NORTHERN TRUST

MAY 10, 2024

WEEKLY ECONOMIC COMMENTARY

IN THIS ISSUE:

- **Are Sanctions Working?**
- **Inflation's Signal and Noise**
- **Empowering AI**

Global Economic Research
50 South La Salle Street
Chicago, Illinois 60603
northerntrust.com

Carl R. Tannenbaum
Chief Economist
312-557-8820
ct92@ntrs.com

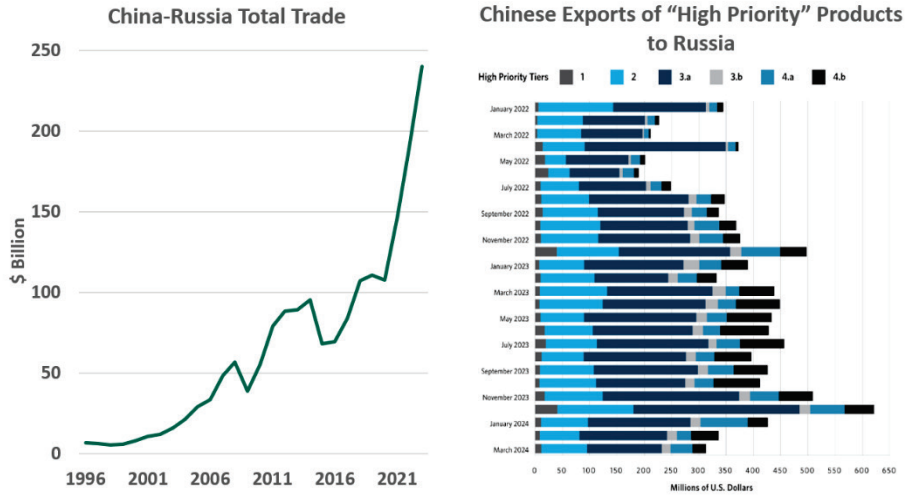
Ryan James Boyle
Chief U.S. Economist
312-444-3843
rjb13@ntrs.com

Vaibhav Tandon
Chief International Economist
630-276-2498
vt141@ntrs.com

In many sports, the referee can call a penalty when a player commits a foul. In economics, when a country breaks the rules, it attracts penalties in the form of sanctions.

Last week, the U.S. unleashed a wave of nearly 300 new penalties aimed at disrupting Moscow's military-industrial base amid the ongoing Ukraine war. Among those sanctioned are 20 Chinese companies. Russia's trade with China has surged since the start of the Ukraine war, making it Beijing's sixth-largest trading partner in 2023. Chinese exports to Russia have risen by more than 60% in the past two years; China is now the nation's largest supplier of commercial goods.

It is the increasing supply of "high priority" or dual-use components that has drawn America's ire. This category includes alumina, optical instruments and microelectronic components essential for manufacturing weaponry. China was responsible for about 90% of Russia's imports of goods covered under the Group of Seven (G7) nation's "high priority" export control list in 2023, up from one-third before the start of the war.



