

US containerboard and corrugated cost inflation from oil shock



DEREK MAHLBURG

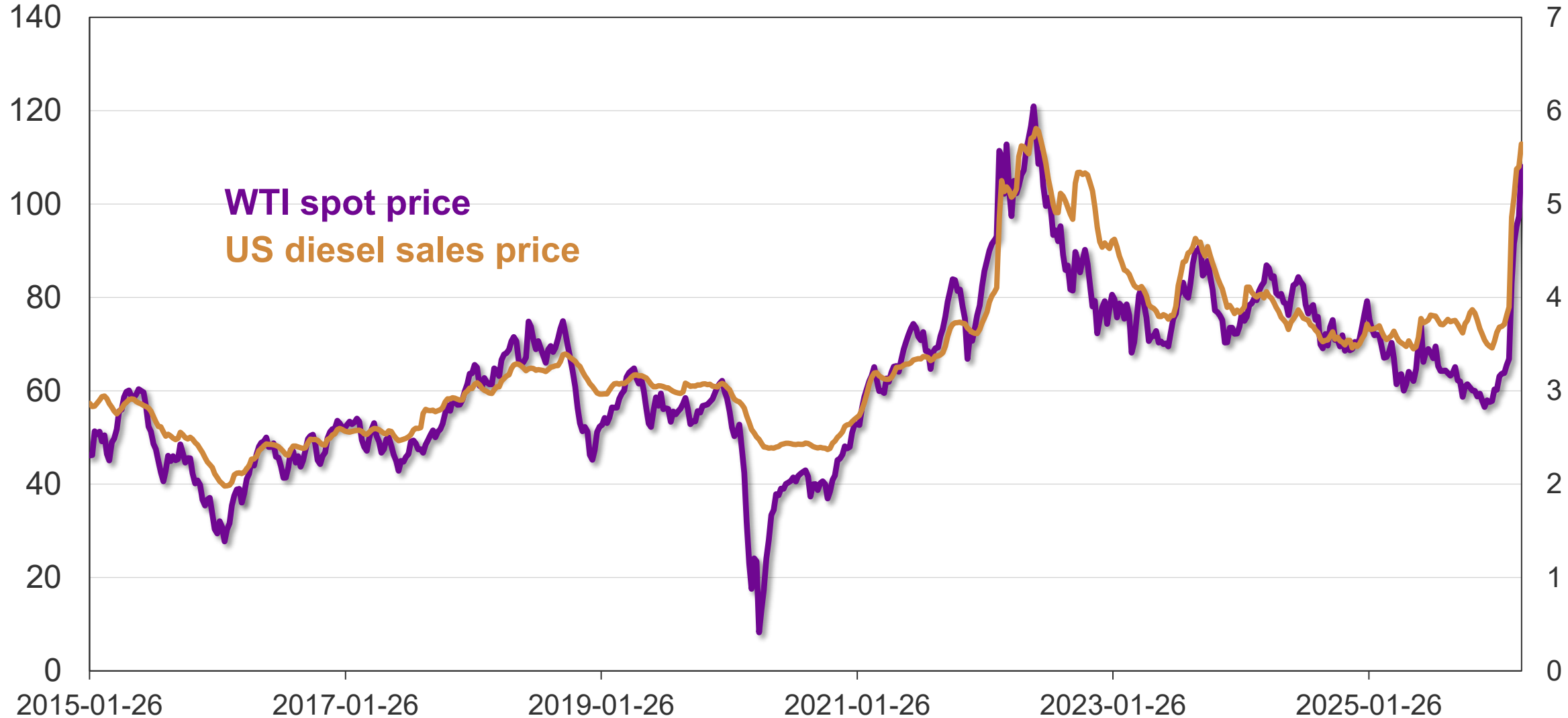
Director, North American Paper &
Packaging

Diesel has risen with oil, will be main driver of US cost inflation



US oil and diesel prices

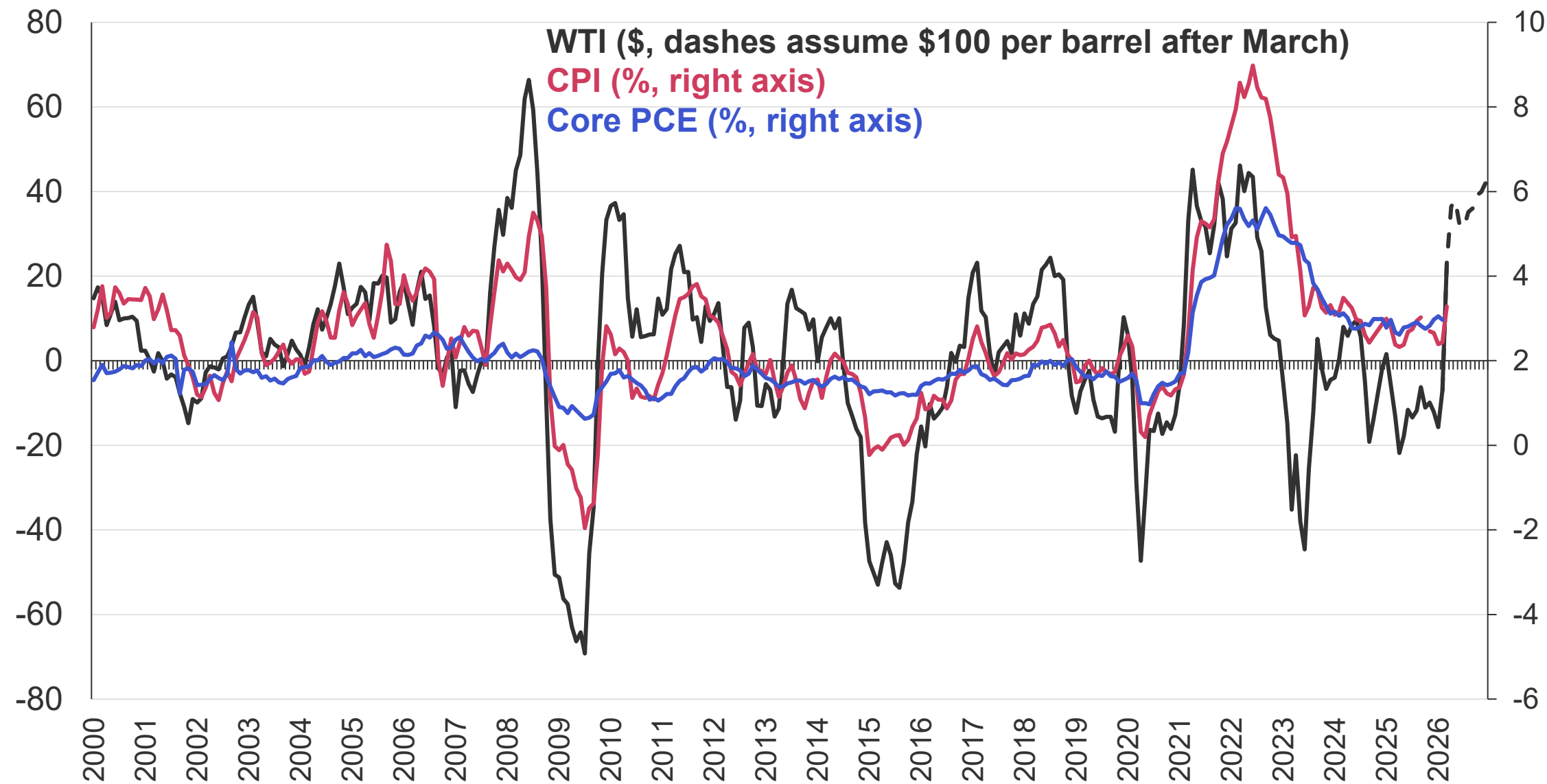
\$/barrel and \$/gallon, weekly ending Monday





