overly engineered, and globally distributed supply chains. More resilient production networks can only come into being if fixed investment rates rise back towards pre-GFC levels (Figure 5), an outcome likely to generate higher growth and interest rates over the next three-to-five-years than most would have expected a year ago.

**Figure 5.** Underinvestment in Advanced Economies Post-2008

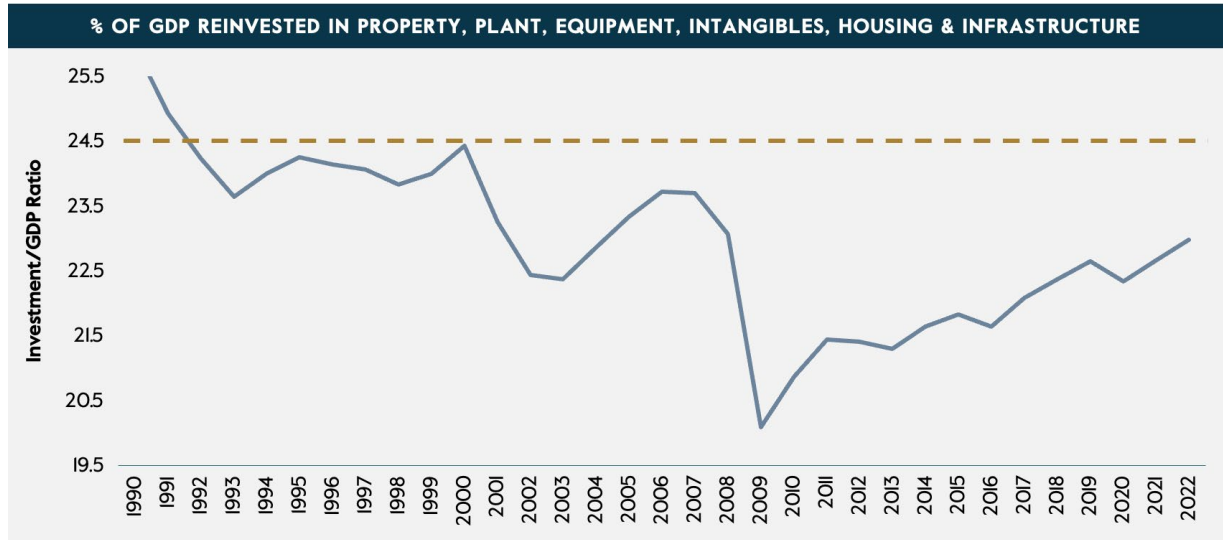


Figure 5. Source: Carlyle Analysis of 2022 IMF WEO Database. There is no guarantee any trends will continue.

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## Will the ‘tech’ slump deepen?

“Financial distress” conjures images of troubled companies operating in declining industries. Its onset typically stems from technological disintermediation, as entrants employing more advanced and efficient processes displace incumbent businesses and industries. At the onset of the pandemic, the Bank for International Settlements (BIS) classified roughly one-in-five companies as a “zombie,” with the meager growth rates and absence of intangible assets (intellectual property, proprietary technology) characteristic of companies on the losing end of a technological transition.<sup>3</sup>

It might seem reasonable to conclude, therefore, that the easiest way to avoid financial distress would be to lend money to fast-growing businesses in the ascending sectors of the economy. That may seem especially true if such businesses have “sticky” revenue streams that exhibit little year-to-year variation, as is often the case for providers of “mission critical” subscription-based software. While the valuations of such businesses can reach vertiginous heights, creditors can enter at a sufficiently low loan-to-value (LTV) ratio to ensure an ample equity cushion absorbs any re-rating.

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<sup>3</sup> Banerjee, R.N. and B. Hofmann. (2020), “Corporate zombies: Anatomy and life cycle,” BIS Working Paper No. 882.

Reasonable as this strategy may look on paper, it hasn't panned out quite as expected. While old economy "zombies" may indeed be the first casualties of tighter funding liquidity conditions, it is technology-rich industries, like software, experiencing the highest incidence of financial distress (Figure 6). Few capital structures in this space seem to have contemplated a

world where three-month finance rates could exceed 5%. Consider that "technology" accounted for 21% of floating-rate loan origination volumes in 2021, but less than 5% of bond issuance. Among 2021 deals, capital structures in "tech" have 6.5x as more floating-rate loans than fixed-rate bonds, far and away the greatest disparity of any industry (Figure 7).

