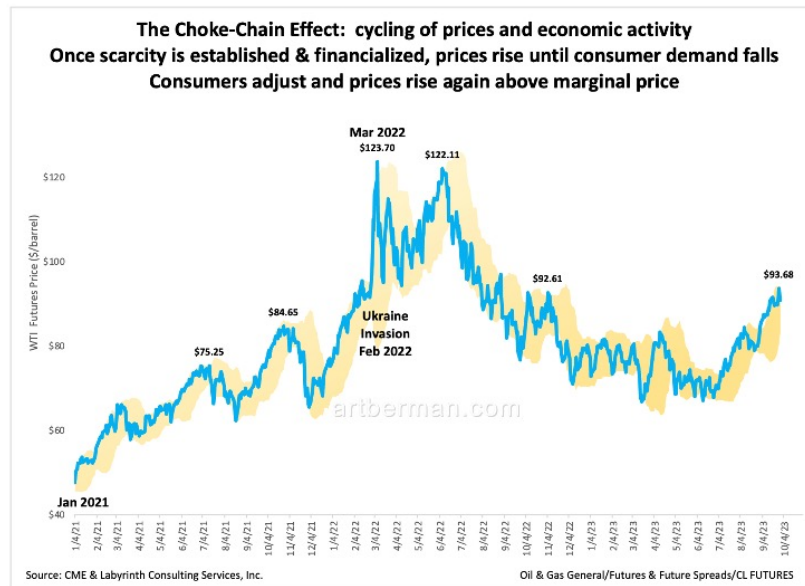
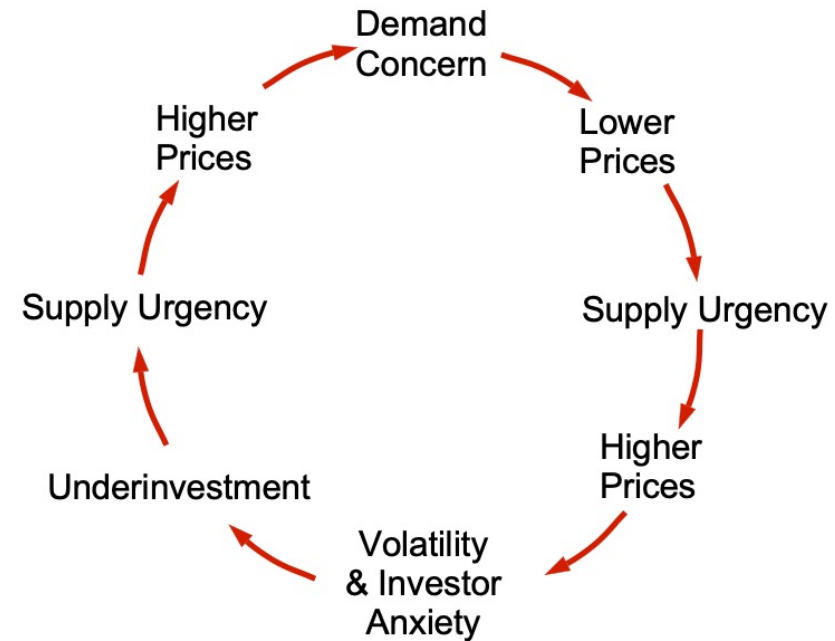


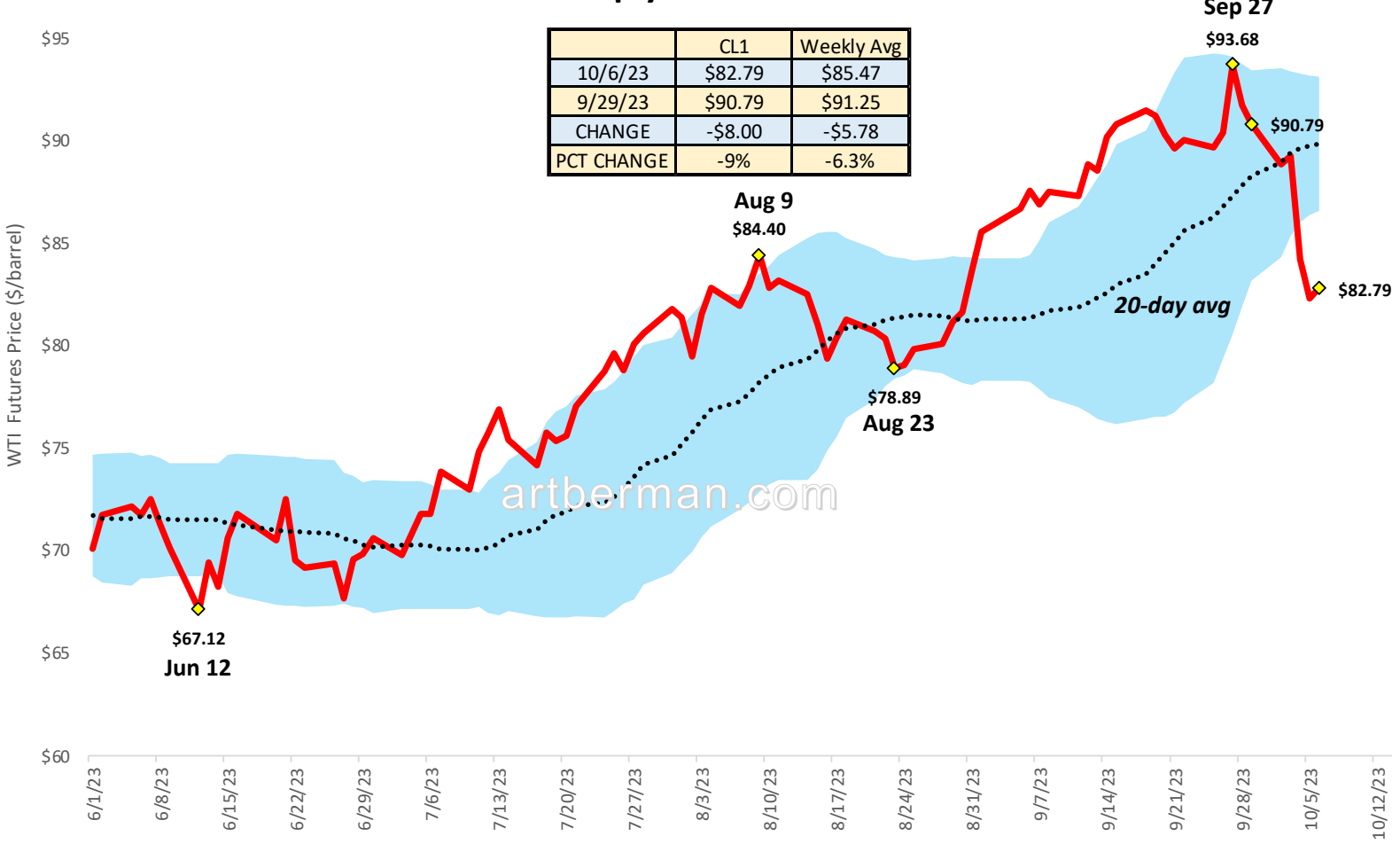
Net scarcity persists until a technology changes the structure of supply or the economy contracts



