The Great Inflation Misdiagnosis.

History has shown that neither the **FED** nor a recession can stop a commodity-driven inflation cycle. **Capital investment** is the only cure.

Our failure to learn from history is likely to <u>depress</u> capex and <u>extend</u> the inflationary cycle…

…consistent with historical periods of outperformance for commodity-levered investments.

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INVESTMENT ADVISORS

Research Material Disclaimer

This material is for informational purposes only and is an overview of the relationship between inflation and several different economic variables. Included is a discussion on the potential impact on the energy and natural resources investment markets, and these discussions are intended for educational and illustrative purposes only.

This material is not designed to cover every aspect of the relevant markets, and is not intended to be used as a general guide to investing or as a source of any specific investment recommendation. It is not intended as an offer or solicitation for the purchase or sale of any financial instrument, investment product or service.

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The **misdiagnosis** of how to manage today's inflation is sowing the seeds for a **lengthy commodity cycle**

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Excluding transitory money supply impacts, inflation is a product of the **commodity investment (capex) cycle.** Without capex, Fed hikes and recessions historically have not stopped inflation.

Misdiagnosed as "transitory" due increased money supply during COVID, inflation today is actually a result of multi-year **underinvestment in commodities.**

Using a proprietary 60-year economic, operating and financial dataset, we show the only cure for persistent (commodity-driven) inflation is a **surge in capital investment.**

The Fed's current approach – raising rates to slow GDP in an attempt to reduce commodity prices – has failed before in the early 1970s, and may reduce capex, **extending the cycle.**

Inflation has historically reduced broad market returns returns, but has also driven multi-year **outperformance for commodity-levered sectors.** With unprecedented societal, political and financial hostility to capex today, we see potential for a repeat of the huge outperformance of 1971-81.

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Capex is **THE** key variable for understanding commodity and inflationary cycles

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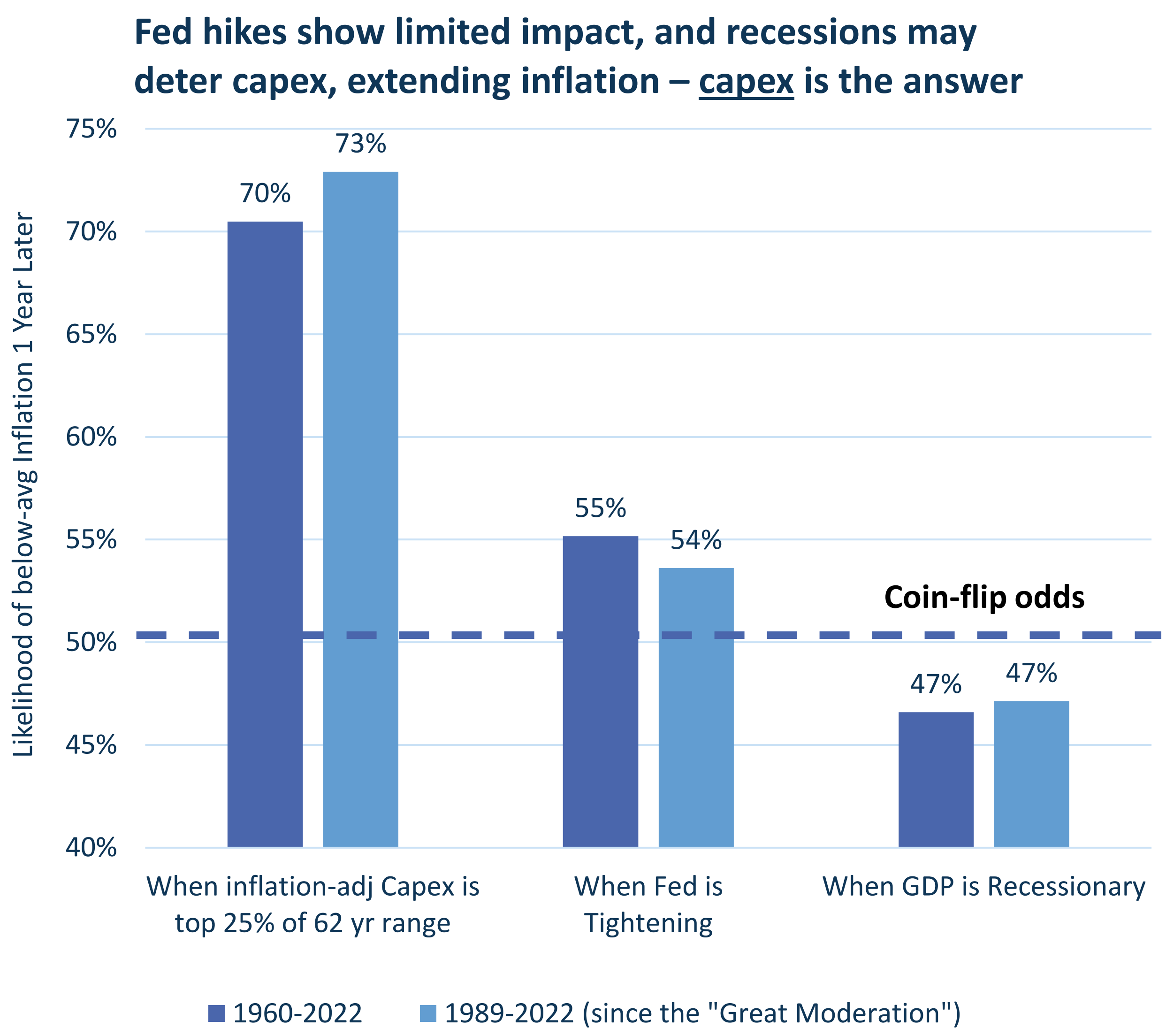