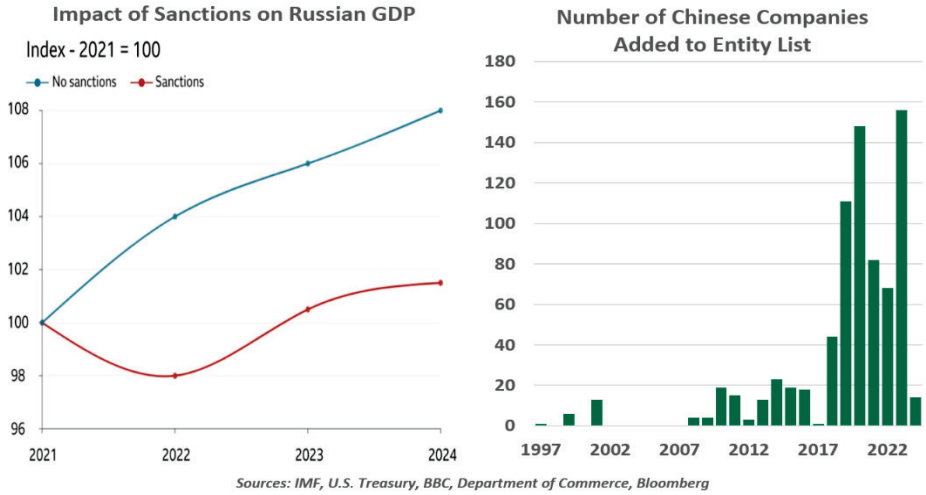
Sources: WIND, SCMP, Carnegie Endowment

The imposition of sanctions covering Chinese entities represents a significant move that could further strain relations between the world's two largest economies. And it has raised questions about the effectiveness of these penalties as a deterrent against bad actors.

Sanctions have been a key part of the U.S. policy toolkit, but are increasingly becoming easy to evade unless they have strong multilateral support. With over 16,000 sanctions against it, Russia was already the world's most penalized country. These unprecedented

measures were expected to impair the Russian economy and its military-industrial base. Instead, Russia adapted by turning to markets like China and India for its most important exports, allowing sustained economic growth. Russia remains one of the world's largest oil exporters, which is helping it fund military, social and other spending without stressing its finances.

Sanctions have brought some pain to the Russian economy. According to U.S. Treasury calculations, these measures have cut 5% from the economic growth it might have had over the past couple of years. Moscow has lost access to $300 billion of its foreign exchange reserves held by G7 nations, while its currency has lost almost a fifth of its value against the U.S. dollar. Russia's industrial base has been crippled, which contributed to an inflationary environment.



Sources: IMF, U.S. Treasury, BBC, Department of Commerce, Bloomberg

The effectiveness of sanctions has eroded; not so for Russia's military-industrial base.

The U.S. still has some powerful options at its disposal as it seeks to limit Russia. Among the most extreme measures would be weaponizing the dollar by removing Chinese financial institutions from the global financial system if they fail to curb support for Russia. But such a move would severely disrupt global trade, as China is a main trading partner for many nations. Further, cutting Chinese financial institutions off from the global financial network will only boost adoption of Beijing's Cross-Border Interbank Payment System and the yuan in the longer run.

These factors explain Washington's measured response towards Chinese entities. By avoiding more punitive measures now, the U.S. is also likely seeking to preserve its leverage for future strategic contests with Beijing.

The West needs to focus on improving the enforcement of and compliance with economic sanctions as they become a tool of first resort. Only then will penalties lead to goals.

Inflation Segregation

Economic reports have had a strong, but frustrating start to the year. Consistent spending has sapped the momentum of inflation's decline, while elevated job creation shows no need for policy support. Traders and forecasters (like us) have had to reconsider our expectations for rate cuts.

Frustrated by this, some have started digging through the details of the inflation reports and suggesting that we dismiss segments whose prices are rising unnaturally. We would caution against this practice.

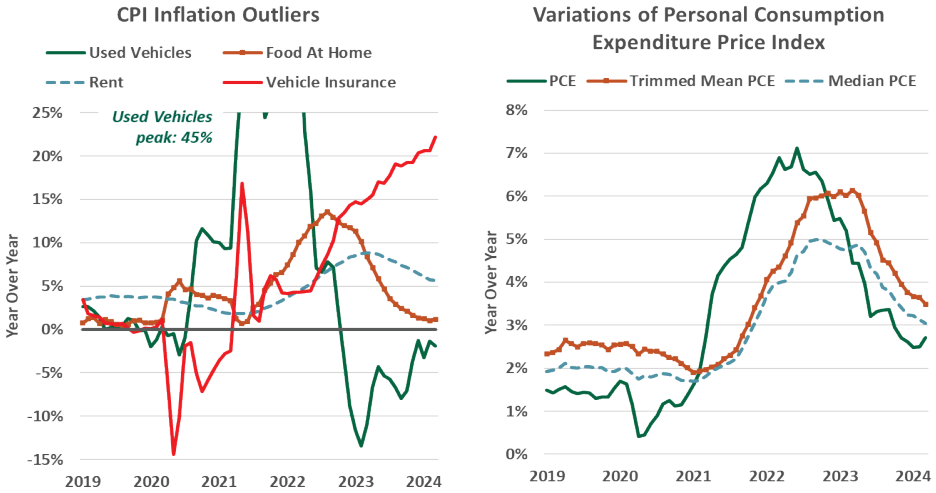
When outcomes do not live up to our expectations, it is natural to seek root causes. The cost of shelter has been a key culprit in the United States. In the March consumer price index (CPI) report,

shelter grew 5.6% year over year, while the overall index accelerated by only 3.5%. Excluding shelter, headline CPI has hovered between 0.8% and 2.3% for the past year.

