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RETURNS REINVENTED

2022 Global Investor Conference

The Pit & The Pendulum

SEPTEMBER 2022

Danger seemingly lurks in every direction…

…The Fed has never successfully engineered a 400bps fall in inflation rates without triggering recession. Why would this time be any different? Europe finds itself in the midst of an energy crisis for which there is no parallel in the history of advanced economies. China faces an uncertain economic transition driven by demographic decline and high-tech ambitions U.S. policymakers view suspiciously. Many developing economies sit in their most precarious position in decades, buffeted by shortages of food, fuel, and U.S. dollars. Investors are understandably anxious, with elevated implied and realized volatility across rates, credit, and equity markets…

A sense of foreboding might protect investors from some of these immediate risks but also degrade portfolio performance over time. Today's challenges represent the aftershocks of pandemic-and-policy-inflected earthquakes. They will fade. Left in their wake will be memories of the fragility they revealed: inadequate and insecure energy supplies, over-engineered supply chains, and globalized production processes that prioritize efficiency at the expense of resilience.

Efforts to remediate these deficiencies could unlock trillions of dollars of capital deployment opportunities over the next several years, leading to higher investment rates and stronger growth than widely understood.

1 THE PIT

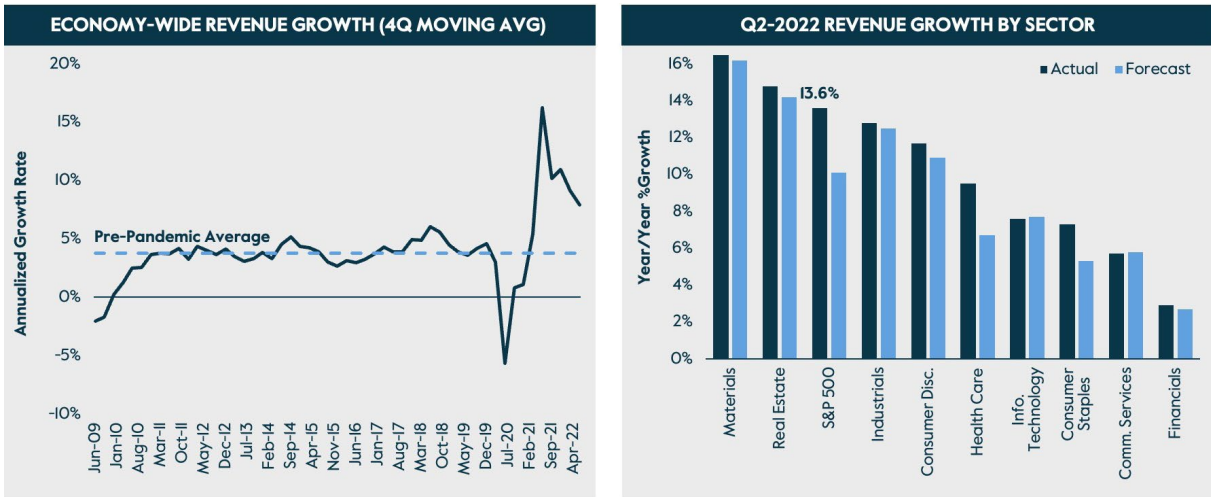
"At length, with a wild desperation at heart, I quickly unclosed my eyes. My worst thoughts, then, were confirmed."

DISINFLATION & ITS DISCONTENTS

Some argue the feared U.S. recession already arrived. Expenditure-based estimates of U.S. GDP contracted in both QI-2022 (-1.6%) and Q2 (-0.6%). But if this was a recession, it was history's first to occur prior to any meaningful slowdown. Gross business receipts expanded at a 10% annualized rate in Q2-2022, more than twice the pre-pandemic average (Figure 1).

S&P 500 sales rose 13.4% relative to year-ago levels, 350bps better than analysts had anticipated. The problem was not any weakness on businesses' top line, but that too much of the strength was attributable to price increases rather than underlying growth in business volumes.

Figure 1. Inflation Isn't All Bad: Revenues Grow at 2x Previous Rate



The title and certain quotations used herein are to *The Pit and the Pendulum* by Edgar Allan Poe, 1843.
Figure 1 Source: Carlyle Analysis of S&P Capital IQ, BEA & Factset Data. There is no guarantee any trends will continue.

Inflation is often equated to cost pressures and therefore assumed to be bad for margins and profitability. The best way to "hedge" inflation risk, it was said, was to buy the best businesses, which would be able to pass those cost increases onto customers. As it turns out, this had it exactly backwards: When consumer prices are escalating rapidly, everyone seems able to "push price through." Pricing power morphs from a rare attribute into something enjoyed – and exploited – by most businesses.

The Fed's job is to take this indiscriminate pricing power away. Tighter financial conditions and elevated recession fears combined to depress inflation expectations and price and wage pressures in Q2-2022. These gains appeared threatened by a stock market rebound premised on a Fed "pivot" to rate cuts in 2023. Powell was wise to tamp down such expectations at Jackson Hole. The forward curve now looks much more reasonably priced, with cash rates set to remain in a 3% to 3.5% band through year-end 2024 (Figure 2).

Figure 2. **USD Cash Rates Expected to Remain Above 3.25% Through Year-End 2024**

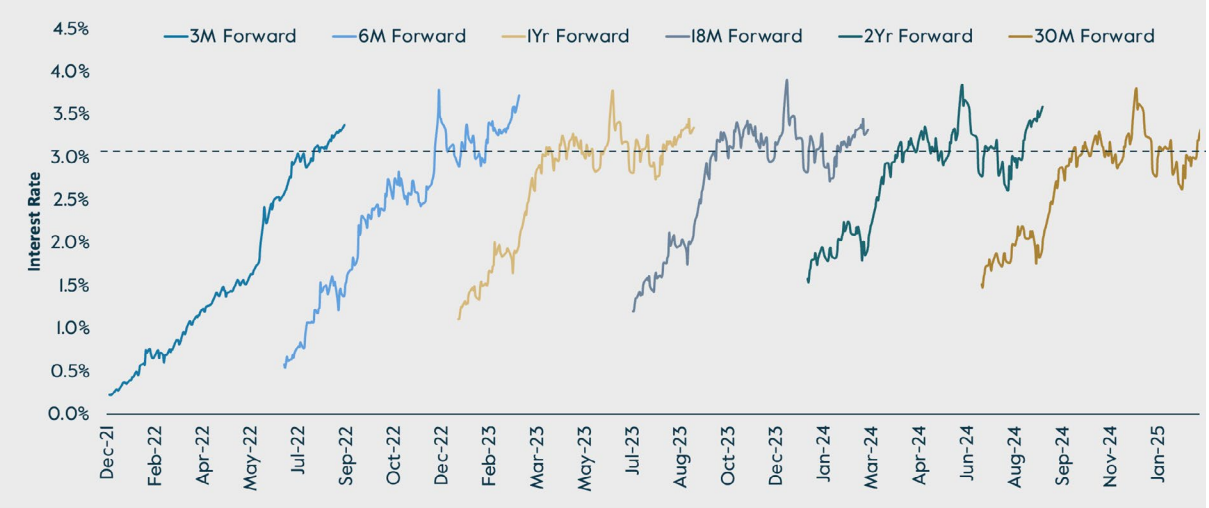


Figure 2 Source: Carlyle Analysis; U.S. Treasury, September 7, 2022. There is no guarantee any trends will continue.