Figure 6. Financial Distress by Industry

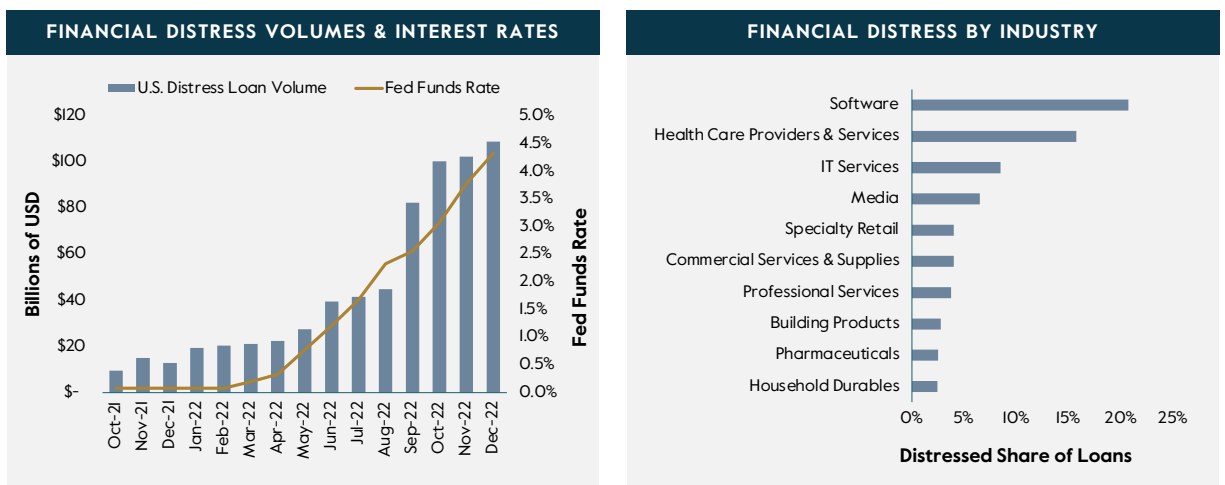


Figure 7. Loans vs Bonds by Industry

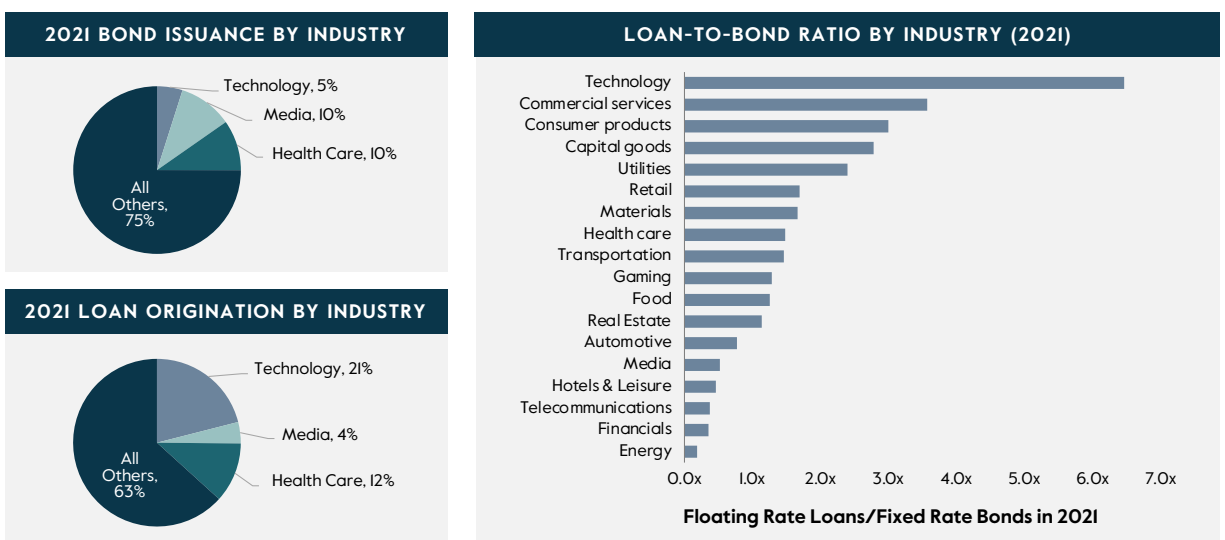


Figure 6. Source: Leveraged Commentary & Data (LCD); Morningstar LSTA US Leveraged Loan Index, December 2022.  
 Figure 7. Source: S&P LCD and BAML Data, December 2022.



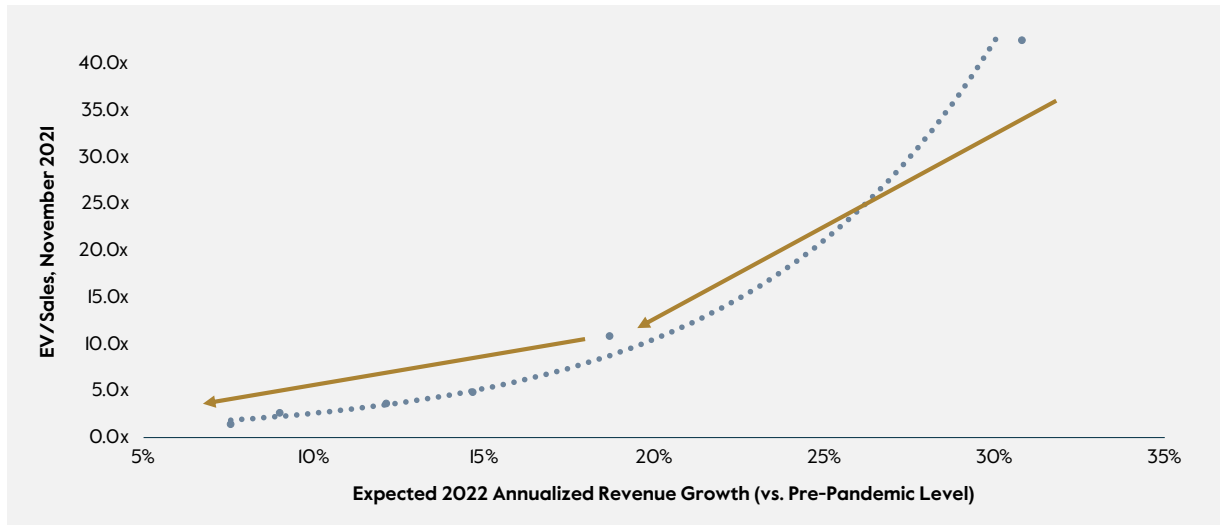
The arithmetic predicament is not hard to grasp. At 2020-21 tech valuations, there is simply not enough cash, per unit of enterprise value, to meet elevated debt service costs.<sup>4</sup> In some cases, the loans were extended on the basis of recurring revenue (not income) on the assumption that rapid growth would allow operating cash to arrive in advance of Fed rate hikes. But even “conservative” capital structures look wobbly. When a company is acquired for 18x EBITDA, 11% interest rates consume nearly all of its operating cash even with an equity cushion in excess of 50% of the purchase price. Suddenly, 90% gross revenue retention rates are insufficient to service debt.

Many affected companies spend so much on customer acquisition, product development, and R&D that they could easily raise the cash necessary to meet payment obligations. But “turning off growth” could translate to a calamitous fall in valuation ratios,

which had become increasingly sensitized to top-line growth expectations (Figure 8). Management and sponsors may face a Catch-22, choosing between a payment default or a deceleration in growth that wipes out the implied value of equity.

Some businesses will find that they’ve been spending money imprudently and can make sizeable cuts without harming the business. This will hurt downstream service providers and advertising spend but bolster the credit and company. Others will opt for mezzanine financing, where the equity holder accepts dilution in exchange for a structured security that reduces near-term debt service costs. Nothing attracts opportunistic credit investors more than great businesses with bad capital structures. But, third and finally, there will be those business models that simply collapse under the weight of higher (i.e. non-zero!) finance costs.