The Scarcity Cycle

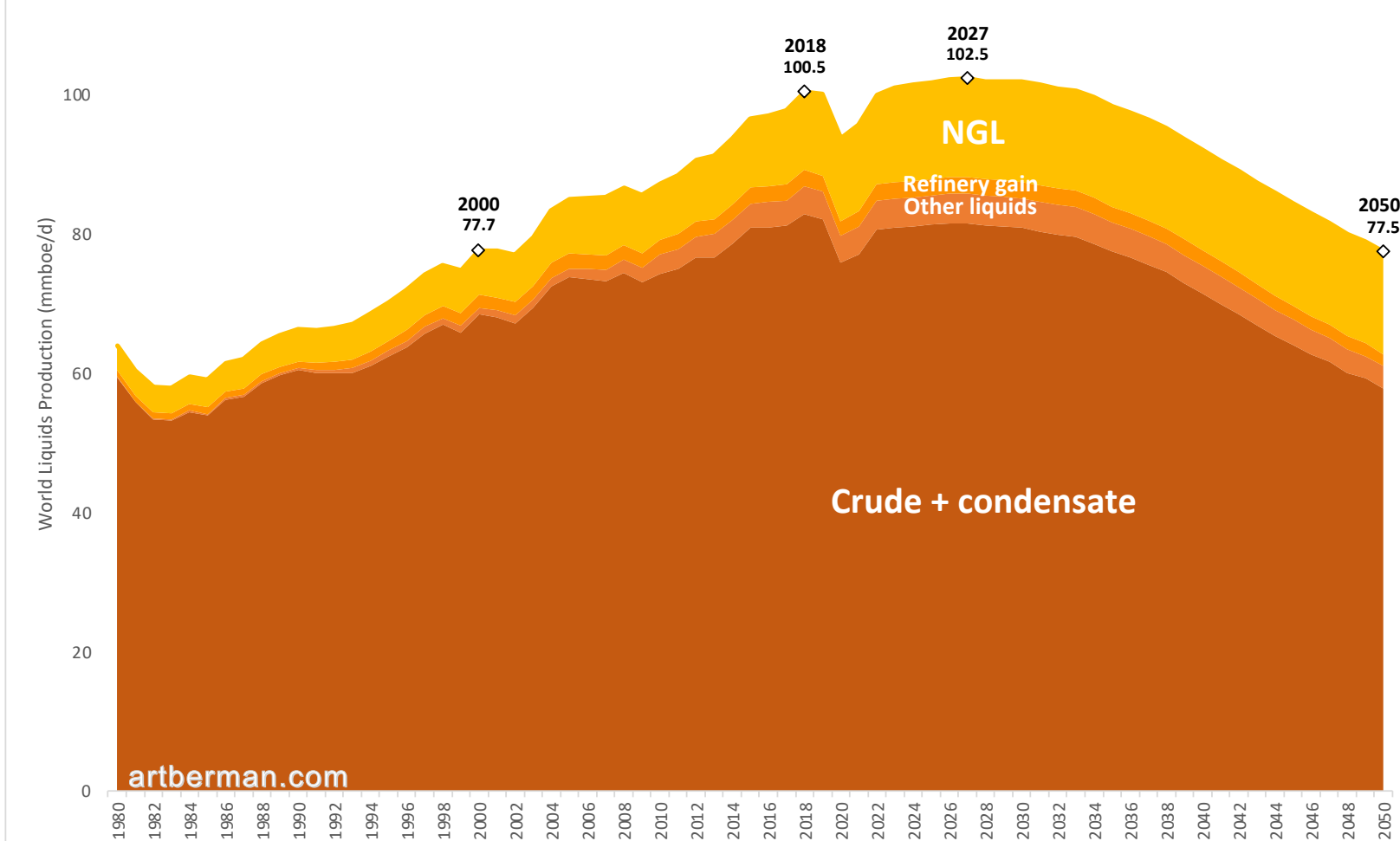


**Oil prices increased 40% from June through September
largely because OPEC+ removed almost 4 million barrels from the market
Prices have fell sharply the first week in October**



Source: CME & Labyrinth Consulting Services, Inc.