Oil price increases lead to accelerated inflation – already problematic prior to war

Year-over-year percentage change in oil price and US inflation
Spot WTI, dollars; Consumer Price Index, percent



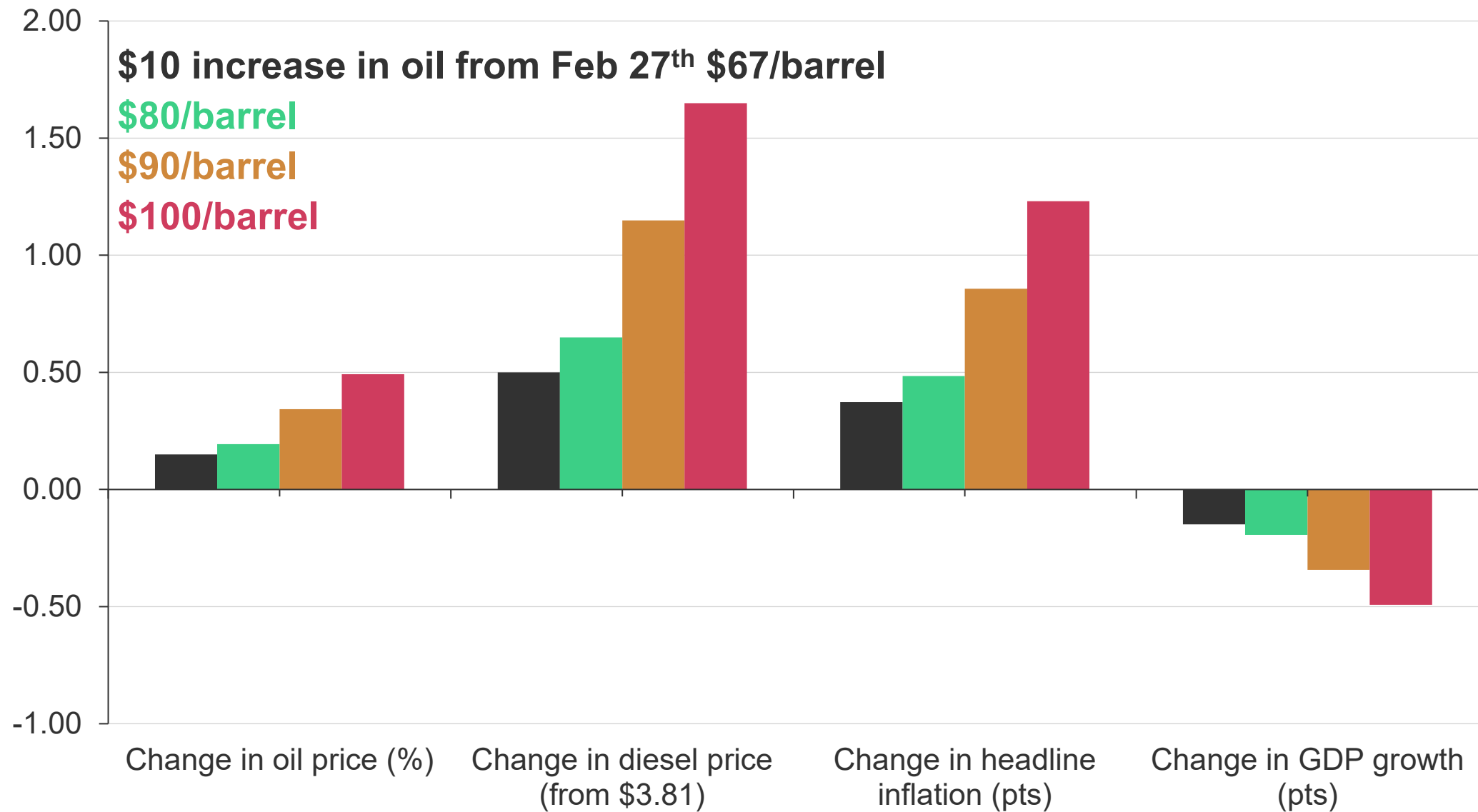
Inflation above target in 2025 despite declining oil prices

Source: Federal Reserve, BEA.

Scenarios for economic impact of oil price increases



Rough scenarios for impact of WTI oil price increase on US economy Percent, dollars and percentage points



Hit to GDP smaller than inflation bump due to impact of higher prices on US energy production, but goods economy fully exposed