Does this mean we should exclude or limit the influence of some shelter components on inflation? Defense for this notion comes from the fact that most U.S. households own their homes. Indices of rents or owners' equivalent rent (OER) do not reflect actual mortgage payments, which are steady for most homeowners. From this perspective, it can be argued that official inflation measures are overstated.

Other approaches to measuring inflation, like the Harmonized Index of Consumer Prices used in many European nations, do not include OER. But inflation is not a tailored measure. Anyone shopping for homes or major purchases like autos has felt the effect of higher interest rates. Those are real economic headwinds.

Readers may recognize the refrain of selective exclusion. As inflation took off in 2021, we could explain that the prices of used cars and trucks were skyrocketing due to automotive supply chain disruptions; excluding them, inflation was more tolerable. In 2022, commodity markets were skewed by the Ukraine war, and inflation was less problematic if categories like motor fuel were excluded. Today, we could get a calmer reading of prices if we ignore motor vehicle maintenance and insurance. There will always be categories of inflation that lead the pack. Inflation must be understood to include some hot and cold categories, not redefined to support a narrative.



Sources: Bureau of Labor Statistics, Bureau of Economic Analysis, Cleveland Fed, Dallas Fed, Haver Analytics

Inflation measures are best understood as trends with a wide scope.

Established measures are available to handle the challenge of outliers. The Federal Reserve Bank of Cleveland publishes a median personal consumption expenditures (PCE) series, indexing to the price category that is the median of inflation rates each month. Their counterparts in Dallas publish a trimmed mean PCE, which excludes the categories with the highest and lowest inflation rates to present a more balanced picture. Both series did not surge like headline inflation rates did, but they also show more distance remaining for a full recovery.

Even the choice of measurement has drawn some scrutiny. CPI has an earlier publication schedule that garners more press coverage, but PCE is the subject of the Federal Reserve's 2% year-over-year inflation target. The two measures are highly correlated in the long run, but when inflation rises, CPI tends to accelerate further and hold higher. Unlike CPI's annual benchmark, PCE is re-weighted every month, making it more responsive to changes in consumer behavior due

to inflation. As of March, the two core measures (excluding food and energy) are a full percentage point apart. They tell a consistent story of trending down, but not as quickly as we would like. Headline inflation of 2.7% for PCE in March sounds more palatable than 3.5% for CPI, but both are too high for comfort.

The Federal Open Market Committee (FOMC) will hold firm to its 2% PCE target. At the May FOMC press conference, Chair Powell made it clear: "Of course, we're not satisfied with 3% inflation. 'Three percent' can't be in a sentence with 'satisfied.'" FOMC members have thus far done a good job rolling with the volatility of inflation, neither prematurely celebrating last year's gains nor casting a more dour tone about this year's shortfalls.

Media mogul Ted Turner once quipped, "If I only had more humility, I'd be perfect." We can always find an attribute that's lacking, or a point to exclude to improve our overall assessment. But the extremes still fit in the equation. With or without them, we see a trend of inflation coming down from an uncomfortable high, but with much more progress needed. The varying set of outliers remind us that inflation's recovery will be uneven. After such a long stretch of stubborn inflation, we will maintain our own humility about forecasting it.

Not Enough Juice

I noticed something new on the social media platforms that I use. As I compose each post, I am asked if I want to sharpen the message by using artificial intelligence (AI). Just to see how it worked, I agreed on one occasion. A simple message about the job market was transformed into a Marxian manifesto decrying the tyranny of capital over labor. I couldn't hit the "undo" key fast enough.