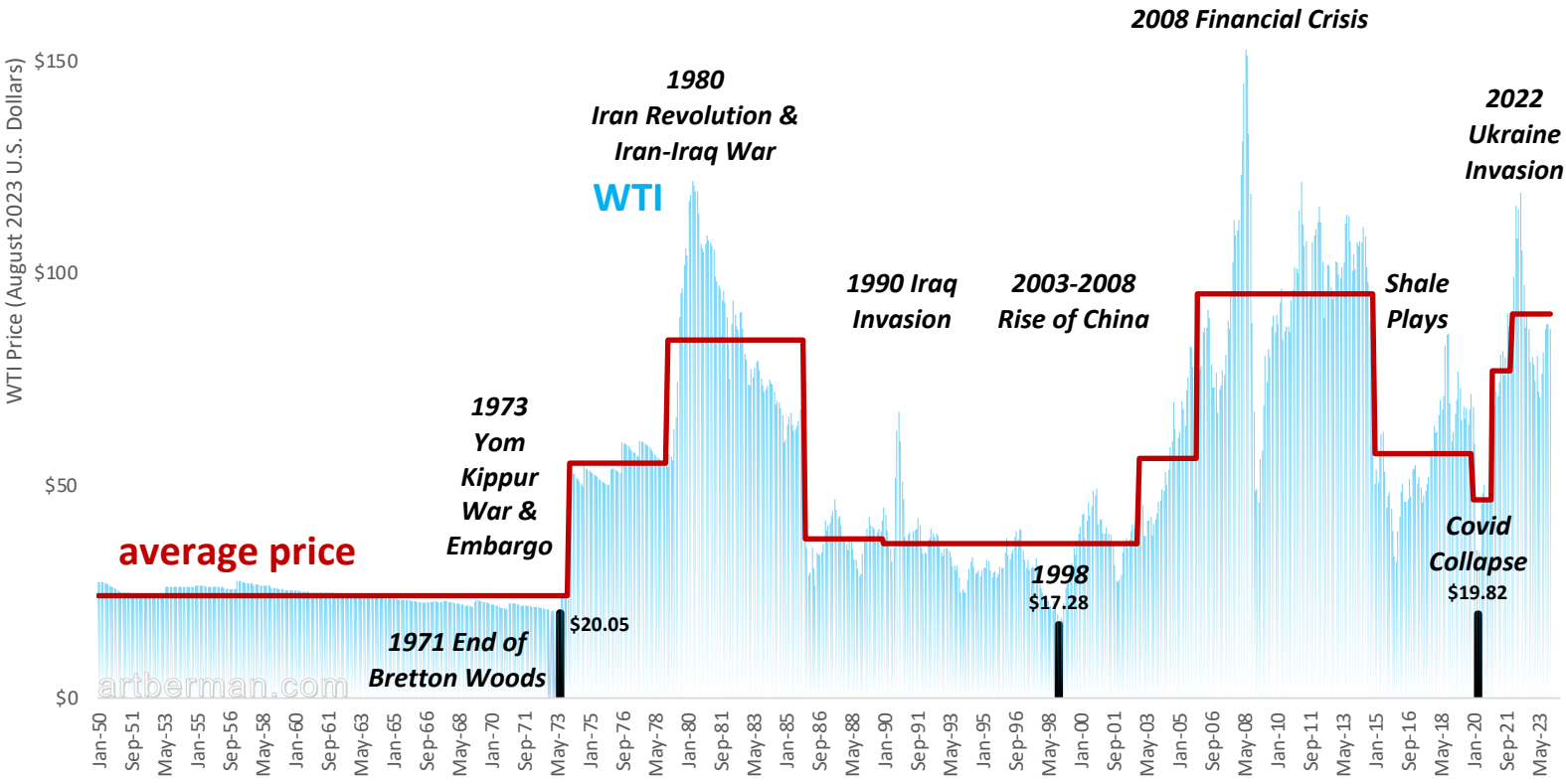
Total world liquids production expected to peak around 2027 but crude + condensate are unlikely to recover to 2018 level