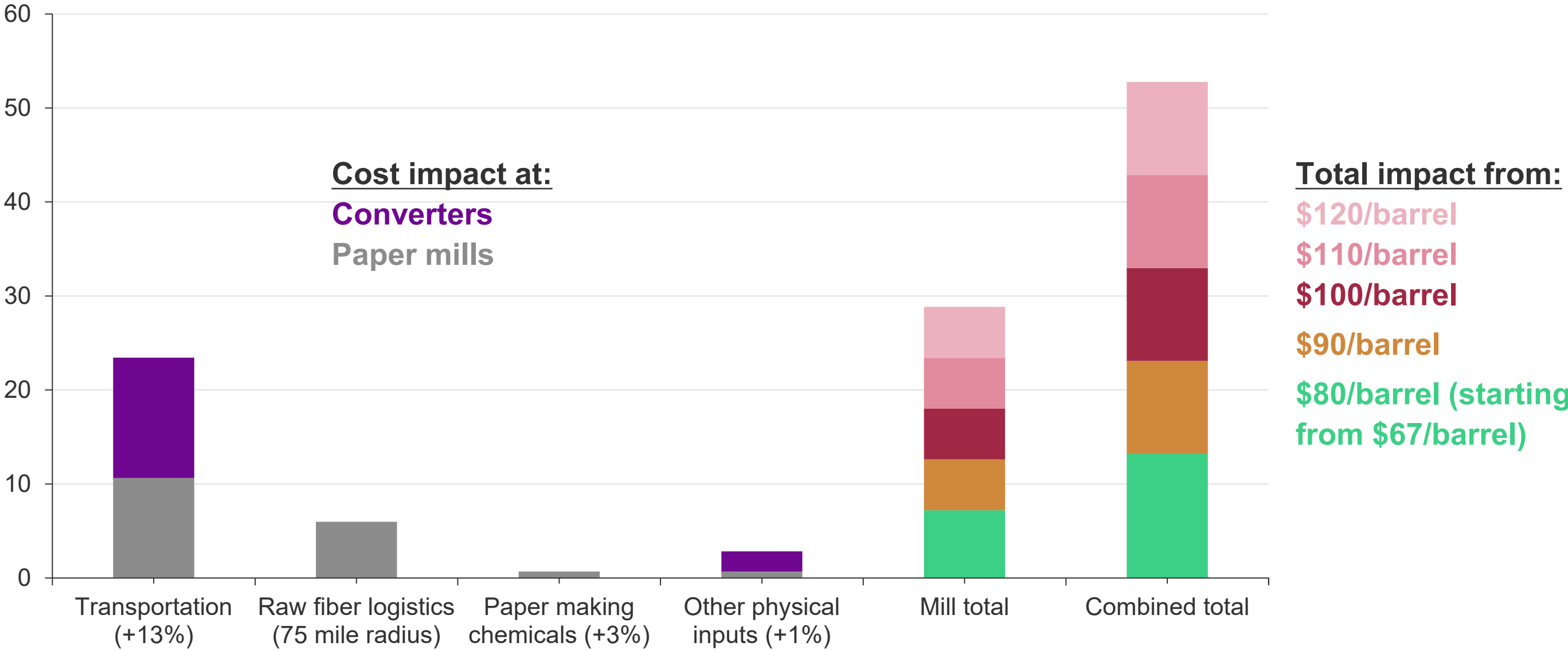
Harmful effects from \$80 per barrel about 40% of \$100 per barrel; 70% for \$90 per barrel

Source: Goldman Sachs rule of thumb, Fastmarkets calculations.

Incremental containerboard and corrugated production cost inflation scenarios from oil shock



Impact of \$100 per barrel WTI oil and \$5.40/gallon diesel
Dollars per ton of containerboard

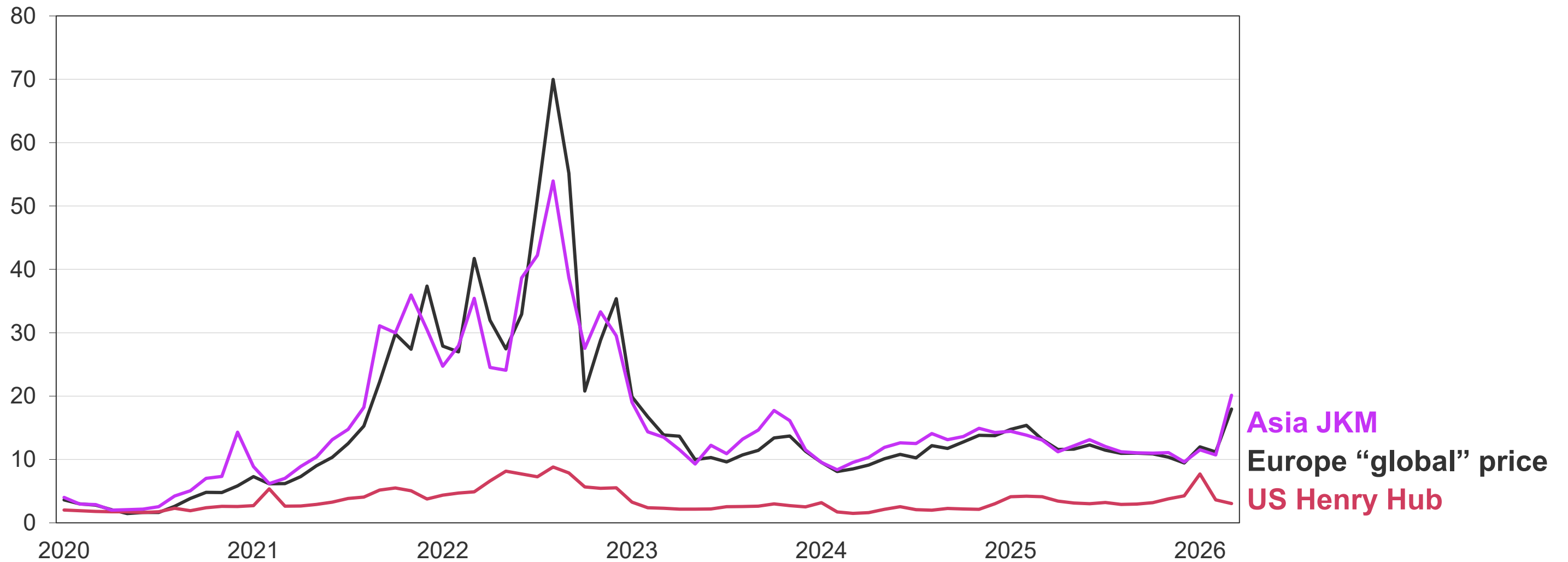


Source: Fastmarkets estimates.

Unlike Asia and Europe, US natural gas prices have been unaffected by US-Iran war