Much as we might try, though, we are unlikely to escape the impact of AI. The time, attention and money that is being devoted to its development are all substantial. Another significant input to the transformation is electricity. Simply stated, AI is a power hog. According to the International Energy Agency, a ChatGPT query uses ten times more electricity than a simple Google search.

High-end analytics and machine learning perform billions of calculations in short spaces of time. Collecting and organizing the data required is also computationally demanding.

The infrastructure required to support the process—commercial buildings filled with servers bearing sophisticated microchips—requires an immense amount of electricity. Aside from the needs of these engines, advanced cooling systems are needed to prevent them from overheating.

AI is a power hog.

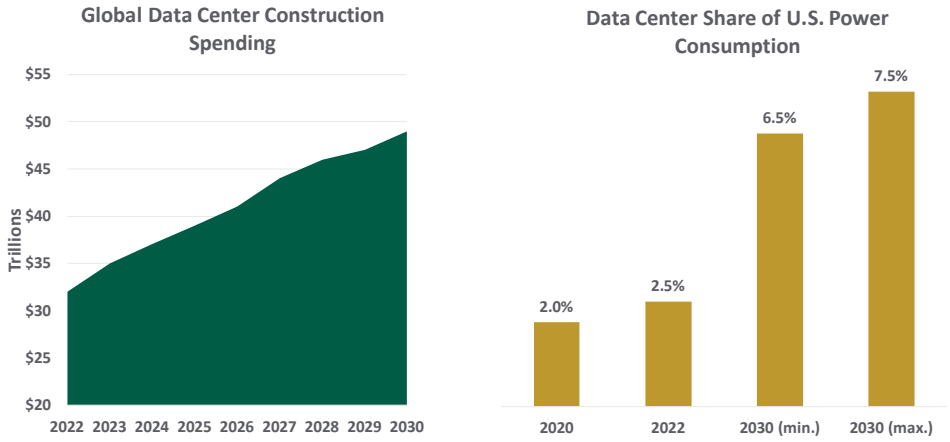
Construction of new data centers is at a fever pitch. Rental rates for space at existing facilities are escalating at an annual pace of close to 20%. Stress on power grids has consequently been increasing. And the shares of power generators have been gaining at a pace that is several times the appreciation of the "Magnificent Seven" stocks. Shortages of commodities like copper and water are directly attributable to the headlong drive to expand computing power.

In some areas, AI providers have arranged for dedicated supplies of electricity. Unfortunately, these sources aren't always environmentally friendly; in parts of the world, coal-fired power plants have been put back into use to feed the demands of the technology. Other potential fuel sources are also being explored, but each has important limitations.

These developments put AI on a collision course with another economic megatrend: adapting to climate change. Long before college students were using AI to compose their essays, the world was struggling with energy policy. The problem is often called a *trilemma*: a situation in which there

are three objectives, but only two can be coincidentally achieved. The world wants inexpensive energy; it wants clean energy; and it wants to procure energy from reliable sources without compromising geopolitical principals.

Reconciling these aims carries a very high degree of difficulty. As an example, one strategy for reducing the growth of carbon emissions is to increase the share of electric vehicles on the road. But that requires the construction of a vast network of charging stations, which will place steep demands on the electricity grid and compete with the needs of data centers.



Sources: Synergy, McKinsey, Boston Consulting Group

Two economic megatrends—AI and climate change—are on a collision course.

In the United States, fossil fuels (primarily natural gas) account for 60% of energy generation. Nuclear and renewables both hover around 20%. In the short term, then, we'll need a good deal more gas-fueled capacity; this will require more investment in a source that generates mixed feelings among investors and consumers.

How, then, to square society's advancing embrace of AI with its desire to control climate change? Some suggest a "physician, heal thyself" approach. Why not let AI loose on the problem, asking it to design optimal data center structure and manage peaks and troughs of power demand? AI could also potentially examine itself; there may be ways to make the algorithms that run large language models more efficient.

I will be doing my part to address the problem. After my unfortunate experience with the labor market comment, I will not use AI again anytime soon. It may not save a lot of electricity, but every little bit helps.

northerntrust.com

@NT_CTannenbaum