Fed efforts will be aided by continued closure of the pandemic-era supply-demand gaps and tightening fiscal policy. Falling durable goods demand and easing supply chain bottlenecks have allowed trailing twelve months' manufacturing output to close within 1% to 2% of cumulative orders (Figure 3). Goods prices could be falling by year-end as retailers look to move inventory on restocked shelves and lots. An end to massive fiscal transfers led to a -70% (!) decline in the U.S. federal budget deficit through the first ten months of the 2022 fiscal year, the largest and perhaps least remarked-upon fiscal consolidation in history.

Disinflation will prove both welcome and painful. Falling inflation necessarily means that fewer businesses will be able to raise prices without losing sales. Some will have to cut prices to prevent customer defections. Revenue growth will slow materially, narrowing margins and leaving some businesses struggling to support their cost base. But all of this looks fairly conventional. The more exotic risk of a chaotic inflationary spiral seems contained, with the path for policy rates now consistent with the Fed's objective.

Figure 3. Pandemic-Era Supply-Demand Gap Narrows, Reducing Inflationary Pressure

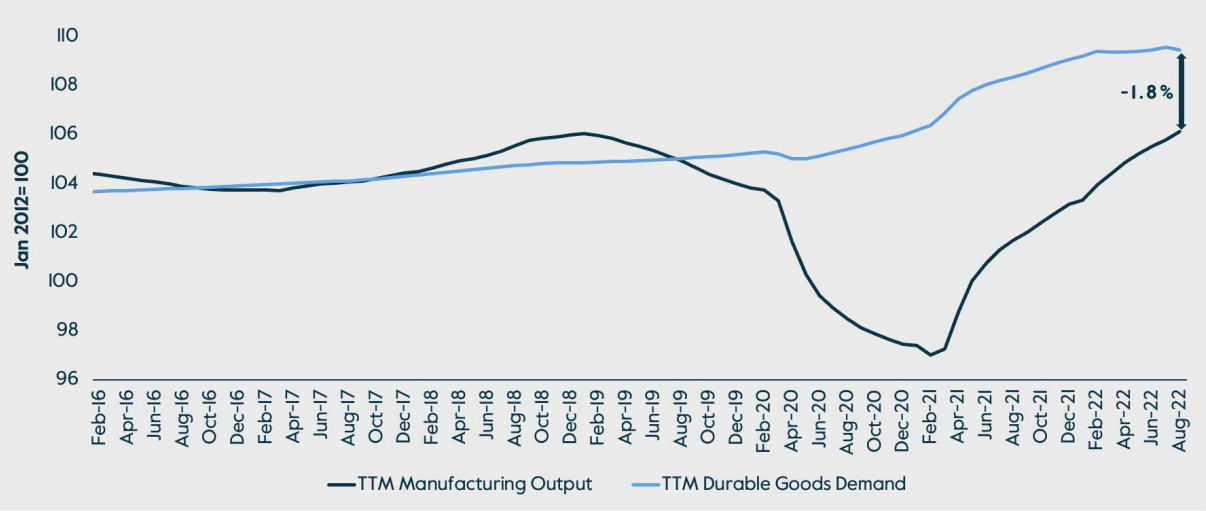


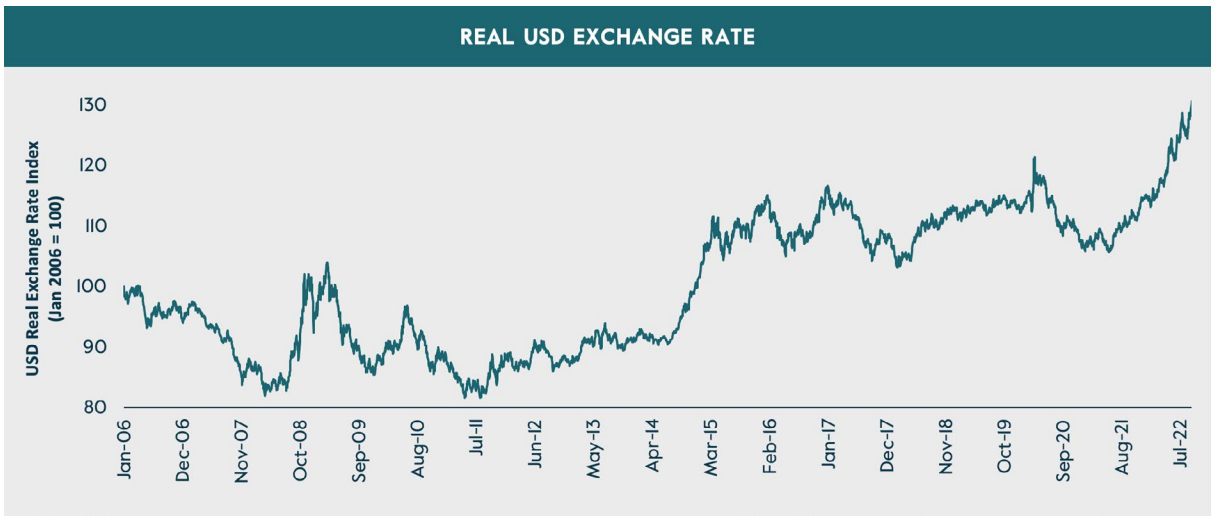
Figure 3 Source: Carlyle Analysis of Federal Reserve and BEA Data, August 2022. There is no guarantee any trends will continue.

SHORTAGE OF FOOD, FUEL & DOLLARS IN DEVELOPING ECONOMIES

The more resolute the Fed, the stronger the dollar (Figure 4). And the stronger the dollar, the lower the domestic value of U.S. corporations' foreign sales and earnings, and the more expensive it is for businesses and households in the rest of the world to buy things denominated in dollars, which in a dollarized global economy is virtually every primary commodity.

Developing economies with sufficient domestic supplies of food and energy to meet domestic demand should be fine. Unfortunately, there is a long list that does not meet those criteria, including Sri Lanka, where shortages of food and fuel led to the government's collapse. In the months ahead, many such economies may have no choice but to seek financial support from the IMF and multilateral lenders – a process that heightens near-term uncertainty given the likely restructuring of existing debt and domestic belt-tightening typically mandated as part of the package.[1]

Figure 4. U.S. Dollar Reaches Record High

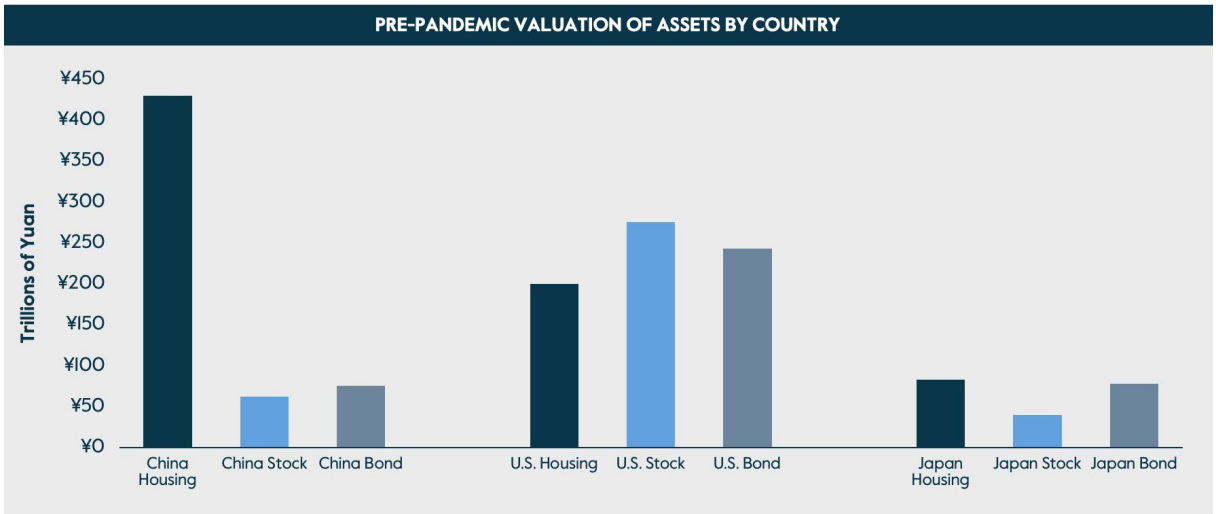


1 Li, L. et al. (2015), "Insights into the IMF Bailout Debate: A Review & Research Agenda," *Journal of Policy Modeling*.
Figure 4 Source: Carlyle Analysis, FRED, Bloomberg, September 7, 2022. There is no guarantee any trends will continue.