Natural gas prices in US, Europe and Asia
\$/mmbtu, monthly

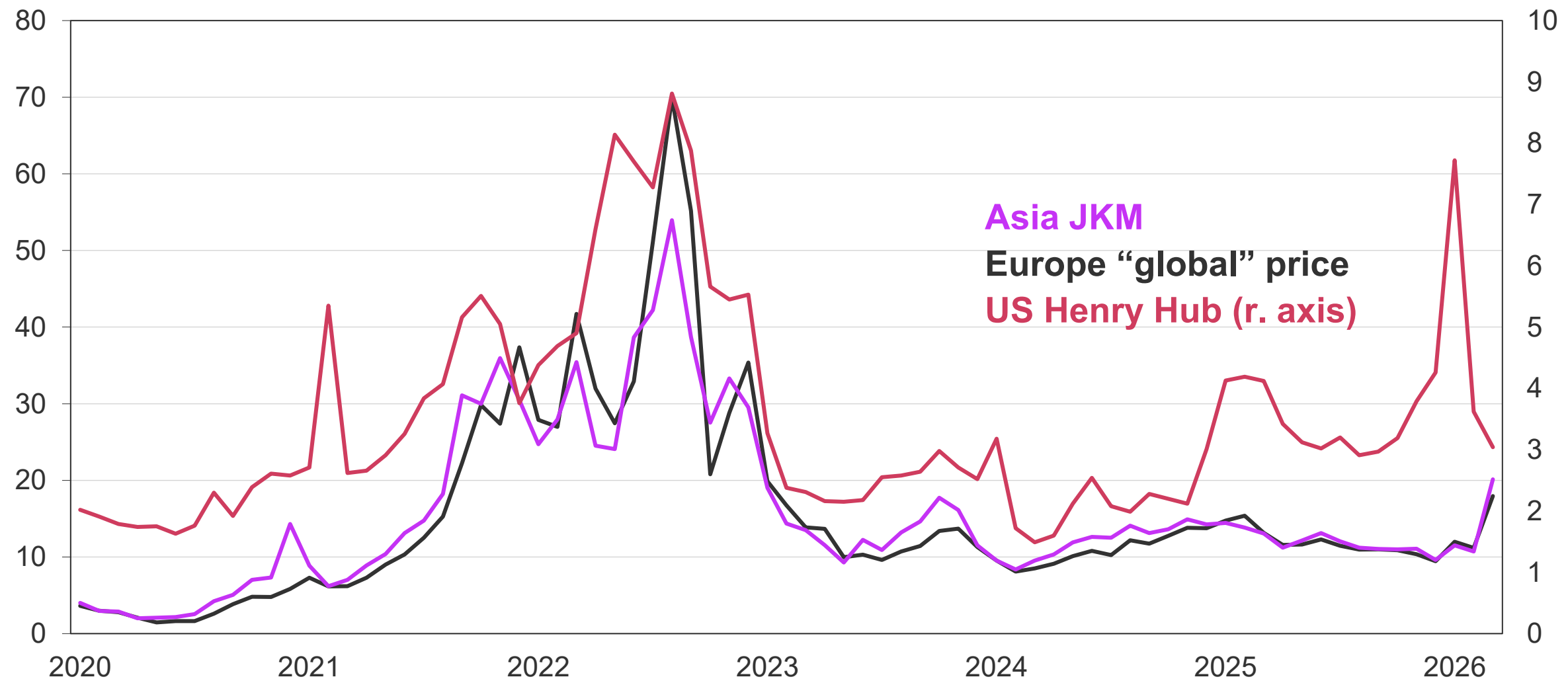


Source: US Federal Reserve, investing.com, Yahoo Finance. March price for Europe converts Dutch TTF in euros/MWh to \$/mmbtu.

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Natural gas prices in US, Europe and Asia
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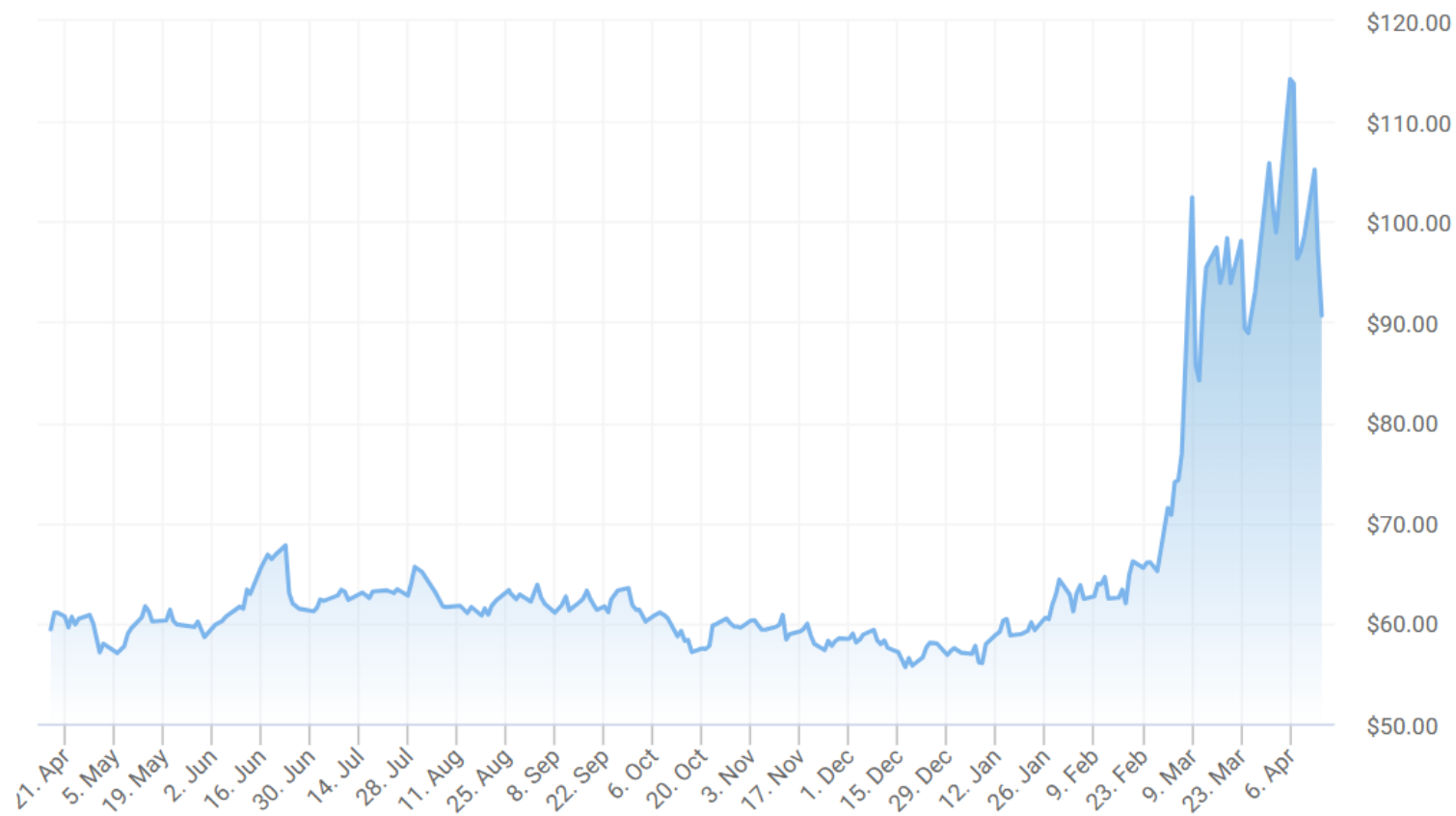
Structural increase for US natural prices in early 2025 due to energy demand and unpaused LNG export licenses

Source: US Federal Reserve, investing.com, Yahoo Finance. March price for Europe converts Dutch TTF in euros/MWh to \$/mmbtu.