One challenge in understanding **inflation** is that correlation does not imply causation…

…But we see that higher **capex** levels coincide with lower inflation rates 1 year later.

Even if we cannot prove causation, we see that inflation has persisted in hawkish policy environments and during weak GDP growth, but **inflation almost NEVER exists in times of high drilling/mining capex.**

Let's walk through 60 years of inflation/capex history to examine our claim: **that capex is truly the only cure for inflation.**

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Why is understanding the **capex** cycle so important for natural resource and energy investors?

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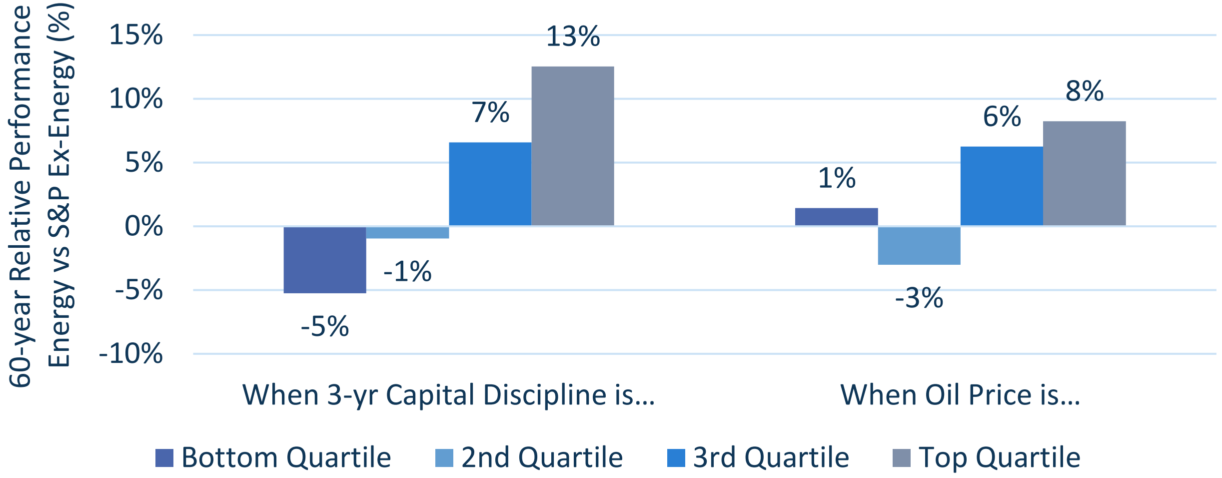
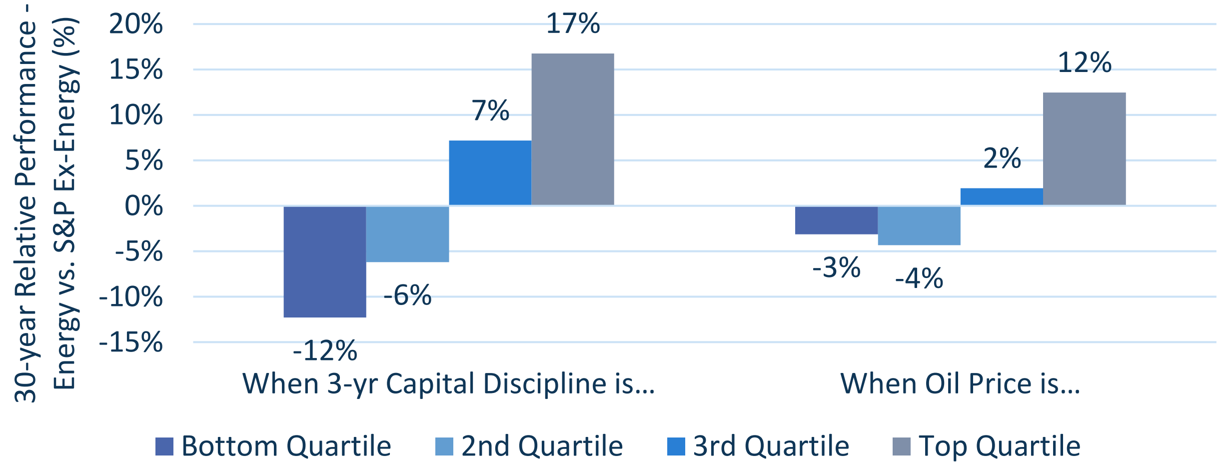
Incredibly, knowing past capex been more useful for energy investors than accurately predicting current year oil price



Even excluding the "inflationary experience" of the 1970s and 1980s, capex remains the dominant variable



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When **capex** is lower, relative energy performance has historically been stronger…

…with 3-year trailing **capex** showing a stronger relationship and higher correlation to relative performance than actual oil prices!