In many cases, developing economies may turn to China, which has emerged as the world's largest bilateral lender and official creditor.[2] But China faces its own problems, both in terms of energy shortfalls from extreme heat's impact on hydroelectric generation, and distress in property markets tied to official efforts to rein in the sector. Property markets became the preferred destination for household savings thanks to outsized returns during the period when real estate development successfully moved 450 million people from the countryside to cities (Figure 5).

Given current demographic realities and high-tech ambitions, those resources would be more productive today if channeled to commercial and industrial loans or equity stakes in operating companies. Just as the Fed had no choice but to instill fears of recession to break ingrained inflationary psychology, so too have Chinese policymakers been forced to inflict losses in real estate markets to reorient fund flows away from the sector.[3]

Figure 5. Chinese Portfolios Significantly Overweight Housing



2 Gelpern, A. et al. (2021), "How China lends: A rare look into 100 debt contracts with foreign governments," Peterson Institute for International Economics.
3 http://money.people.com.cn/n1/2020/1201/c42877-31950958.html
Figure 5 Source: "Peak China Housing," Rogoff, Kenneth S., Yang, Yuanchen, August 2020. There is no guarantee any trends will continue.

EUROPE'S ENERGY MAELSTROM

Rich economies can also find themselves short on energy. Europe certainly has. Over the past decade, European domestic natural gas production declined by -63% while gas consumption rose 2% (Figure 6). One can imagine what this disjunction means for European energy security, especially when imports from Russia were supposed to fill the gap. Over the past year, gas prices have risen 10x and the increase in forward electricity prices has been even more dramatic. One MWh of power delivered a year from now in France and Germany can be sold forward today at a price equivalent to more than $1,000 per barrel of oil (Figure 7).

Figure 6. European Energy Insecurity: Collapsing Production, Stable Demand

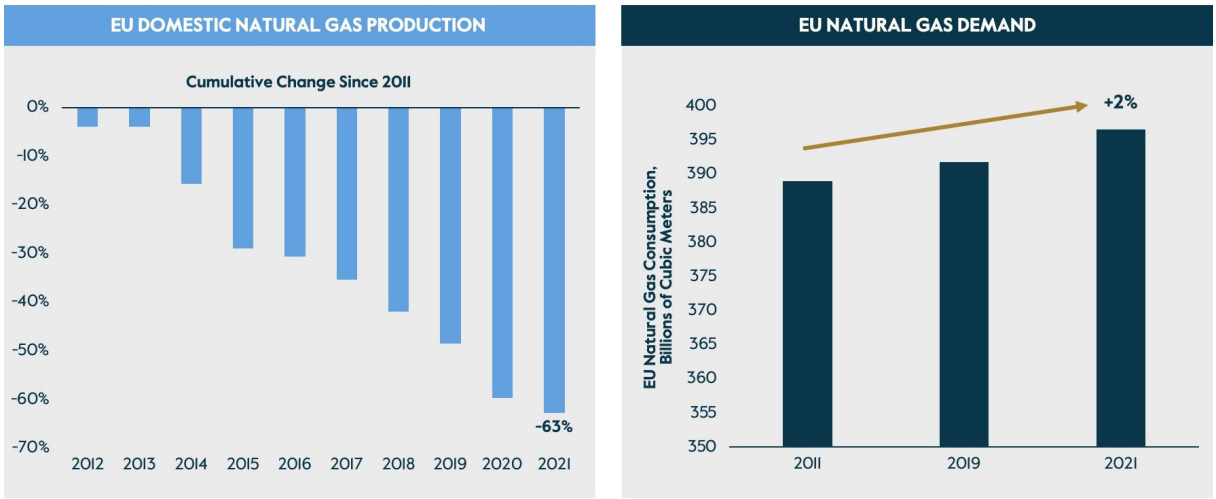
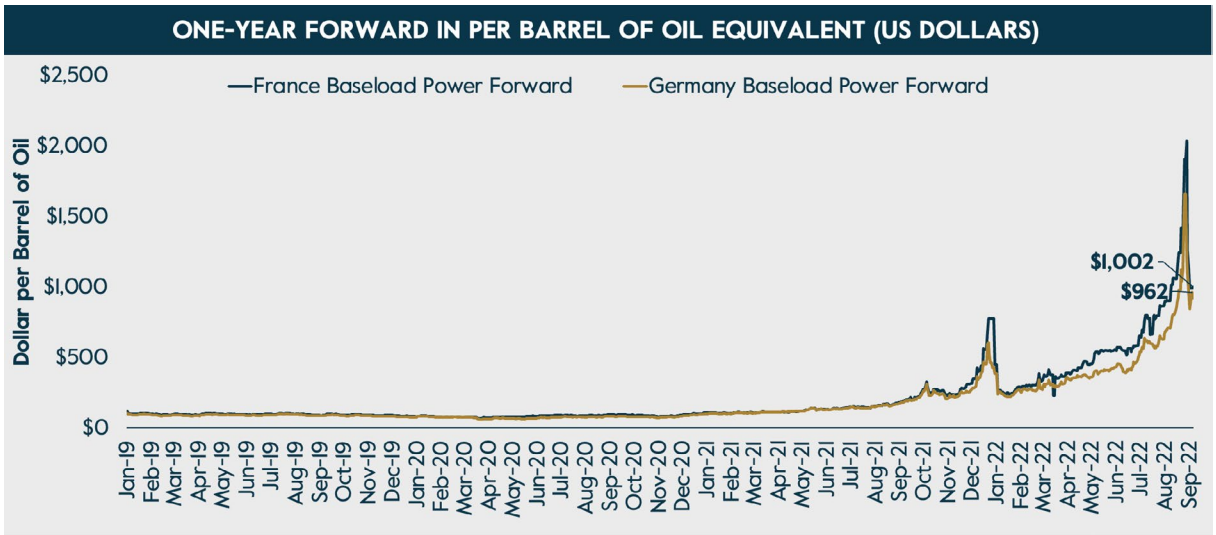


Figure 7. EU Baseload Power Priced at Equivalent of >$1,000 Oil



2 Gelpern, A. et al. (2021), "How China lends: A rare look into 100 debt contracts with foreign governments," Peterson Institute for International Economics.
3 C.f. http://money.people.com.cn/n1/2020/1201/c42877-31950958.html
Figure 6 Source: Carlyle; Statista, August 2022. There is no guarantee any trends will continue.
Figure 7 Source: Carlyle; Bloomberg, September 7, 2022. There is no guarantee any trends will continue.

Large swathes of economic activity become uneconomic at these prices, which also result in ballooning trade deficits since Europe imports virtually all of the fossil fuel it burns (Figure 8). A euro at parity with the U.S. dollar may look weak historically but may prove overvalued given the scale of this terms of trade shock. Valuation ratios could also decline further, despite looking cheap historically and relative to those in the U.S. (Figure 9). Direct subsidies and utility backstops have protected households and businesses from bearing the full brunt of the crisis thus far, but until the marginal cost of energy declines closer to pre-crisis levels, investors will need to be compensated for the risk that embedded losses eventually flow through to corporate income statements in the form of higher operating costs, lost sales, or higher taxes.