Figure 8. Average Expected Annualized Revenue Growth by Valuation Quintile

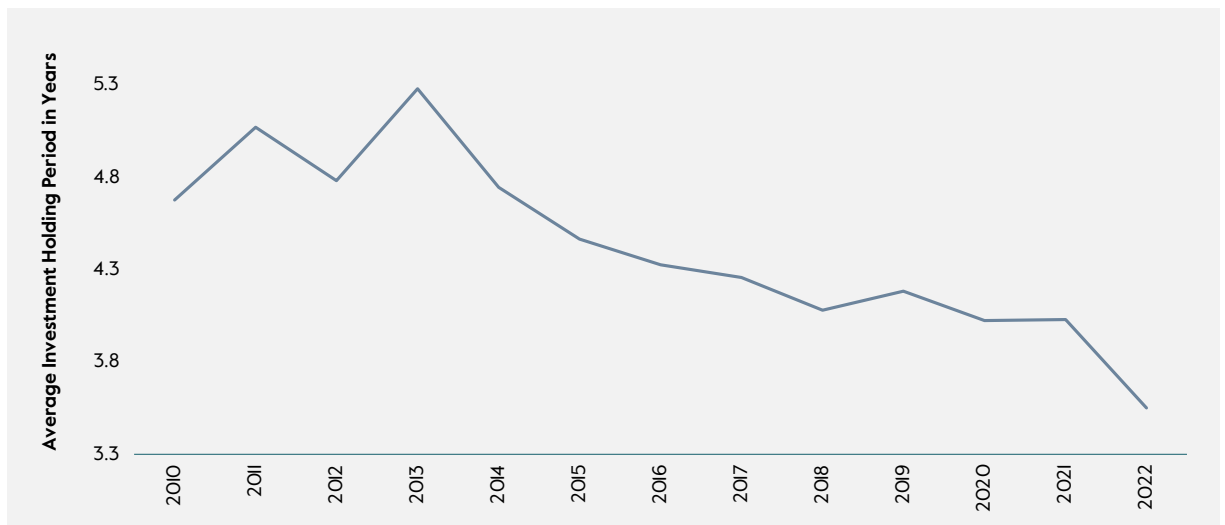


<sup>4</sup> Interest coverage ratios were already lowest among the “computers and electronics” industry per LCD’s U.S. Industry Review, Q3-2022. Figure 8. Source: Carlyle; S&P Capital IQ, November 10, 2022. There is no guarantee any trends will continue.

As valuations became more sensitized to growth, management teams faced immense financial pressure to achieve certain top-line growth rates irrespective of the impact on profitability or long-term value. In some cases, growth may have been the business model itself, as horizons to

profitability seemed to lengthen even as holding periods shortened (Figure 9). The adjustment observed thus far in public markets (Figure 10) may be just a foretaste of what's to come, as operating profitability reasserts itself as the valuation metric of greatest (sole?) import to investors.

**Figure 9.** Average Technology Investment Hold Period by Exit Year



**Figure 10.** Evolution of Sponsored IPO Valuations

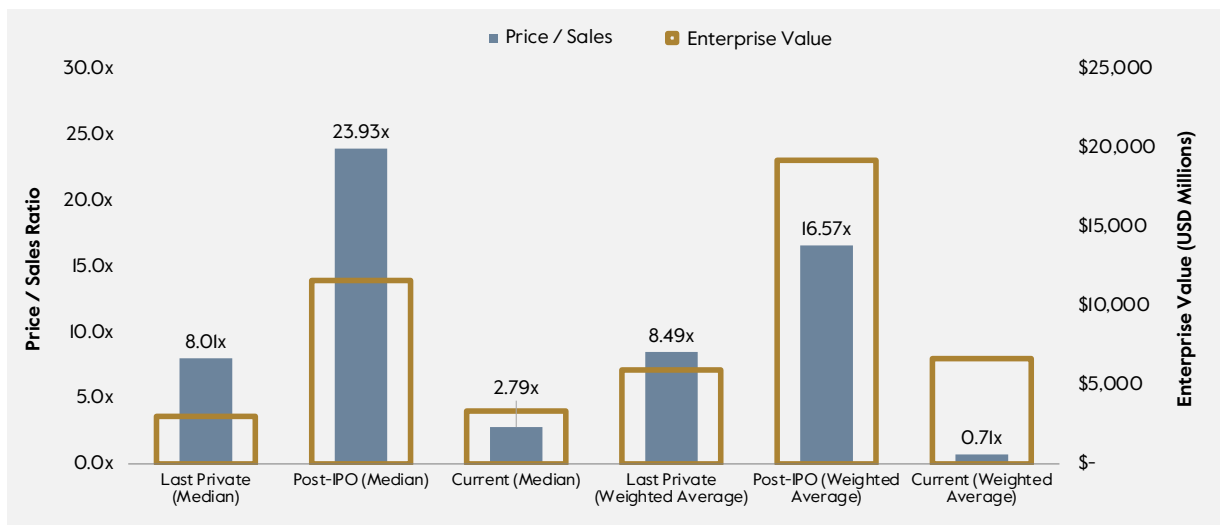


Figure 9. Source: Carlyle Analysis; Preqin, Burgiss, November 2022.  
 Figure 10. Source: Carlyle Analysis; S&P Capital IQ, November 2022.

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## What lessons will Europe (and the world) draw from its energy crisis?

It is one thing to suppress the production of fossil fuels. It's quite another to reduce consumption of them. Over the past decade, natural gas production in the European Union (EU) dropped by 65%. Unfortunately, natural gas consumption

rose by 2% over the same period (Figure II). Even more unfortunately, the resulting supply-demand imbalance was to be closed by imports from the Russian Federation that are no longer forthcoming.