Source: EIA, IEA, Rystad Energy, BP & Labyrinth Consulting Services, Inc

EIA International/International Production Forecasts 2023

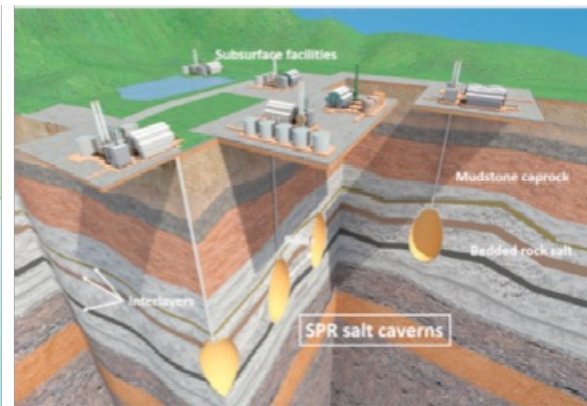
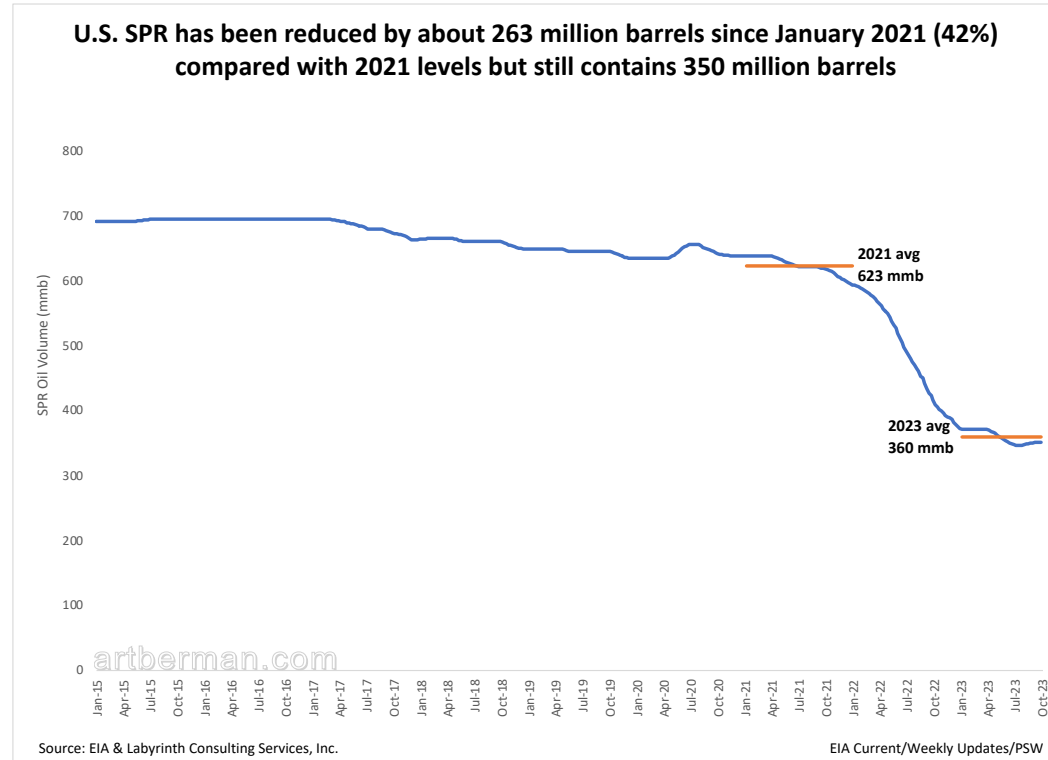
Lowest real price of oil was \$17 in 1998
Yom Kippur war & Arab oil embargo (1973), Iran-Iraq war (1980) & rise of China (2008)
were the first three oil shocks; Ukraine war may be the fourth



Source: EIA, U.S. Bureau of Labor Statistics & Labyrinth Consulting Services, Inc.

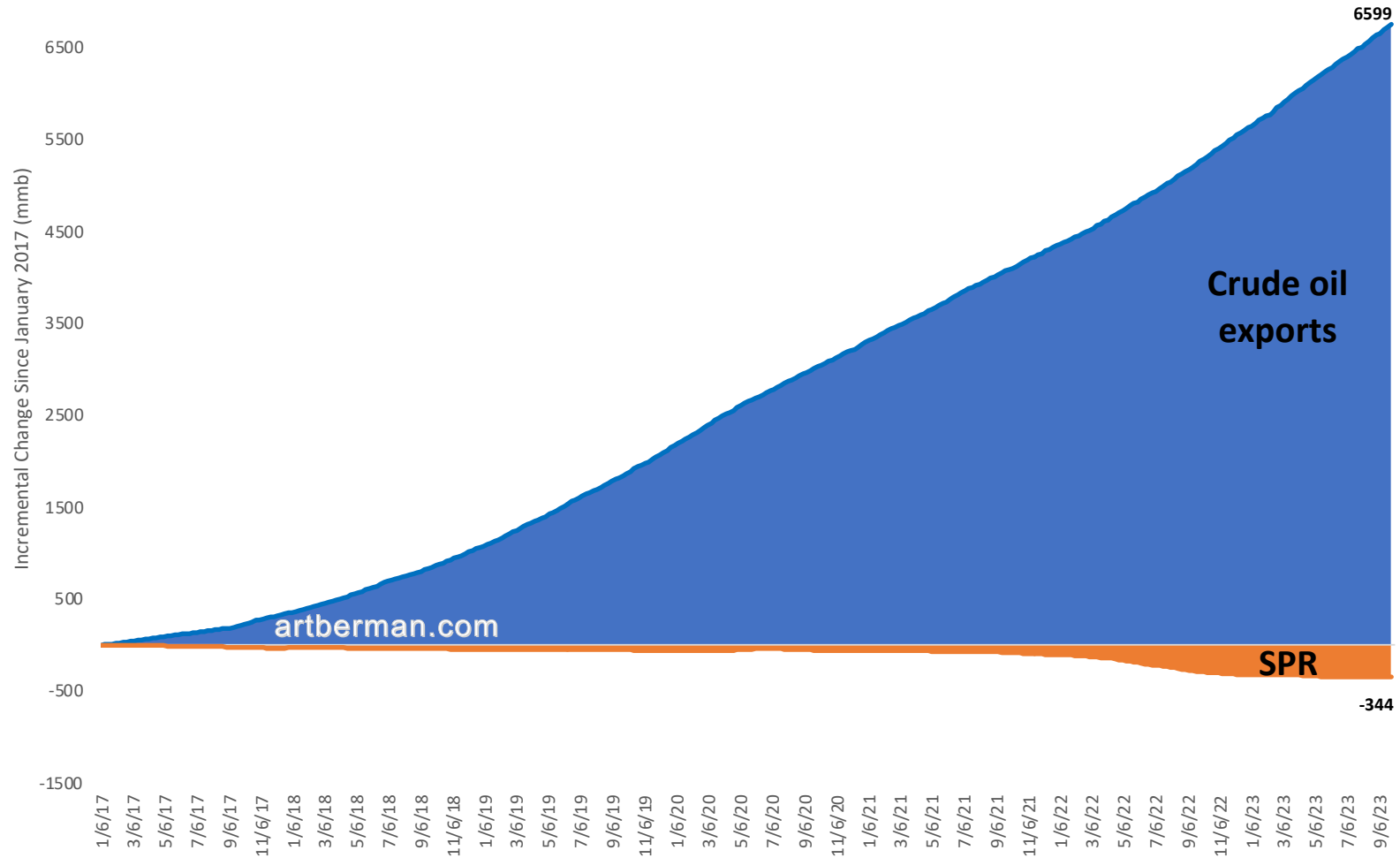
Oil & Gas Supply General/CPI-Adjusted WTI GDP Bubbles

