

**The Changing Industrial Landscape** and Impact on Natural Gas Demand



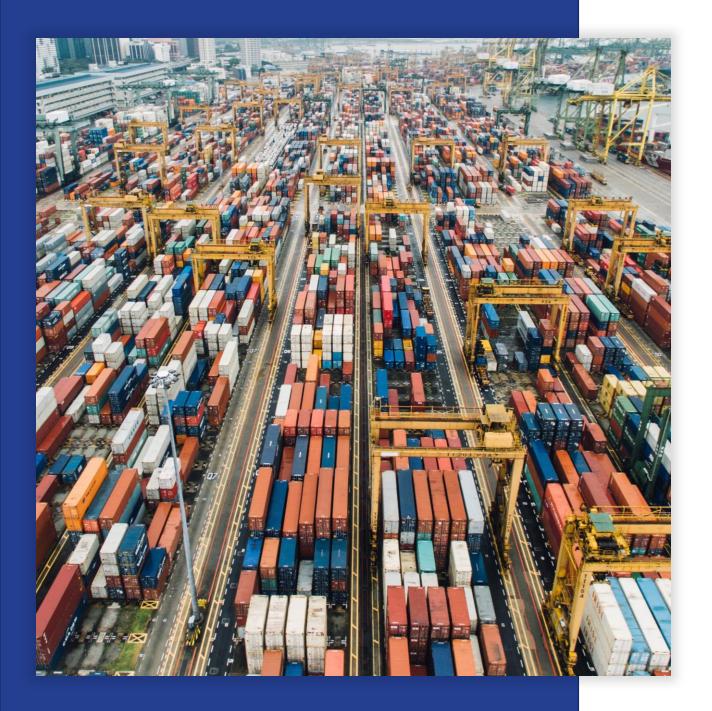
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### **Globalization and Growth: The Last 30 Years**

- While we've gone through numerous economic cycles, the post cold war era has been characterized by technological innovation, globalization, cheap and abundant energy, central bank easing, and relative global stability
- This allowed for strong economic growth, with the inflationary pressures of strong economic and money supply growth offset by technological efficiency and more efficient resource allocation (globalization). From 1992 to the Present the DJIA has increased ~10x while 10-year interest rates have been cut almost in half-even after the 300bp run-up post-Covid.
- This also led to a decline in heavy manufacturing, both in the United States and the broader western world, as it moved towards countries with cheaper labor (and often more lax labor and environmental standards)
- However, over the past decade several factors have emerged that are beginning to significantly shift the macro picture for the global economy, as well as the micro picture for North American manufacturing
- With ~1/3 of natural gas use in the US going to industrial demand, a revitalization of manufacturing would represent a meaningful tailwind for gas demand





## The Shifting Macro View

- While the extent and degree will be unclear for some time, the world is in the process of deglobalizing essential supply chains, and favoring more stable and often more expensive countries when outsourcing is necessary
- Increased focus on climate policy and carbon management, while perhaps necessary, is inherently inflationary in the short to medium term. Poor and incoherent energy policies can serve to exacerbate this effect.
- Increased geopolitical uncertainty and tensions between countries integral to the global financial and trading system drastically increase event risk and tail risk to prices
- Printing money is inflationary; it won't be seen in the currency market as everyone has done it, but is being reflected in commodities and other hard assets

#### **De-Globalization**

- Classic economic theory holds that production should shift to the cheapest/most efficient location if you wish to maximize wealth and growth
- This is true to an extent, but as we have learned post covid and Ukraine it drastically underestimates the
  operational risk inherent in shifting production away from the end user, particularly if shifted to
  countries that are less stable or friendly
  - Economic impacts of disruptions (chip shortage, etc.)
  - Existential Geopolitical risks (the USA had a very small standing army in 1942-but did have industrial might)
  - Hybrid disruptions (Nordstream/German energy crisis)
- When the operational risks are factored in, costs of offshoring greatly increase, in many cases favoring
  or requiring onshoring. In the near term onshoring is more expensive and thus inflationary.
- The US has access to (more stable) Atlantic trade routes, technological expertise, and access to cheap and abundant energy-one of the few stable countries with potential energy independence.





# **Energy and Manufacturing**

- Energy is essential. The move away from fossil fuels
  will likely not be complete in our lifetime and can only
  occur as viable replacement alternatives exist at
  sufficient scale. Wind, solar, hydrogen, and wastebased biofuels help but don't solve the issueparticularly if global electrical load and fuel demand
  continue to grow significantly as South Asia and Africa
  industrialize..
- Natural gas is perhaps the most scalable transition fuel as it displaces global coal for power generation and reduces coal in steelmaking and other industrial applications. As the only country in the Western world in the top 10 for natural gas reserves, the US is well positioned to benefit.

## **Energy and Manufacturing**

- European energy policy has been a trainwreck for the last decade, and they are
  now harvesting the fruit of bad policy. In the current mild winter, gas prices in
  Europe still hover at ~\$15/MMBtu. Factoring in corresponding electricity prices,
  the energy cost spread for a ton of steel produced in Europe versus the US
  exceeds the cost to ship a ton from the US to Europe. At \$100/MMBtu, where
  prices could be in a cold winter (and were last year), energy costs for European
  producers exceed selling prices per ton for most producers and products.
- Natural gas is difficult and expensive to liquify and export at scale, and LNG
  requires significant infrastructure investment. The easiest way to export natural
  gas is in the form of finished goods such as steel, aluminum, ethanol, or
  fertilizer. We expect this dynamic to provide tailwinds to manufacturing in North
  America and headwinds to Europe.
- While the extent of increased industrial demand remains to be seen, it is a meaningful potential tailwind over the next decade





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