Figure II. Collapsing Natural Gas Supply, Stable Gas Demand

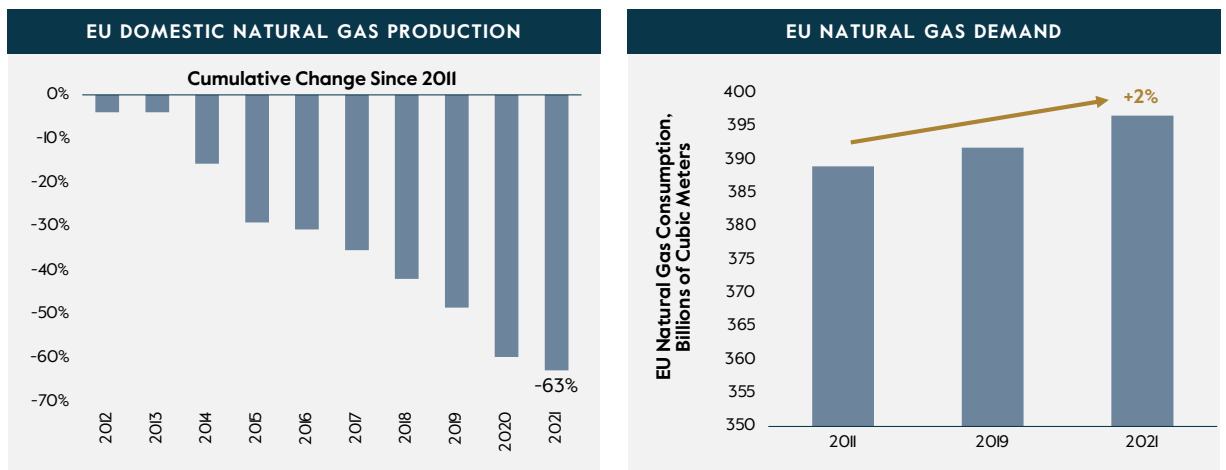
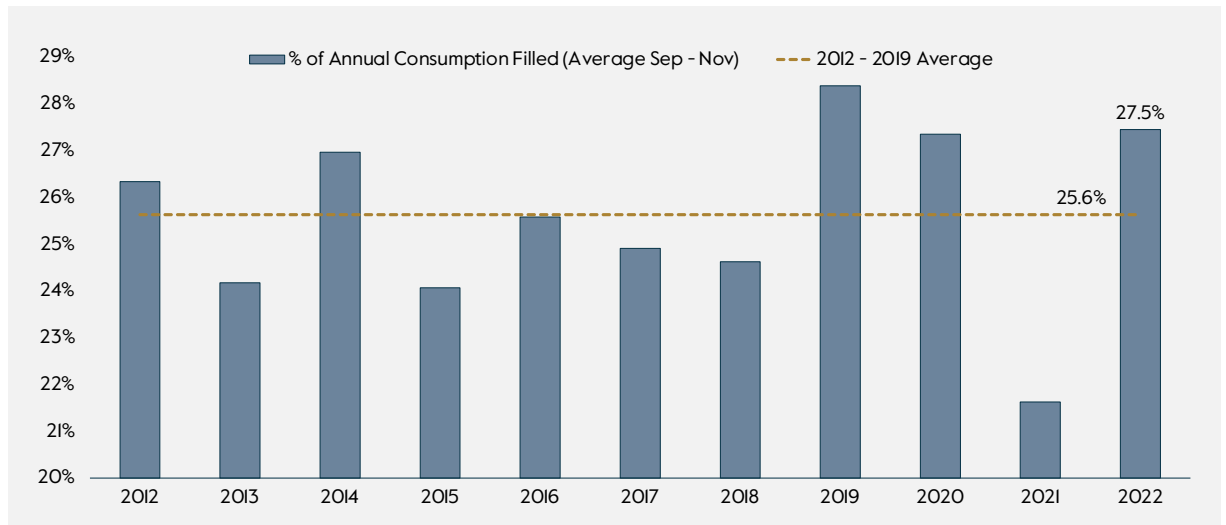


Figure II. Source: Carlyle; Statista, August 2022. There is no guarantee any trends will continue.

Many observers anticipated this energy shortfall would lead to a steep decline in economic activity. That hasn't happened, as yet, thanks to (1) effective planning, which allowed Europe to enter the winter with ample levels of gas stored underground (Figure 12); (2) fiscal subsidies to limit the extent to which wholesale price increases have flowed through to consumers; (3) a price cap scheme that has worked, thus far, to dampen the amplitude of price spikes in futures markets, and (4) the alacrity with which European economies switched to coal as an alternative to gas-fired power.

Europe is not out of the woods. A recent cold snap led to drawdowns in gas storage that could complicate matters in the coming months. And these complications could prove trivial relative to those facing policymakers later in the year when gas storage levels will almost certainly be far below those entering this winter. Price cap schemes have yet to be tested. But, overall, the energy crisis tends to be interpreted as a salubrious event that will accelerate the transition to a clean energy future.<sup>5</sup>

**Figure 12. EU Gas Storage as a % of Annual Consumption**



<sup>5</sup> C.f. <https://www.investmentweek.co.uk/news/4047138/fink-recent-global-events-accelerate-energy-transition-long-term>  
 Figure 12. Source: Carlyle; Bloomberg; Viborc, accessed November 7, 2022. There is no guarantee any trends will continue.

The data seem equally capable of supporting a far more pessimistic conclusion. European governments currently spend 3% to 6% of GDP, on average, to subsidize carbon-based energy consumption (Figure I3). Carbon fuel subsidies have never before existed on this scale. Coal-fired electricity emits 2.3x as much

carbon dioxide per megawatt hour (MWh) as gas-fired generation,<sup>6</sup> yet EU coal consumption is up by 22% over the past two years (29.7 million tonnes in 2021 alone, Figure I4). In 2019, the EU consumed 8% less coal than the U.S.; in 2022, it consumed 3% more.<sup>7</sup>