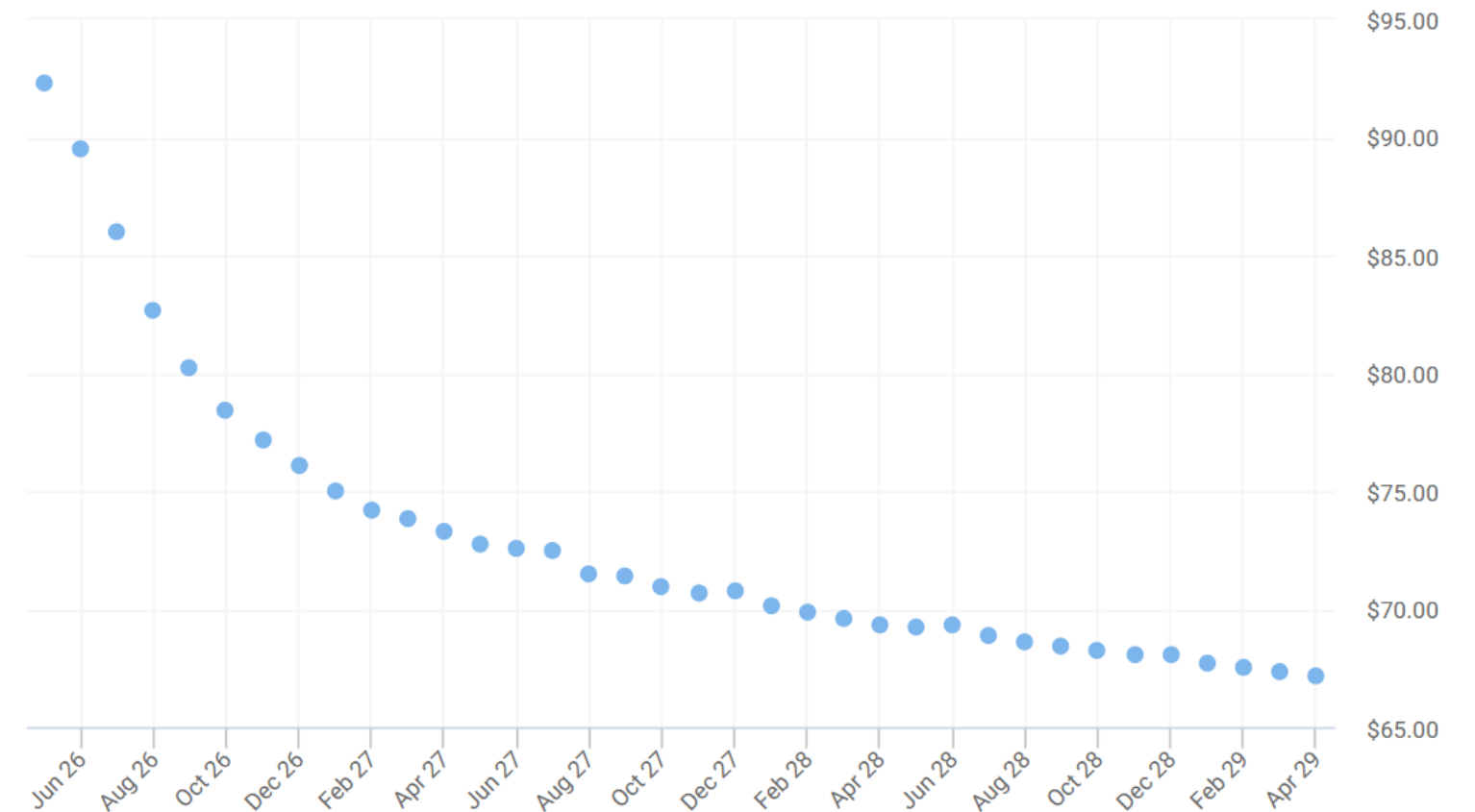
Where do financial markets think oil prices will end up?



Current WTI price
\$ per barrel



WTI futures curve
\$ per barrel



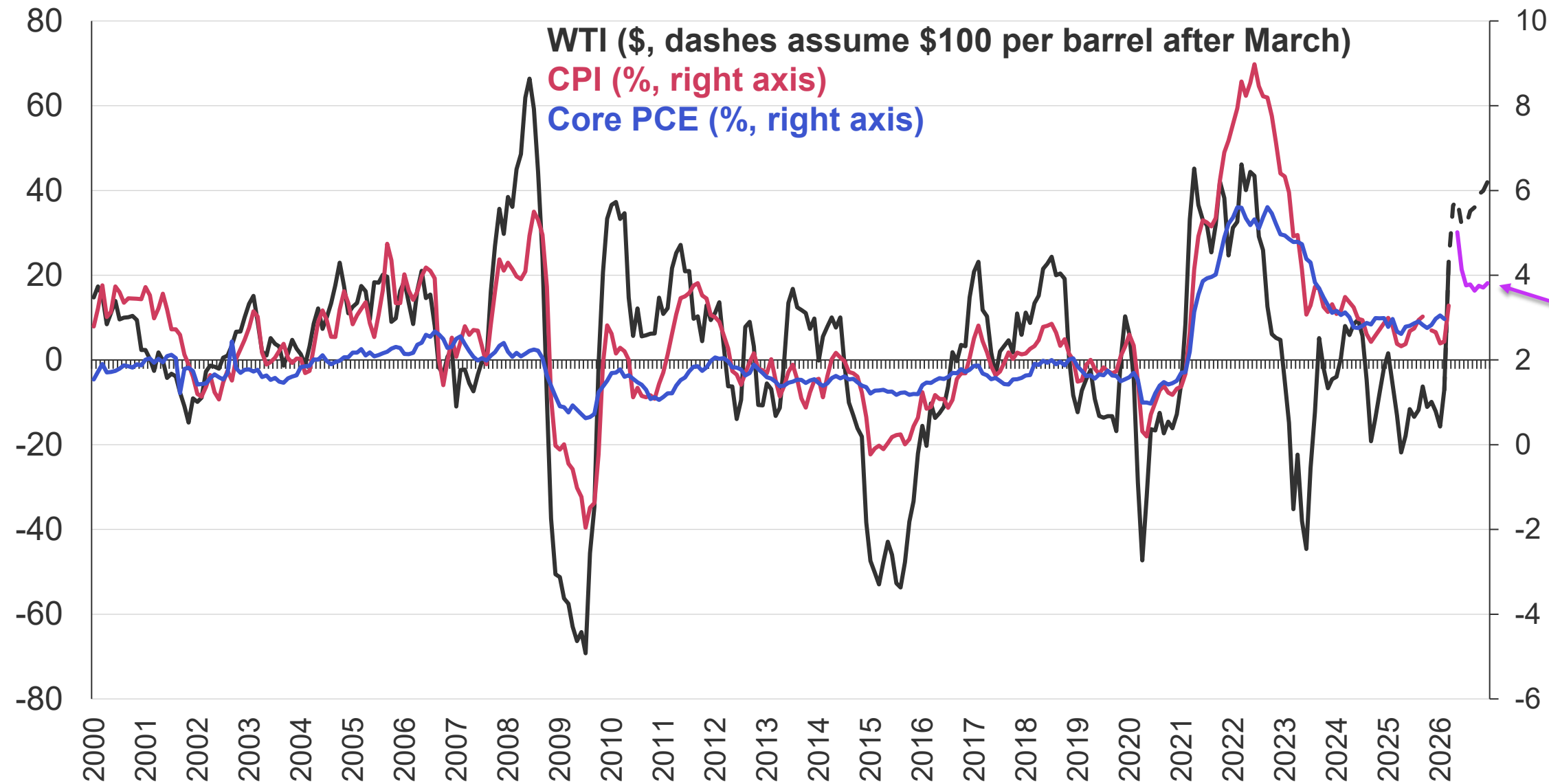
Implied price per barrel from futures curve:
2Q26: ~\$92 (assumes \$95 in April)
3Q26: \$83
4Q26: \$77
2026 average: \$81