Figure 8. Europe Imports Nearly All of Its Fuel, Placing Downward Pressure on Trade Balance & Euro

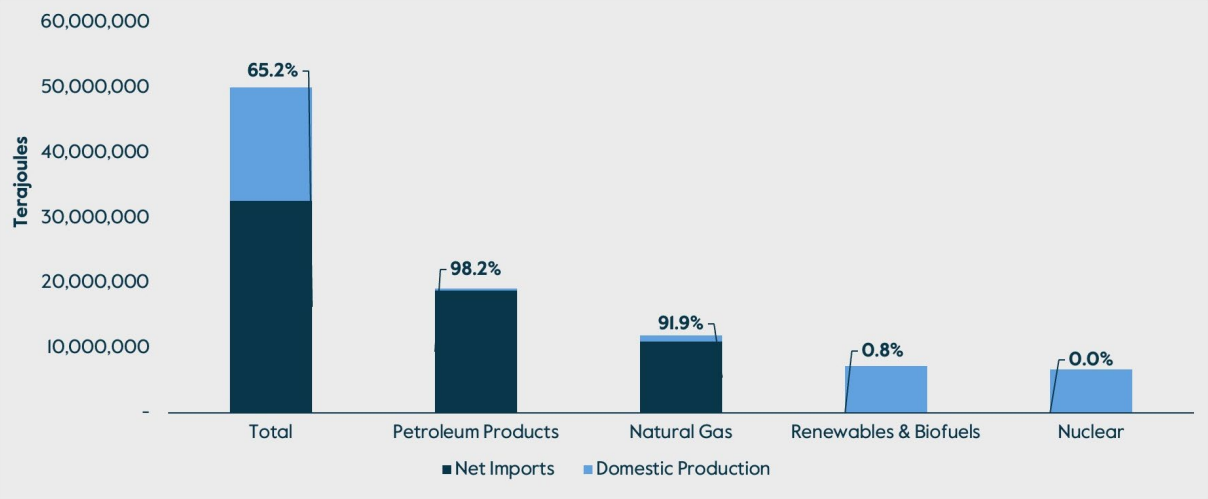


Figure 9. European Valuations Cheap Historically & Relative to U.S.

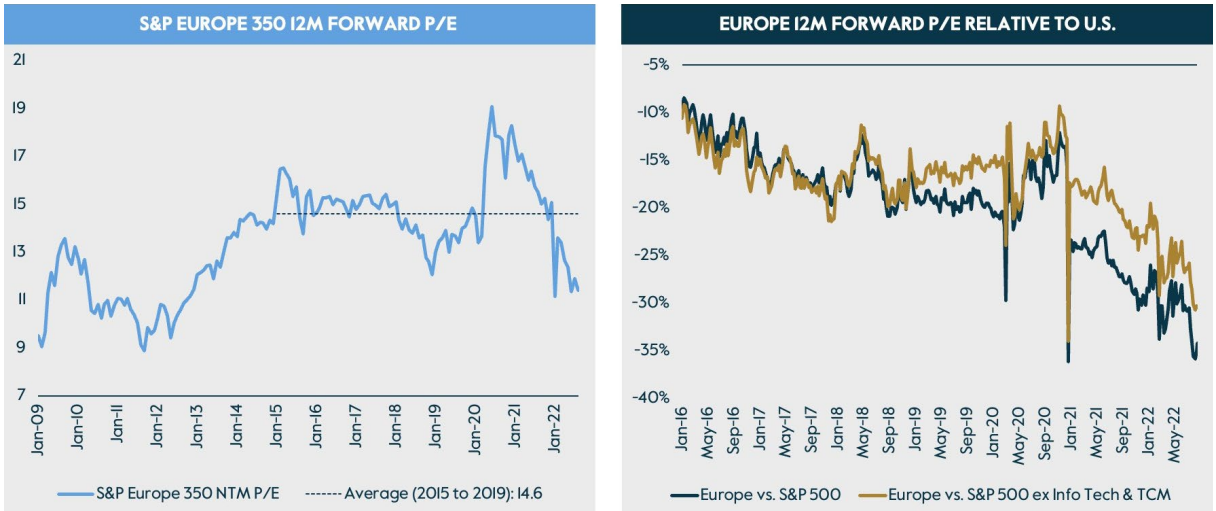


Figure 8 Source: Carlyle; European Commission; EuroStat, August 2022. Data as of 2019. There is no guarantee any trends will continue.
Figure 9 Source: Carlyle Analysis; Cap IQ, August 2022. There is no guarantee any trends will continue.

2 THE PENDULUM

> "I saw clearly the doom which had been prepared for me, and congratulated myself upon the timely accident by which I had escaped."

The pitfalls facing investors' portfolios, then, are hardly imagined. But sober assessment of current risks must be wedded to an honest appraisal of likely macroeconomic dynamics over the medium term. Worries about a sustained economic downturn seem misplaced. Contractions tend to be caused by overcapacity, where negative returns on the last increment of capital cause economy-wide investment rates to drop as companies shed assets and payrolls to shrink their footprint and cut their losses (Figure 10). This seems to be the opposite of the problems we face today, which stem largely from *underinvestment* in the decade preceding the pandemic.

Figure 10. No Signs of the Excess Capacity Associated with Deep Downturns

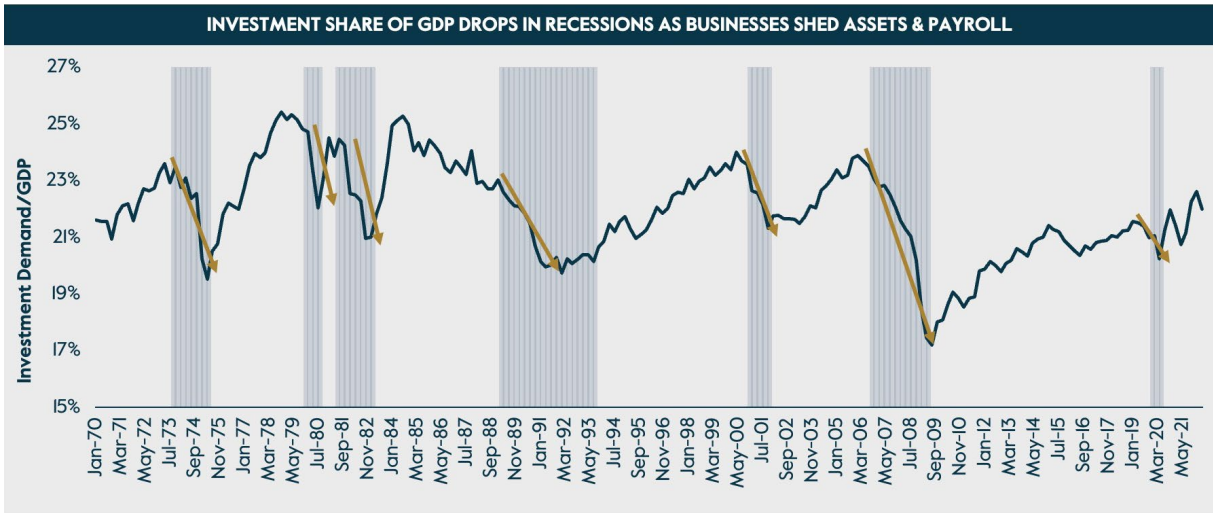


Figure 10 Source: Carlyle; Bureau of Economic Analysis; OECD; August 2022. There is no guarantee any trends will continue.