U.S. Strategic Petroleum Reserve



U.S. has exported 6.6 billion barrels of crude oil since January 2017

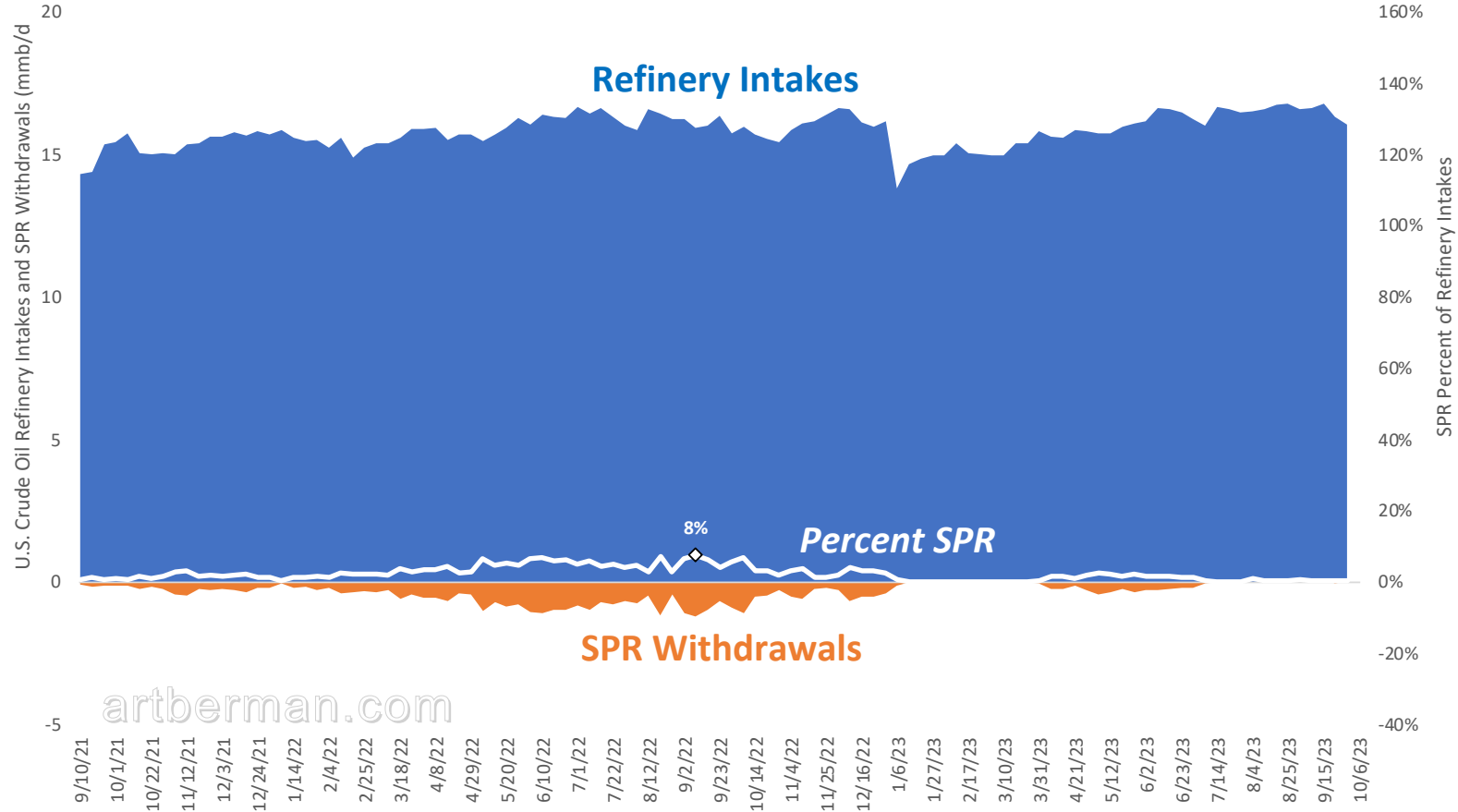
Strategic petroleum reserve has decreased 345 million barrels



Source: EIA & Labyrinth Consulting Services, Inc.