Figure I3. Energy Subsidies by Economy

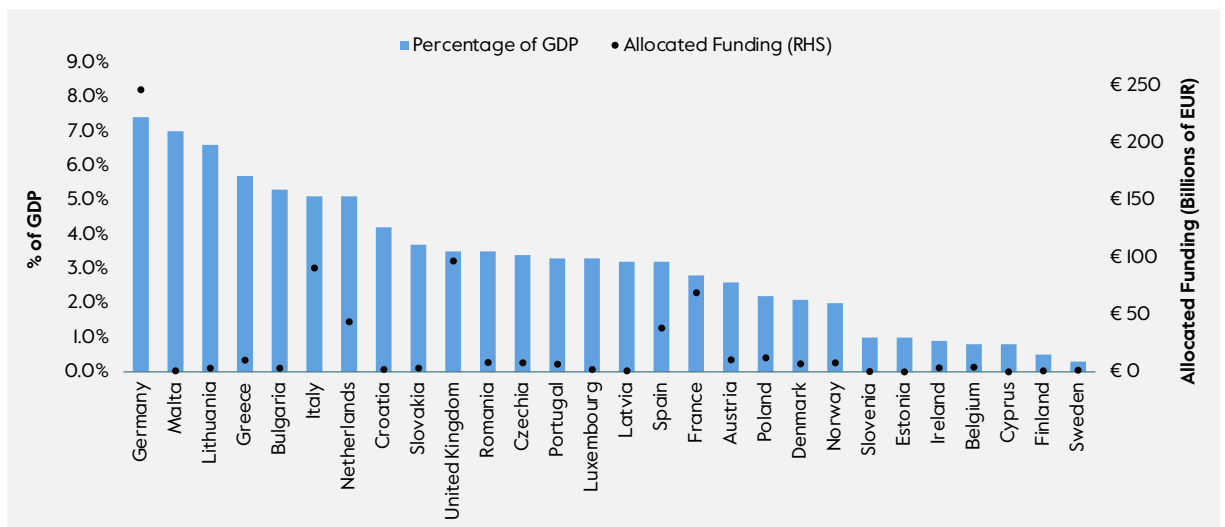
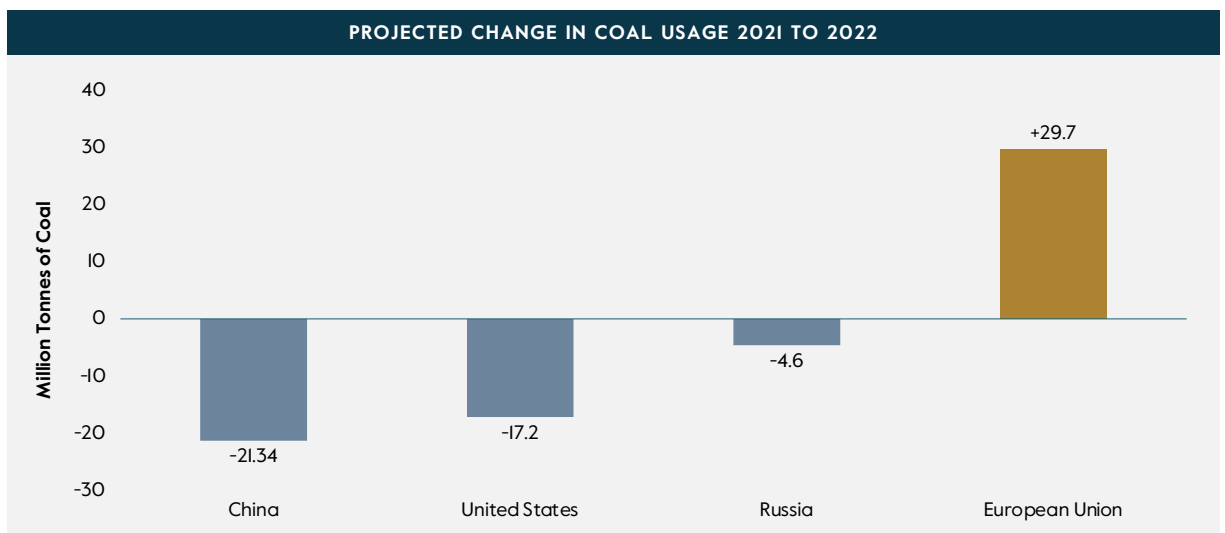


Figure I4. Projected Change in Coal Consumption



6 Energy Information Administration, June 2021.

7 International Energy Agency, Coal 2022, December 16, 2022.

Figure I3. Source: Bruegel, November 2022. There is no guarantee any trends will continue.

Figure I4. Source: Carlyle Analysis; IEA: Coal Market Update July 2022. There is no guarantee any projections will materialize.

Perhaps all of this will prove temporary. But it sends an important message about contemporary political economy. It is easy to engineer shortfalls of natural gas through policies to suppress its exploration and production. But these shortfalls only reduce carbon emissions to the extent that they translate into demand-destroying price increases. If at the moment of truth policymakers opt instead for massive subsidies to mask higher prices, then all the shortfalls have done is create a fiscal black hole.

Policymakers' fears of electoral backlash are hardly imagined. Inflation is unpopular, especially when it seems causally linked to energy policy. Most alarming are recent polls that suggest inflation associated with carbon fuel shortages arouses skepticism of the risks of climate change itself, undermining political support for the entire planet-saving project.<sup>8</sup> While well intended, the divestment approach to energy transition trivializes this contingency, failing to perceive how feedback effects of the sort observed in Europe could contribute to a catastrophic increase in carbon emissions over time.

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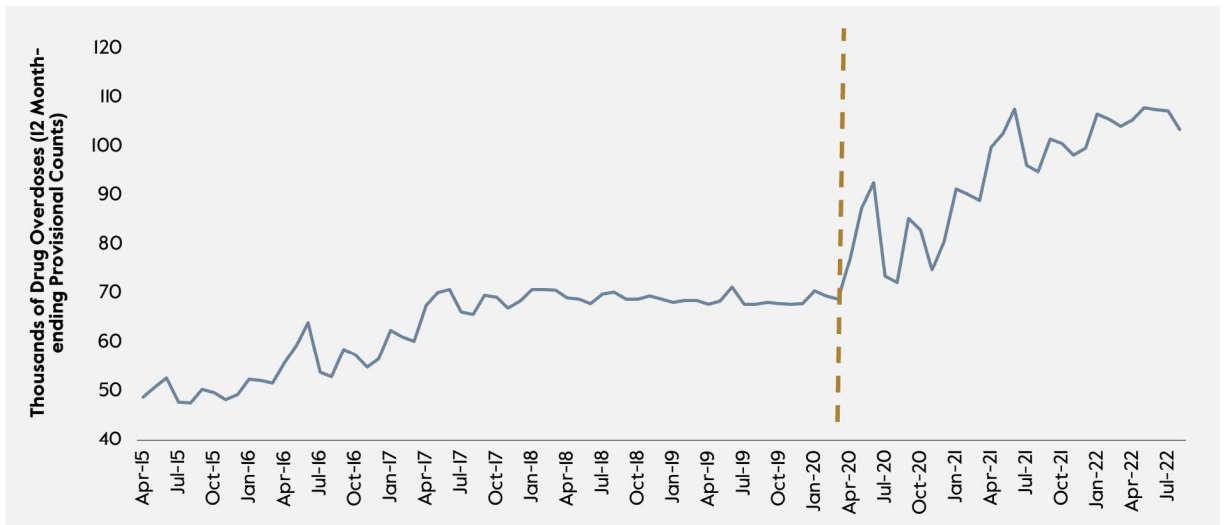
## How does China emerge from ‘Zero Covid’?