THE PSYCHOLOGICAL SCARS FROM THE GFC

In the years following the Global Financial Crisis (GFC), companies cut back substantially on investment in working capital, fixed assets, and anything else that needed to be financed or could become "stranded." The net stock of physical, nonresidential assets expanded at barely half the rate of the prior 20 years (Figure I1). Capacity was increasingly leased rather than purchased, with a proliferation of contract manufacturing arrangements and lengthening global "supply chains" that turned each component, input, or step in the production process into its own contestable market.[4] These strategies not only de-risked companies in the event of another GFC, but also substantially boosted return on equity (ROE) as unbundling allowed companies to focus on the highest value-added portions of the production process, like product design, R&D, and marketing (Figure I2).

By focusing almost exclusively on the most salient risks revealed by the GFC, management teams and investors came to undervalue productive capacity, physical assets, and primary commodities. Intangible assets – proprietary technology and human capital – are often far more valuable than their physical counterparts and market pricing should reflect that reality.[5] But an obvious imbalance emerged over time. Energy came to be trivialized despite serving as the principal input from which all other economic activity flows. Software that algorithmically matches buyers and sellers of durable goods commanded higher market values than companies with the physical assets and know-how needed to manufacture those products.[6] An inexorable move towards "virtual" or "factoryless" manufacturing often traded modest increases in (modeled) ROE for exotic and underappreciated risks that only became clear when entire production processes came to a halt due to the inability to secure timely delivery of commoditized inputs like air hoses, cords, or display chips sourced from far-flung corners of the globe.

4 WTO, "Beyond Production," Global Value Chain Development Report, 2021.
5 Thomas, J. (2021), "When the Future Arrives Early," Carlyle.
6 Compare Carvana to Ford as of Feburary 2021, for example.

Figure 11. Fixed Investment Growth Slows Post GFC

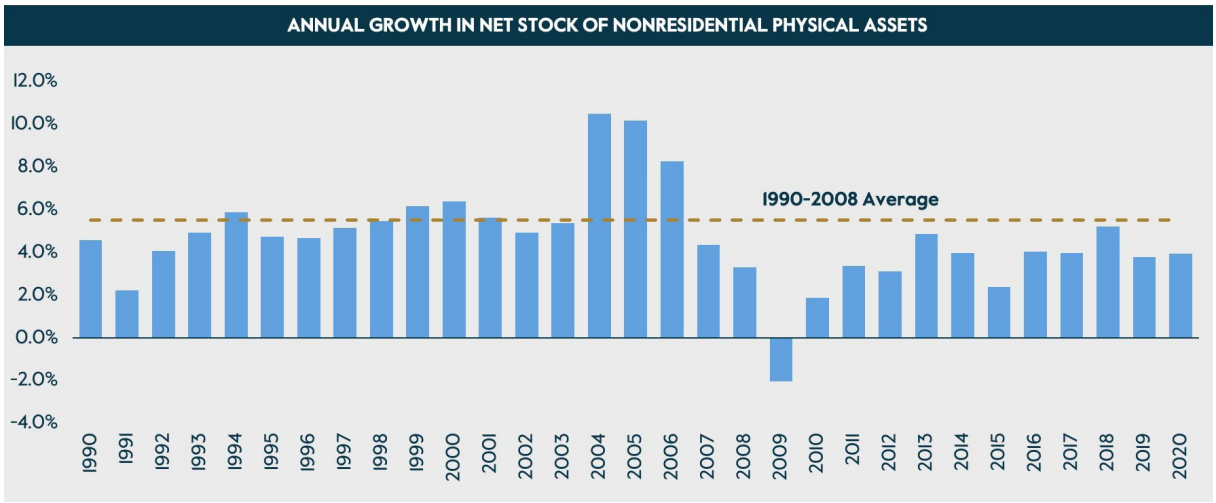


Figure 12. Companies Outsourced Certain Production Processes to Reduce Financing Need, Boost Return on Equity

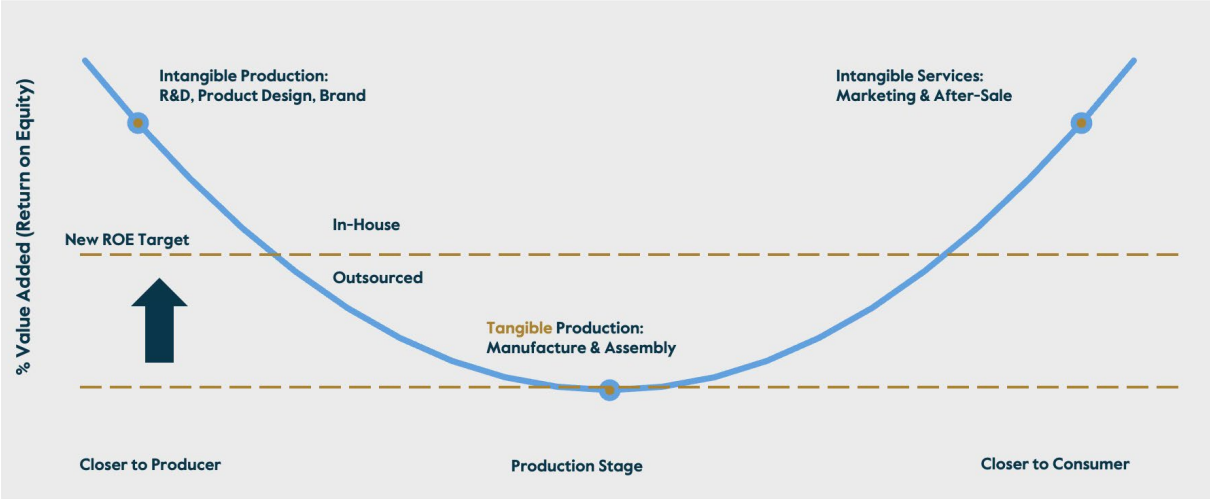
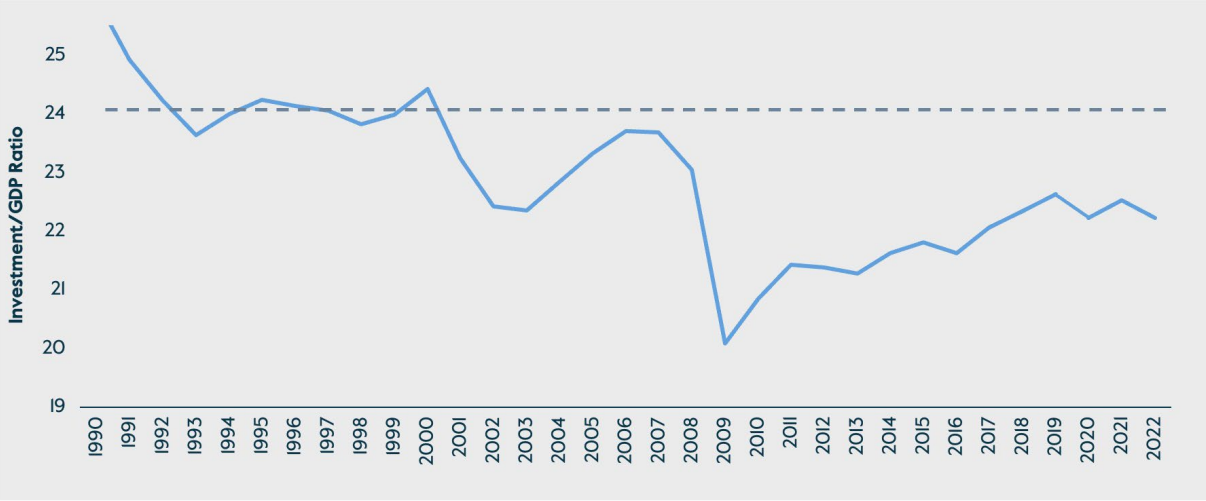


Figure 11 Source: Carlyle Analysis; BEA Fixed Asset Tables, August 2022. There is no guarantee any trends will continue.
Figure 12 Source: Carlyle, Adapted from WTO, "Recent Trends in Global Value Chains," 2022. There is no guarantee any trends will continue.