Futures curve suggests oil shock will moderate, but it will remain major driver of inflation



Year-over-year percentage change in oil price and US inflation

Spot WTI, dollars; Consumer Price Index, percent



Inflation already elevated prior to war

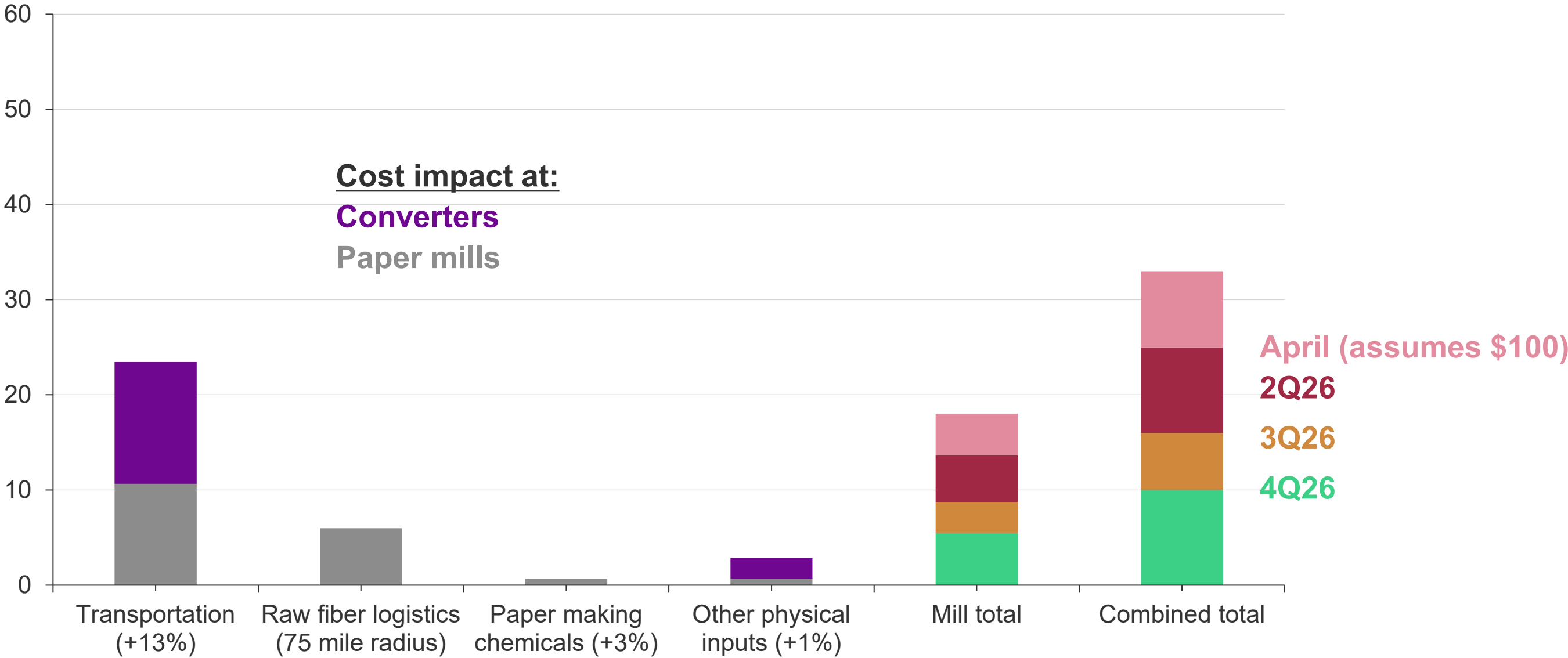
Implied from futures curve (below \$80/barrel by October)

Source: Federal Reserve, BEA.

Incremental containerboard and corrugated production cost inflation on oil futures curve



Impact of \$100 per barrel WTI oil and \$5.40/gallon diesel
Dollars per ton of containerboard