The only policy that seems to have garnered more criticism than “Zero Covid” was China’s sudden abandonment of it. Mass containment proved unsustainable, but the alternative looks even worse, with more than 200 million residents infected with the virus in the first week of reopening.<sup>9</sup>

Epidemiological curves exhibit symmetry. The worse the outbreak, the faster it recedes. This must be the hope of Chinese authorities, at least, whose steadfast commitment to “Zero Covid” signaled a recognition of how bad the initial phase of full reopening could prove to be.

The relationship between economic and public health ultimately proved far more complex than many understood at the onset of the pandemic. Outbreaks can depress economic activity every bit as much as lockdowns. At the same time, policies to slow the spread of disease can contribute to a sharp deterioration in mental health and an increase in excess deaths from other causes (Figure 15). But in this case, China’s abandonment of Zero Covid should be understood as part of a broader effort to reignite economic activity.

Figure 15. Drug Overdose Deaths Spike After Lockdowns

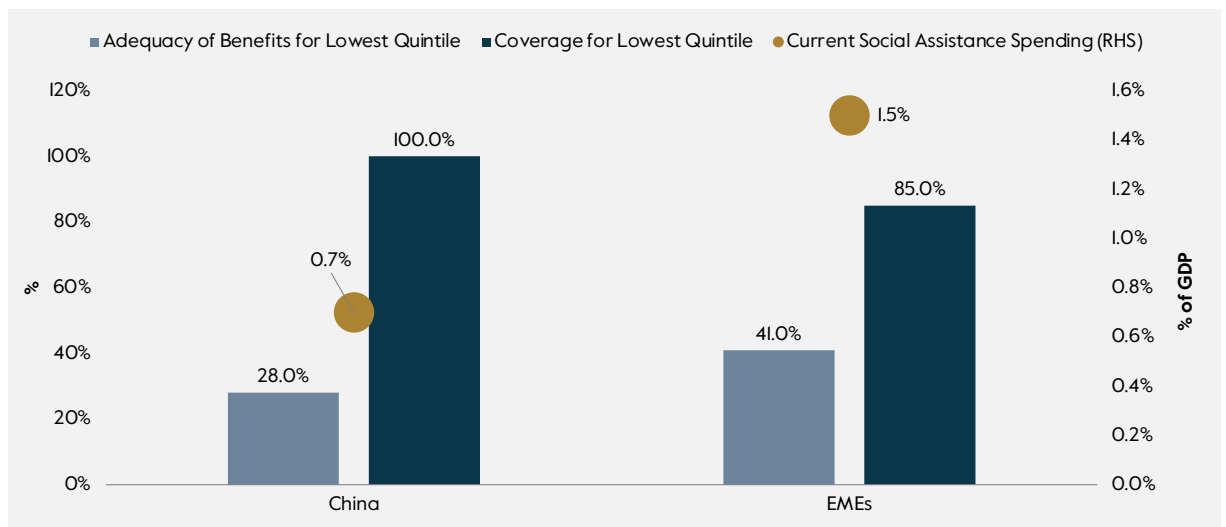


9 National Health Commission, Cited in Bloomberg, “China Estimates Covid Surge Is Infecting 37 Million People a Day,” December 23, 2022. Figure 15. Source: Carlyle Analysis; CDC, November 2022.

China's social safety net is inadequate, not only when measured relative to those of advanced economies but also compared to emerging market economies' (Figure 16). In place of public insurance schemes, China meets its social obligations through

a commitment to robust economic growth and the employment opportunities and real wage gains it generates. No surprise containment proved politically unsustainable once cumulative GDP growth fell as much as 5% below target (Figure 17).

**Figure 16.** China Meets its Social Obligations Through a Commitment to Growth



**Figure 17.** Chinese Economic Activity Slows Materially

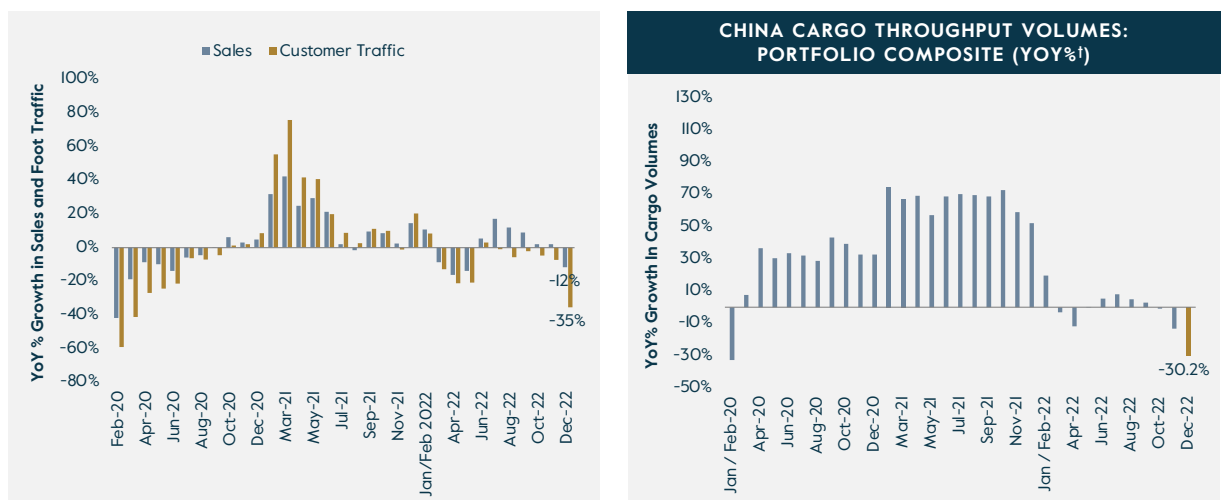


Figure 16. Source: IMF Article IV, January 2021. There is no guarantee any trends will continue.