ENTERING A PERIOD OF "DEFERRED MAINTENANCE"

As memories of the GFC fade, the risk perceptions of investors, management teams, and policymakers become shaped by more recent shocks.[7] Worries about the implications of a sudden stop in finance give way to concerns about energy security and the resiliency of supply chains. Today, the macro pendulum swings in the direction of increased fixed investment, greater capacity, and more robust systems and production networks. This is good news for the global growth outlook. Returning to pre-GFC investment rates (Figure 13), for example, would increase capital formation in advanced economies by more than $1.2 trillion annually and boost real growth rates by 0.2% to 0.3% per year, holding productivity constant.

Figure 13. Advanced Economies Reinvest a Smaller Share of GDP

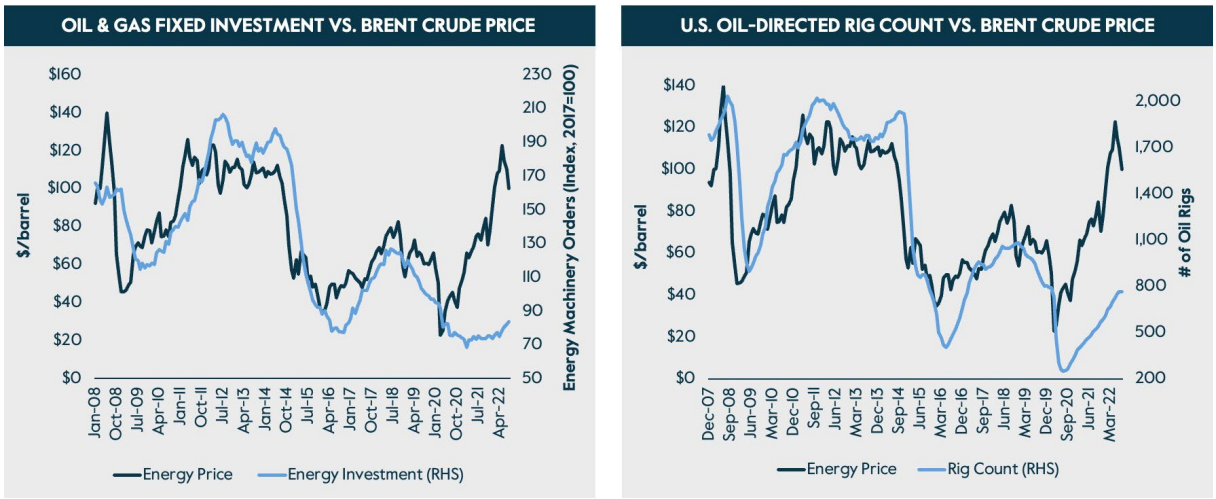


7 Sunstein, C. and R. Zeckhauser. (2011), "Overreaction to fearsome risks," Environmental and Resource Economics. Nareswari, N. et al. (2021), "The Effect of Behavioral Biases on Risk Perception."

Figure 13 Source: Carlyle Analysis of 2022 IMF WEO Database. There is no guarantee any trends will continue.

The need for more investment is most obvious in the energy sector, where divestment from fossil fuels has introduced significant vulnerabilities without reducing energy demand or accelerating the transition to a clean energy future.[8] The competing priorities of energy transition, energy security, and energy availability have fallen out of balance. While global energy capex is set to increase by 8% in 2022, over half of that has been consumed by higher costs for construction materials and labor.[9] Moreover, increases in investment rates thus far have been extremely modest relative to the increase in energy prices (Figure 14). Fears of "stranded assets" and shareholders' demands for increased distributions have paralyzed fixed investment at oil and gas companies, despite record prices and revenues. The result is major financial leakage from the sector; global investment in PV solar and wind is expected to equate to less than 10% of the *net income* earned by integrated oil and gas companies over the course of the year.[10]

Figure 14. Energy Investment Lags Relative to Energy Prices



8 Thomas, J. and M. Starr (2022), "The Inclusive Approach to Energy Transition," Carlyle.
9 IEA, World Energy Investment 2022.
10 IEA, World Energy Investment 2022.
Figure 14 Source: Carlyle Analysis; St. Louis Federal Reserve, August 2022. There is no guarantee any trends will continue.

If Europe is to escape from the current crisis, it will not be by tinkering with market pricing rules but by securing more energy. The EU has approved two major green energy financing packages since the onset of the pandemic (Figure 15). In the months ahead, policymakers will likely accelerate deployment of capital approved under these programs and add to their size. These outlays will quickly accelerate growth across the economy, boosting demand for the components, parts, equipment, software, hardware, and other industrial inputs necessary to construct solar panels, wind turbines, utility-scale batteries, and smart grid transmission and distribution networks.

Figure 15. Capital Influx: Scheduled EU Energy Transition Outlays

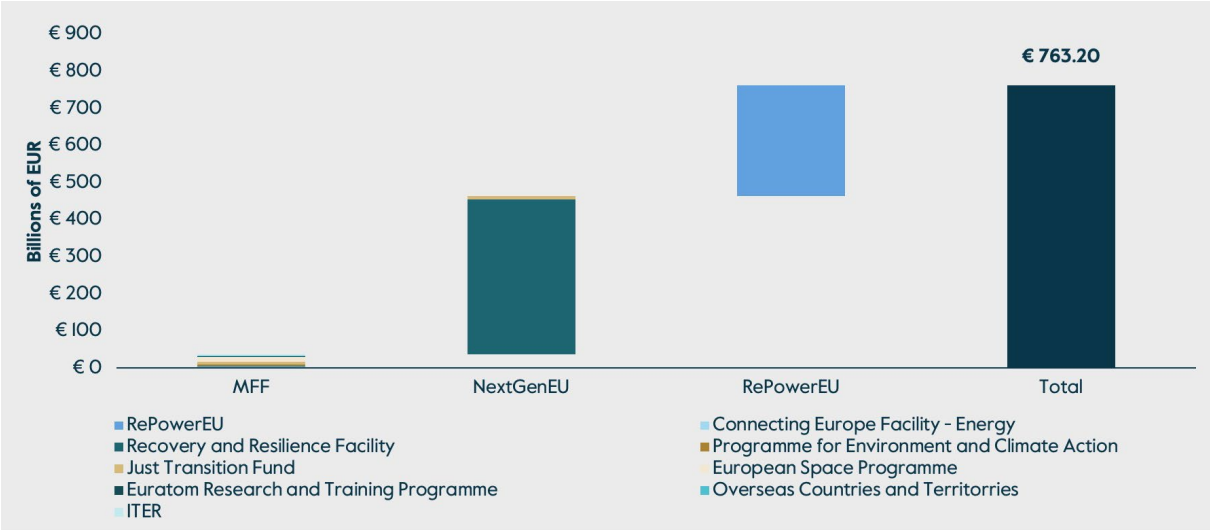
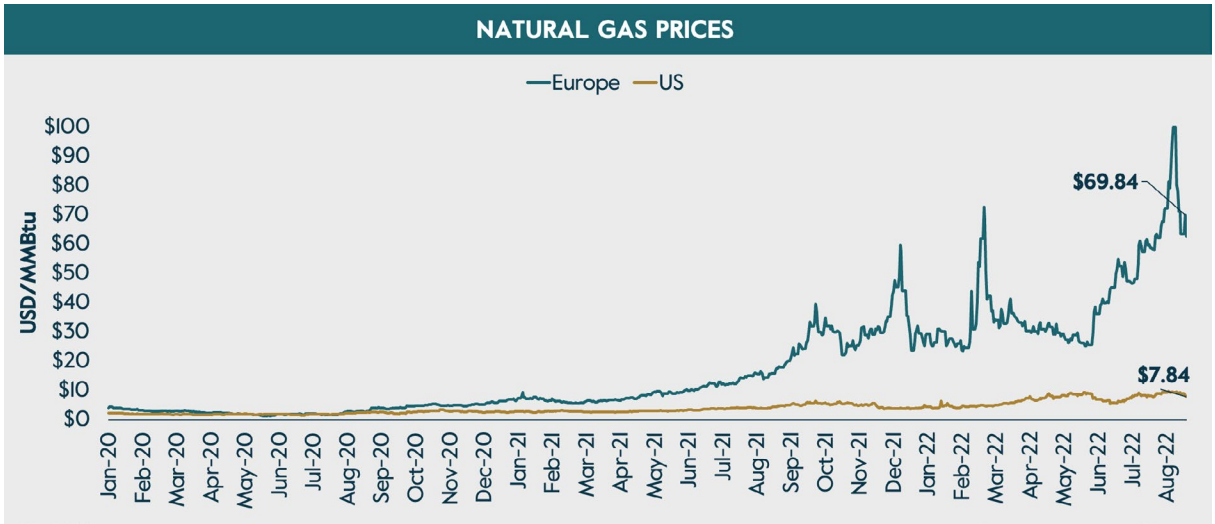