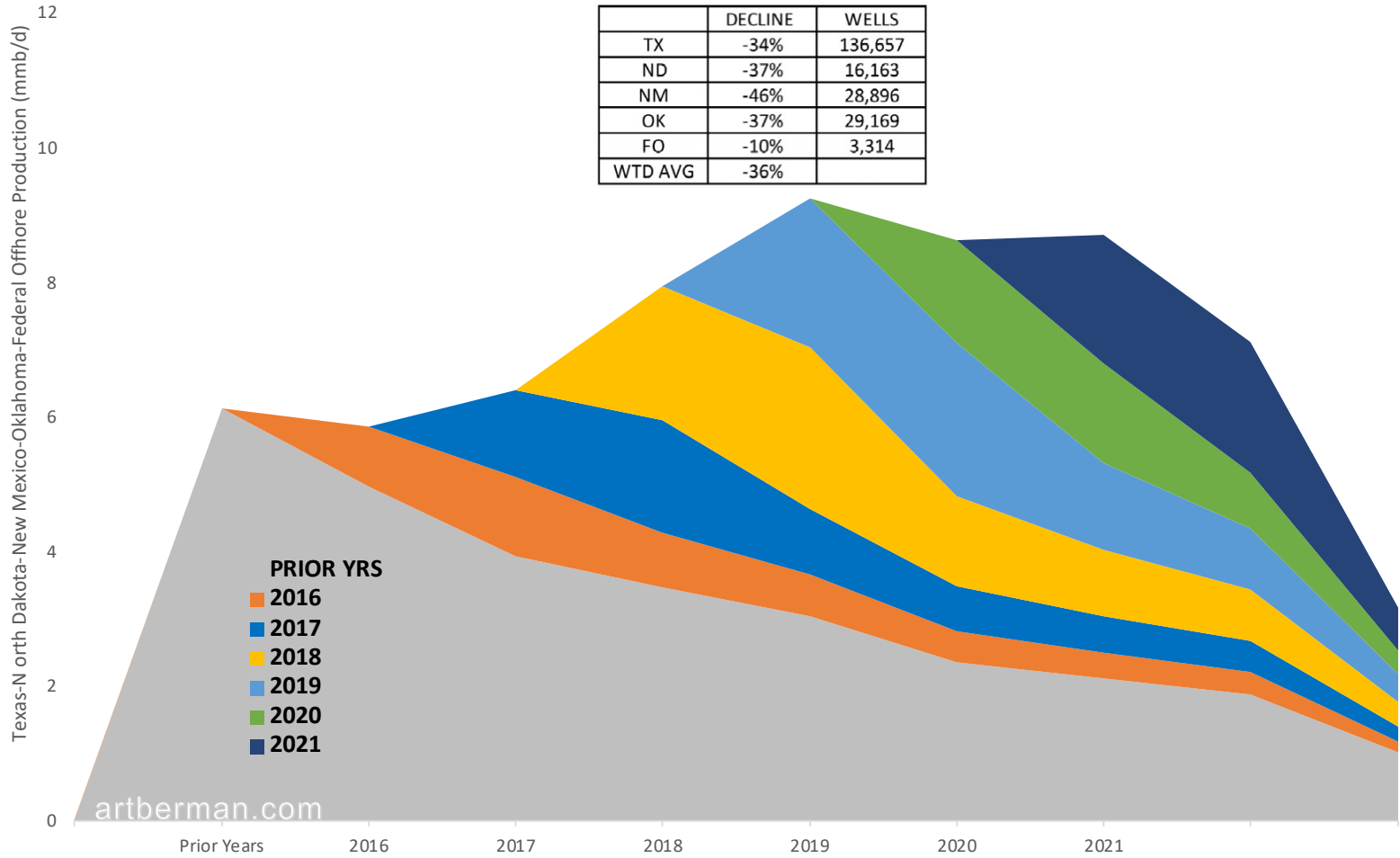
EIA Current/Weekly Updates/PSW

**U.S. Strategic Petroleum Reserve withdrawals averaged 2% of refinery intakes
from September 2021 through August 2023
The maximum weekly withdrawal was 8% of intakes**



artberman.com

**U.S. oil production declines at about 36% per year
based on five largest producing regions that account for 84% of current U.S. output**