Figure 17. Source: Carlyle Analysis of Portfolio Company Data.

†2021 values compared to 2019 due to COVID base effects in 2020.



While it seems reasonable to expect monetary, fiscal, and credit policy to be oriented towards achieving above-trend growth in 2023, the bigger story may be the form that growth takes. “Onshoring” is typically used to describe efforts to “bring supply chains home” to the U.S. and Europe, but it also describes China’s current strategy. Export bans have made painfully obvious China’s reliance on Western technology. The key message from the 20th Party Congress was policymakers’ determination to increase China’s economic self-sufficiency through long-term investment in science and semiconductors, as well as “workaround technologies” to bypass embargoed U.S. intellectual property in the near-term.<sup>10</sup>

Could Chinese companies close the gap with Western competitors, or even leapfrog them technologically? While such a suggestion may strike

some observers as absurd, consider the implications of news reports that Chinese battery manufacturer Contemporary Amperex Technology Co. Ltd. (CATL) is in talks with Ford to build a plant in the U.S.<sup>11</sup> Under the proposal, Ford would own the plant and related infrastructure, but CATL would *operate* the facility. The complex structure seems designed to capture the subsidies provided under the U.S. Inflation Reduction Act (IRA) for domestically produced batteries while simultaneously protecting CATL’s intellectual property from expropriation.<sup>12</sup> The U.S. brings the subsidies for domestic production; the Chinese company delivers the state-of-art technology.

Don’t be surprised if similar stories of Chinese companies’ technological leadership become a recurring theme of the economy’s emergence from Zero Covid.

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<sup>10</sup> C.f. “China’s Xi Jinping Urges Self-Reliance in Tech Amid Rivalry With U.S.,” Wall Street Journal, October 17, 2022.  
<sup>11</sup> Bloomberg, “Ford, China’s CATL Mull Workaround for New US Battery Plant With US-Chinese Tensions High,” December 14, 2022.  
<sup>12</sup> “Report: Ford And CATL Are Considering LFP Battery Plant Investment,” Inside EVs, December 15, 2022.

## When will U.S. investors overcome ‘home bias’?

Most observers agree that past returns provide valuable data on which to base future allocation decisions. Disagreement abounds regarding how these data should be interpreted, however.

Two of the most well-established empirical facts in financial economics are that asset price returns exhibit both “momentum” and “mean reversion.” These findings are in obvious conflict. The first says that yesterday’s “winners” are likely to outperform today, a finding that serves as the basis for many “trend-following” quantitative investment strategies.<sup>13</sup> The second suggests that today’s winners will inevitably *underperform* in the future, the insight on which most “value” or “contrarian” investment strategies are based.<sup>14</sup>

The apparent contradiction is resolved by time horizon: momentum tends to dominate in the short-term while mean reversion asserts itself over time. No one can reliably predict when one factor will give way to the other because liquidity flows create their own space. This is the core insight of Soros’ application of “reflexivity” to financial markets.<sup>15</sup> A sector or asset class comes to be seen as an attractive destination for investment. Funds flow into it. These fund flows bid up the price of assets, generating returns that seem to validate the initial investment thesis. This attracts subsequent rounds of inflows that bolster returns and strengthen convictions.

In other words, a momentum play tends to gather strength at precisely the moment when market participants do not recognize they’re participating in one. High returns attract additional capital by increasing the seductiveness of the investment thesis on which the initial investment was based. Bubbles form rationally as incoming returns data make bullish narratives more compelling.

Some of these dynamics seem to have manifested themselves in crypto markets. Liquidity inflows generated returns that were (mis)interpreted as the natural fruits of transformative fintech innovation. But the issue appears more widespread.

Recent U.S. equity market outperformance has led many domestic investors to wonder why they should allocate capital abroad if they can generate better returns in growth sectors at home? To ask this question is to answer it. If you know which geography or industry will perform best, there is no case for diversification; over 90% of U.S. investors’ stock allocations were directed to U.S. equity markets in 2022.<sup>16</sup>

<sup>13</sup> Moskowitz, T. J. et al. (2012), “Time series momentum,” *Journal of Financial Economics*.

<sup>14</sup> For a history of such understandings, see De Bondt, W.F.M. and R.H.Thaler. (1989), “A Mean-Reverting Walk Down Wall Street,” *Journal of Economic Perspectives*.

<sup>15</sup> Soros, G. (2014), “Fallibility, Reflexivity, and the Human Uncertainty Principle,” *Journal of Economic Methodology*.

<sup>16</sup> “U.S. Remains ‘Only Game in Town’ for Stock Investors,” *Wall Street Journal*, November 21, 2022.

Has liquidity-driven outperformance been recast as something intrinsic to the U.S. market? Since 2013, U.S. corporate valuations have nearly doubled, while those in other advanced economies have remained roughly constant (Figure I8). While most of the increase has been attributed to the more favorable growth dynamics of a larger technology sector, the returns have come largely from investors

paying more for a given amount of growth (Figure I9) rather than the growth itself. When accounting for the strength of the dollar and extent to which past returns cannot be explained by fundamentals (Figure 20), investors would seem to ignore the prospective benefits of geographic diversification at their own peril.