Figure 15 Source: Carlyle Analysis; European Commission, August 2022. There is no guarantee any trends will continue.

But doubling down on renewables will not be enough. More natural gas is necessary to resolve the crisis, including additional LNG terminals to narrow the 8x disparity in wholesale natural gas prices between North America and Europe (Figure 16). With sufficient investment in tankers, gasification and liquefication terminals, and pipelines, the North Atlantic market for gas could be as integrated as that for crude oil. Construction began on Germany's first LNG terminal in July, which is expected to begin operation in December or January.[11] Many more are needed.

A policy mix that includes domestic gas development and LNG may not look any more likely today than a taxpayer-financed backstop for financial institutions may have appeared to observers in January 2008. But once these policies arrive, and after accounting for the aforementioned adjustments in exchange rates and valuation ratios, expected returns in Europe are likely to be higher than anywhere else in the world.

Figure 16. LNG Opportunity: Closing Cross-Atlantic Gas Price Disparity



11 https://www.offshore-energy.biz/uniper-starts-construction-of-germanys-first-lng-terminal-in-wilhelmshaven/

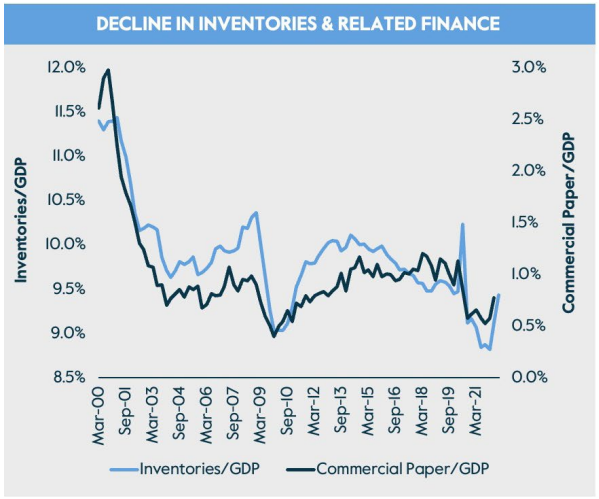
Figure 16 Source: Carlyle Analysis; Bloomberg, September 7, 2022. There is no guarantee any trends will continue.

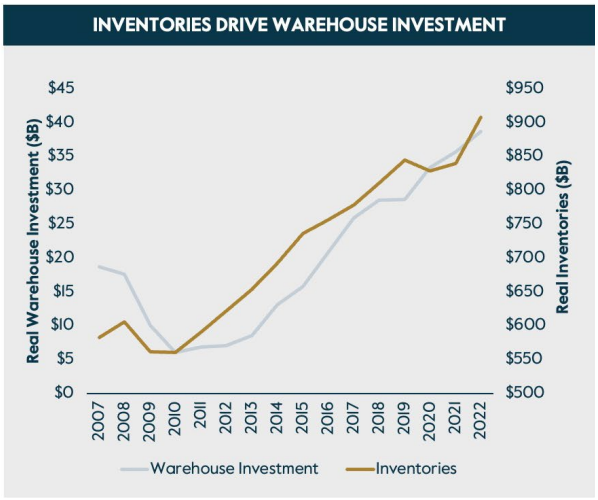
SUPPLY CHAIN RETRENCHMENT & INDUSTRIAL POLICY

Capital outlays to bolster logistics, transportation, and industrial networks should also rise substantially in the next few years. "Supply chains" could not scale up to meet surging goods demand in 2021 because production networks had become too complex, too stretched geographically, and too sequentially dependent, all while operating with inventory levels that provided no buffer for the slightest perturbation to the system. By itself, the move from "just in time" to "just in case" inventories of components and parts could add $400 billion to working capital needs and increase demand for storage floorspace by 65% (Figure 17). And this is but the tip of the iceberg.

Management teams today are engaged in a fundamental rethink of production processes. From the 2018 tariffs to the pandemic, lockdowns, and war in Ukraine, disruptions have come at a frequency and cost that dwarf modeled expectations.[12] A monomaniacal focus on efficiency and wringing out the last basis point of ROE have given way to efforts to take-back control and reduce fragility. To be sure, no one is going back to the industrial model of the 1920s, when virtually every task in a manufacturing process was performed under one roof. But geography once again matters, and management teams consciously accept higher costs in exchange for network redundancies and secondary sourcing.

Figure 17. Move to "Just in Case" Inventories Likely to Boost Working Capital & Warehouse Needs



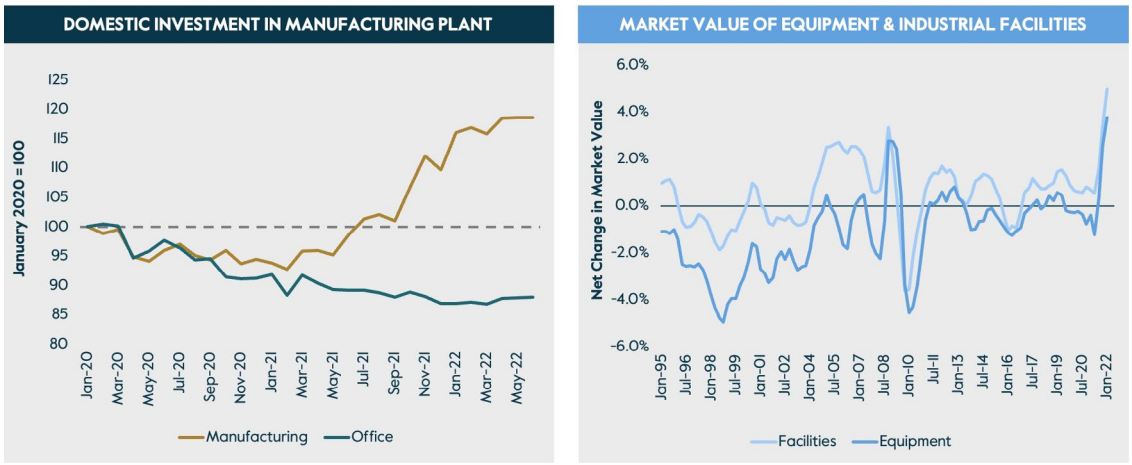


12 Modeled estimates from McKinsey, 2020, Supply Chain Survey.
Figure 17 Source: Carlyle Analysis; Cap IQ, August 2022. There is no guarantee any trends will continue.