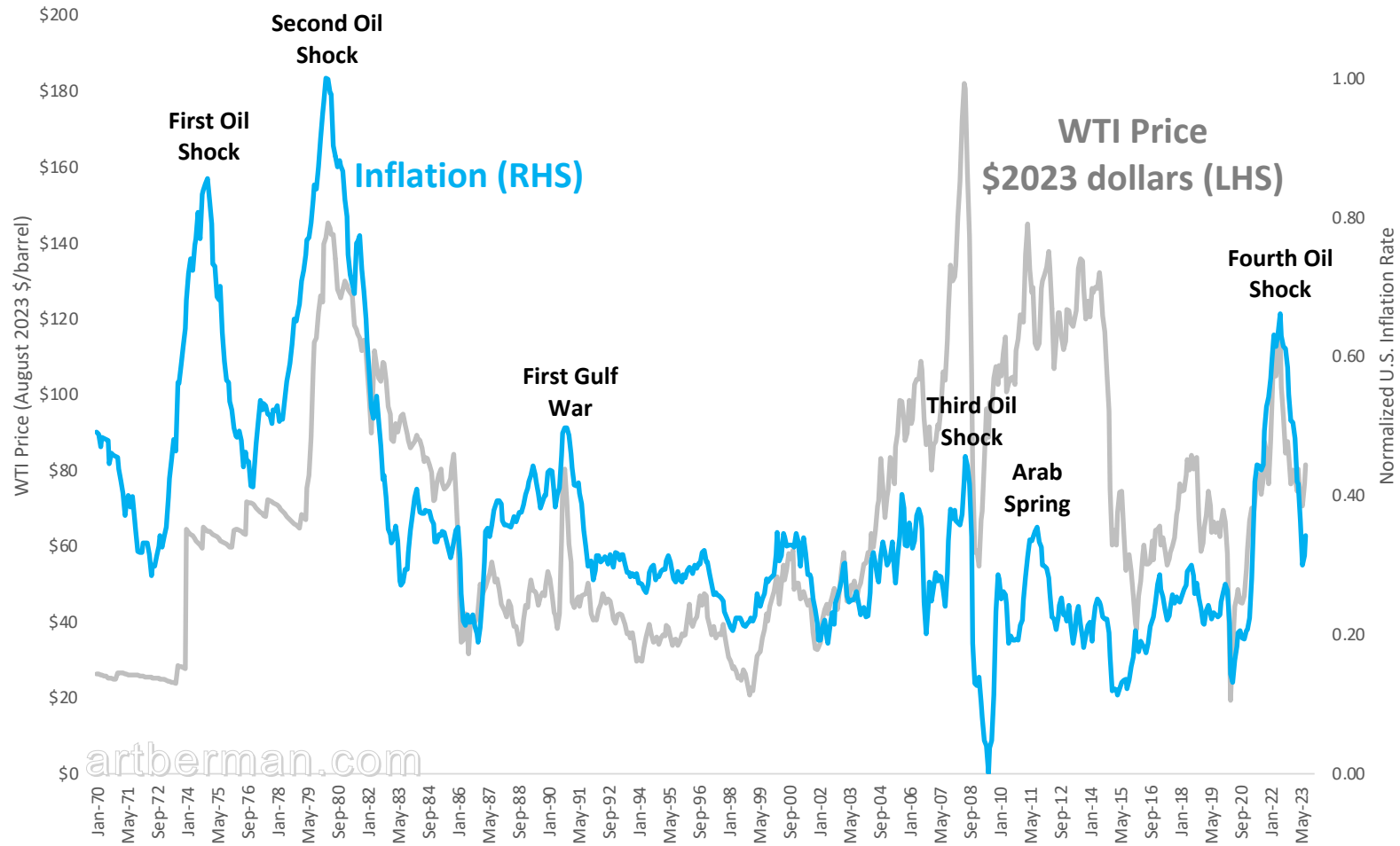


Source: Enverus & Labyrinth Consulting Services, Inc.

Oil & Gas Supply/TX-NDNM-OK-FO/TX-NDNM-OK-FO MERGED VINTAGED CUM OCT 2023

Inflation and oil price have correlated strongly 1973

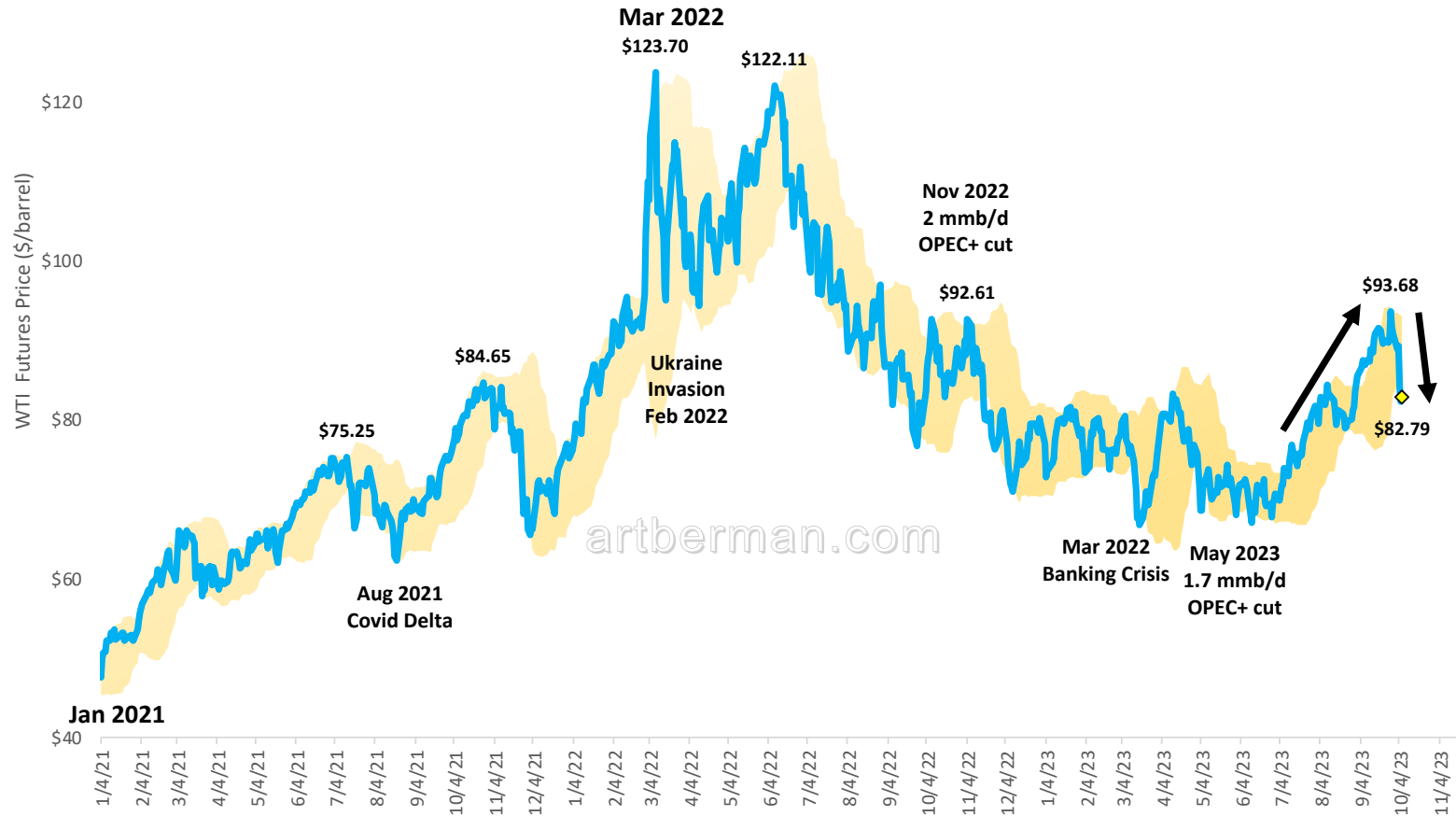
Each oil shock was accompanied by a spike in inflation