**Figure I8.** Post-2013 Rise in Valuations Mostly a U.S. Phenomenon

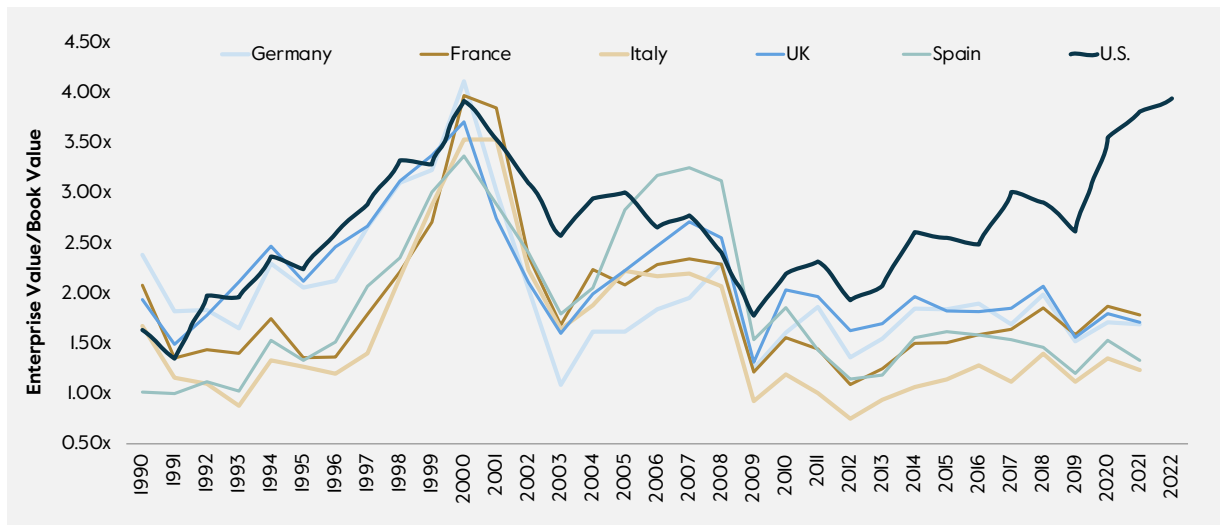


Figure I8. Source: Carlyle Analysis of CRSP Database, November 2022. There is no guarantee any trends will continue.

Figure 19. Increase in Valuations, 2016-2021

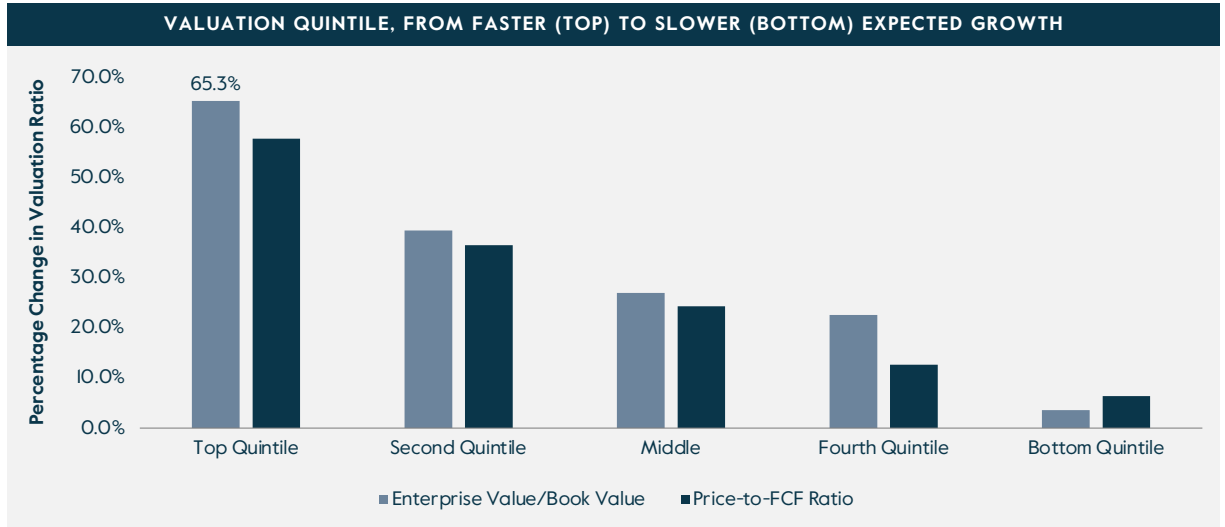


Figure 20. Potential Peak in U.S. Dollar & Returns

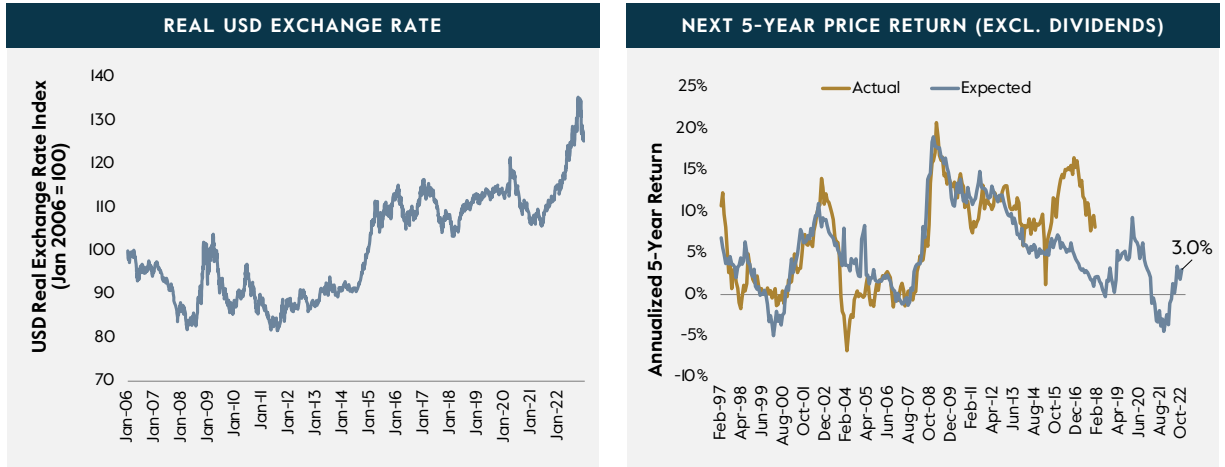


Figure 19. Source: Carlyle Analysis of CRSP Database, November 2022.

Figure 20. Source: Carlyle Analysis; Bloomberg; S&P Capital IQ, December 2022.

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