To these changes, one must add the reemergence of industrial policy. Not long ago, any suggestion that the government should foster the growth of a specific sector or industry was derided as "picking winners and losers" and synonymous with government waste and inefficiency, or crony capitalism and rent-seeking.[13] Through passage of the CHIPS Act and Inflation Reduction Act, the U.S. Congress clearly signaled that this era has come to a close. These laws combine to provide more than $400 billion in outlays and tax incentives to expand the U.S. manufacturing base and facilitate the domestic production of semiconductors and clean energy products and fuels.[14]

The data had already turned in advance of passage of these Acts. While remote work has diminished demand for office space, causing fixed investment in office to drop by -12% since the onset of the pandemic, industrial investment is up by 18% since then, even when excluding warehouses. Demand for industrial capacity is also evident in the market for second-hand equipment and facilities, whose value, net of depreciation, has risen at the fastest rate in more than 30 years (Figure 18).

Figure 18. Domestic Investment in Industrial Capacity Already Booms in Advance of Industrial Policy Changes



13 Favorable assessments of industrial policy were essentially absent from the literature between the 1990s and 2019. C.f. Nam, Chong-Hyun. 1995. The Role of Trade and Exchange Rate Policy on Korea's Growth. In Growth Theories in Light of the East Asian Experience, ed. Takatoshi Ito and Anne O. Krueger. Chicago: University of Chicago Press. AND Stern, Joseph J., J. H. Kim, Dwight H. Perkins, and J. B. Yoo. 1995. Industrialization and the State: Korean Heavy and Chemical Industry Drive. Seoul: Harvard Institute for International Development and Korea Development Institute.

14 Congressional Budget Office, "Estimated Budgetary Effects of H.R. 4346," July 21, 2022. Congressional Budget Office, "Estimated Budgetary Effects of H.R. 5376, the Inflation Reduction Act of 2022," August 3, 2022.

Figure 18 Source: Carlyle Analysis of Census Bureau Data, August 2022. There is no guarantee any trends will continue.

NARROWER MARGINS, HIGHER FINANCE COSTS

While supportive for the medium-term growth outlook, these developments are not uniformly positive for investors. First, the corporate sector's allergy to fixed investment contributed to the record expansion of operating margins (Figure 19). Increased resiliency will not come free of charge; margins are likely to narrow and the variance between companies' is likely to widen materially. Second, increased investment rates also increase the demand for capital, placing upward pressure on equilibrium real interest rates (Figure 20). Monetary policy wasn't as "easy" as it seemed in the years following the GFC because investment became less responsive to lower rates. We might find the opposite is true in the years ahead.

Figure 19. Profit Margins Likely to Narrow as Investment Rates Increase

Figure 20. Higher Investment Demand Will Place Upward Pressure on Equilibrium Real Interest Rates

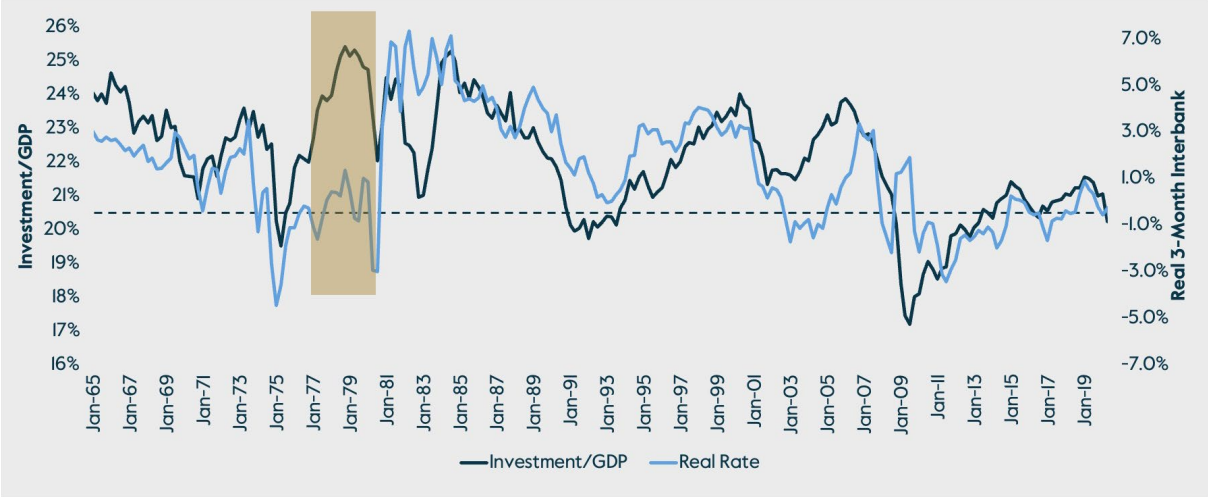


Figure 19 Source: Carlyle Analysis of S&P Capital IQ, BEA & Factset Data. There is no guarantee any trends will continue.
Figure 20 Source: Bureau of Economic Analysis; OECD; August 2022. There is no guarantee any trends will continue.

As we noted a year ago, higher rates are likely to exact the greatest toll on the valuations of fast-growing but loss-making businesses whose free cash flow arrives furthest into the future and is therefore most heavily discounted.[15] Valuation ratios for the top 10% of businesses by the duration of free cash flow did indeed fall -50% over the past year.[16] Further declines could come as 3% cash yields dent investors' appetites to fund losses. Investors concerned about more generalized downward pressure on valuations would be wise to move allocations towards slower growing, but cash-generative assets. Virtually all of the risk of a downward adjustment in valuations appears to be concentrated in the top third of the distribution (Table I).

Table 1. Valuation Risk Concentrated in Top Third of Distribution

PRICE-TO-EARNINGS RATIOS BY QUINTILE, JUNE 30, 2022			
	JUNE 2022	LONG-RUN AVERAGE	DIFFERENCE
Top Quintile	53.48x	38.07x	+40.5%
Second Quintile	28.21x	22.31x	+26.4%
Middle	18.40x	16.97x	+8.4%
Fourth Quintile	11.79x	12.86x	-8.3%
Bottom Quintile	5.70x	5.70x	--

12 Modeled estimates from McKinsey, 2020, Supply Chain Survey.
Table I Source: CRSP Database, August 2022. There is no guarantee any trends will continue.

FAREWELL TO THE POST-GFC ERA

No one should minimize the near-term risks facing investors, but vulnerabilities exposed over the past two years may have finally brought the post-GFC era to a close. After more than a decade of free money but nowhere to put it (aside from bidding up the price of the existing stock of assets), we seem to be entering a period of "deferred maintenance." Capital deployment opportunities will increase as management teams and policymakers ramp-up fixed investment to boost capacity, add redundancies, and develop more robust systems and production networks. Viewed from the emotional distance of a three-to-five-year investment horizon, this shift would seem quite favorable to the growth outlook, perilous as it may prove for those investment strategies premised on a limitless supply of money to burn.

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