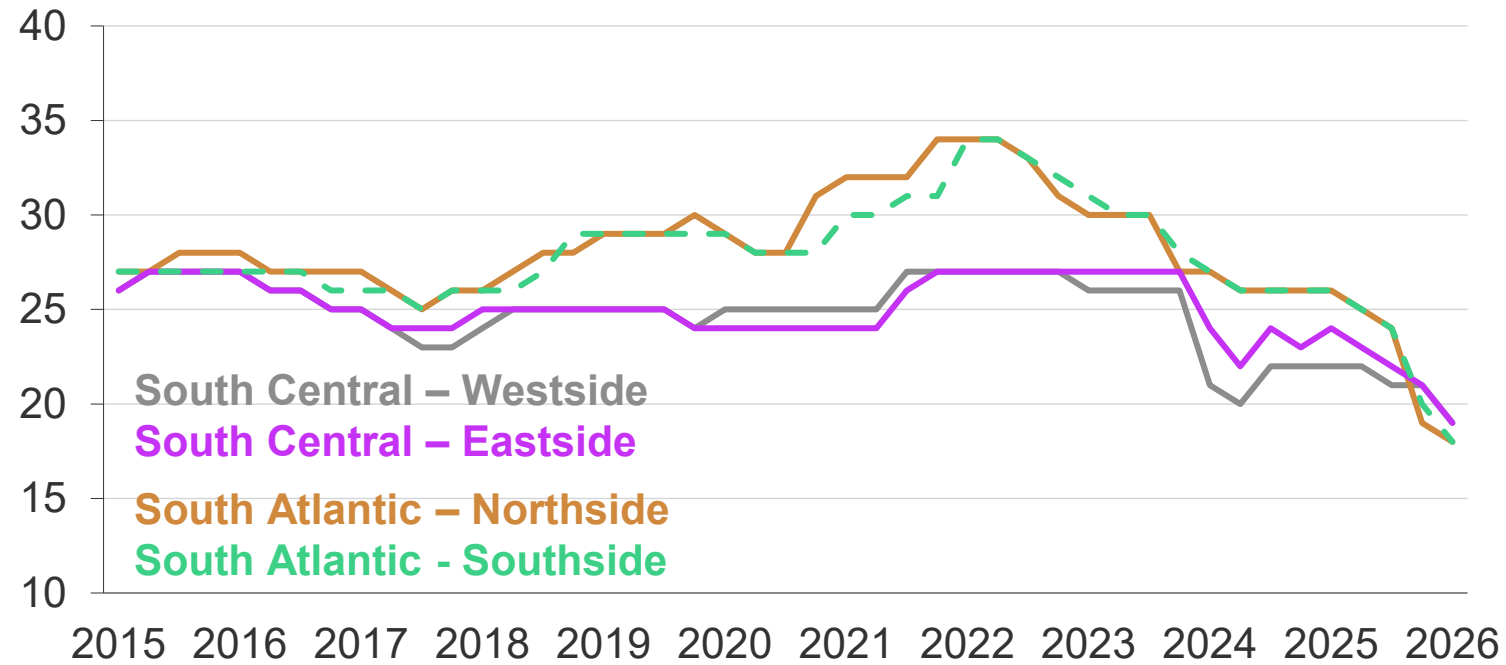
Source: Fastmarkets estimates.