Source: EIA, U.S. Dept. of Labor Statistics & Labyrinth Consulting Services, Inc.

Oil & Gas General/CPI Monthly 1912-2023

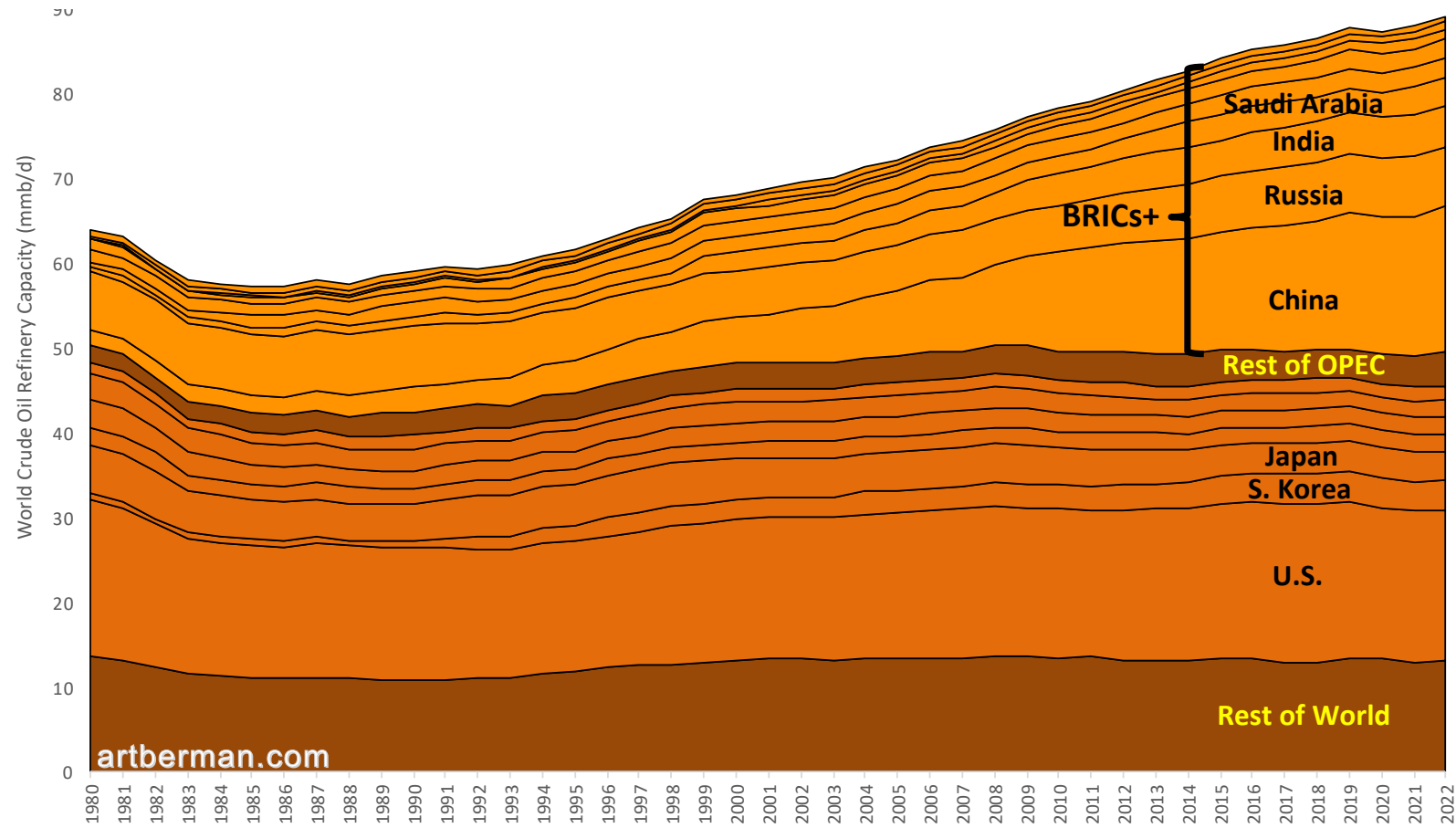
The Choke-Chain Effect: cycling of prices and economic activity
Once scarcity is established & financialized, prices rise until consumer demand falls
Consumers adjust and prices rise again above marginal price



Source: CME & Labyrinth Consulting Services, Inc.

Oil & Gas General/Futures & Future Spreads/CL FUTURES

BRICs+ control 39% of global oil refinery capacity and almost all growth in capacity



Source: OPEC & Labyrinth Consulting Services, Inc.

OPEC/ASB 2023/OPEC Refinery Capacity T42