Raw fiber's currently cheap prices present upward cost risk



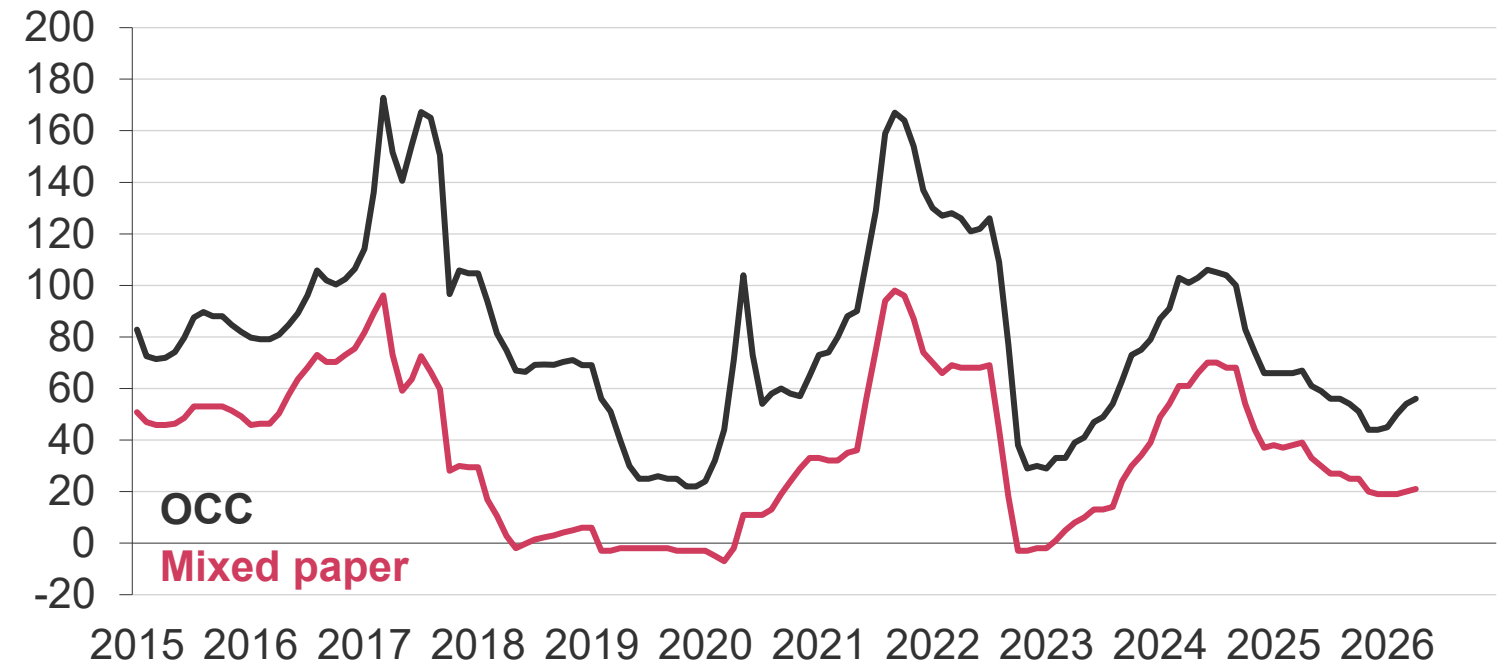
US South softwood chip prices

\$/ton, quarterly



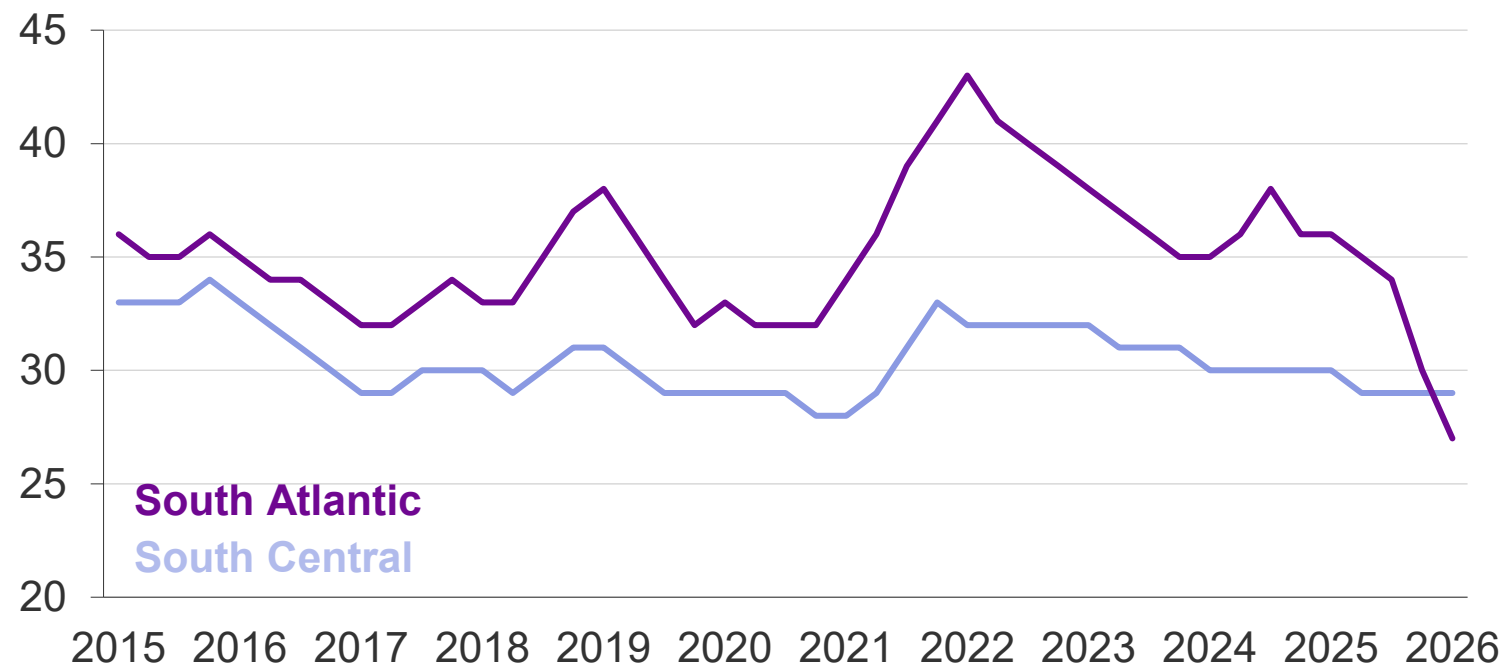
US recycled fiber prices

\$/ton, monthly



US South softwood roundwood prices

\$/ton, quarterly



Fiber costs are exposed to diesel via trucking, collection and harvesting... already near cyclical lows?

Substantial wood cost relief after 2025 mill closures

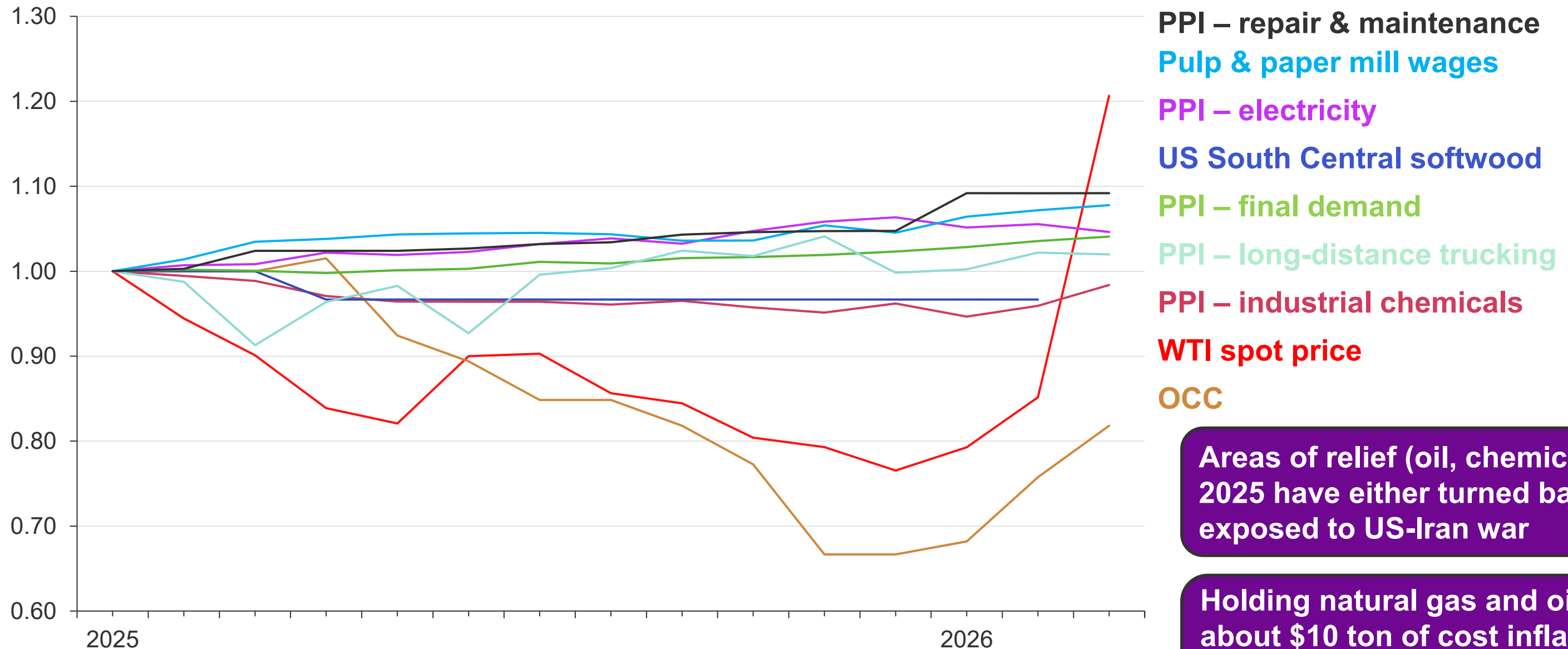
Source: Fastmarkets North American Woodfiber & Biomass Markets.

Unlike 2025, fiber and oil will not offset other cost inflation in 2026



Key cost drivers in 2025 and early 2026

Index, January 2025 = 1.00



Areas of relief (oil, chemicals, fiber) in 2025 have either turned back up or are exposed to US-Iran war

Holding natural gas and oil constant, about \$10 ton of cost inflation from electricity, overhead, labor since February 2025

Source: Federal Reserve, BLS wages, Fastmarkets.

Big picture impact of Iran war on US containerboard costs

Diesel and fiber transportation will be main driver of US containerboard cost inflation

About \$33/ton of system-wide, incremental inflation at \$100/barrel oil; about \$10/ton per \$10/barrel

Other, broad inflation still a major issue

Cost relief areas from 2025 may become biggest inflation issues of 2026; broad inflation, about \$10/ton per year, will continue

Cost increases, demand destruction, margin erosion

Producers will face pressure to raise prices or add surcharges to cover costs, but will likely also absorb margin erosion