As shown at lower left, the primacy of capex remains intact post-1986, with even stronger correlation.

This leads us to a powerful and unexpected conclusion: forecasts of GDP, interest rates, and oil prices – even good forecasts – may be less useful for investors than understanding the long-term **capex cycle**.

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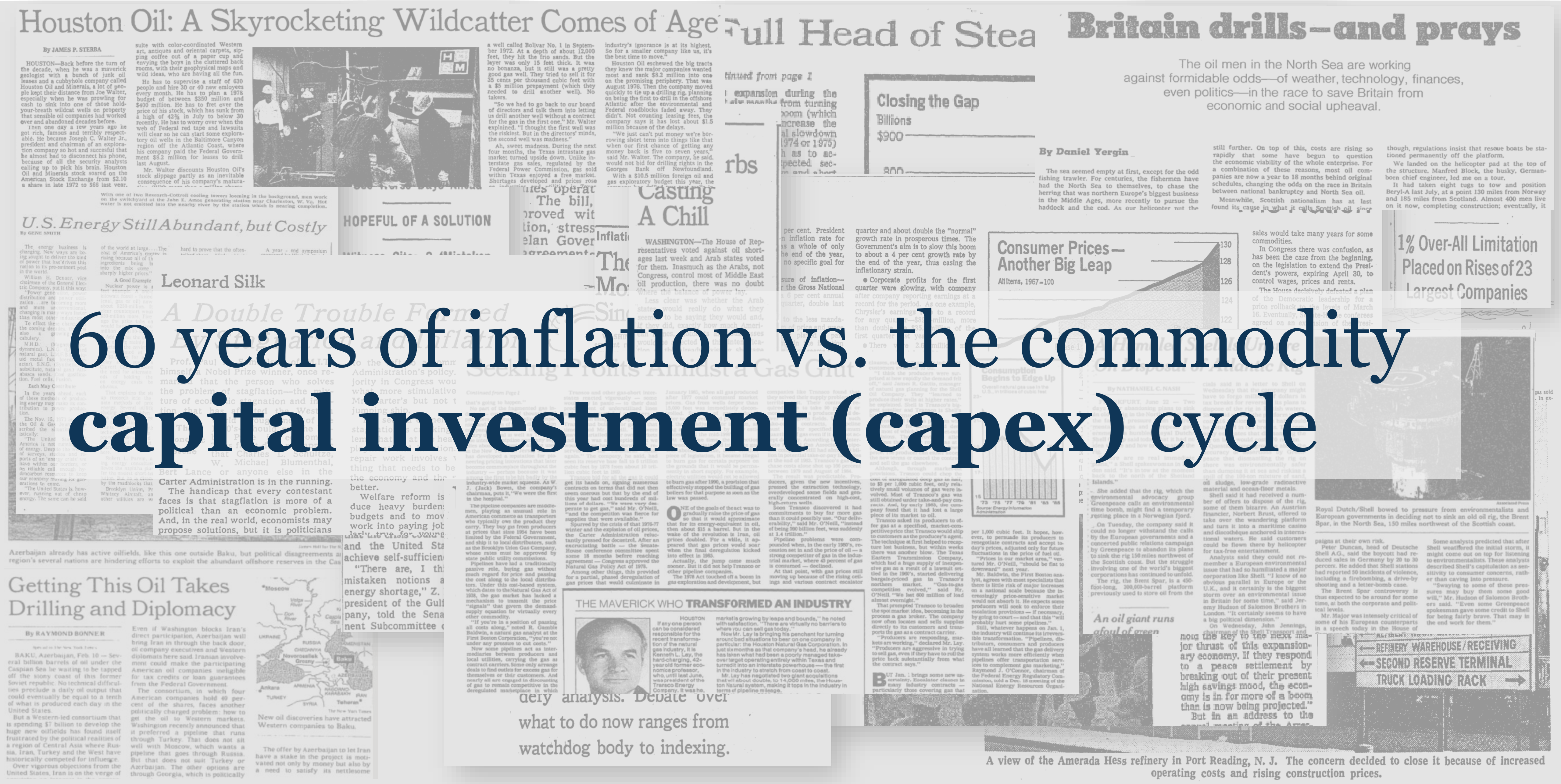

60 years of inflation vs. the commodity **capital investment (capex) cycle**

In fact, the **inflation** cycle and the **capex** cycle are inextricably linked

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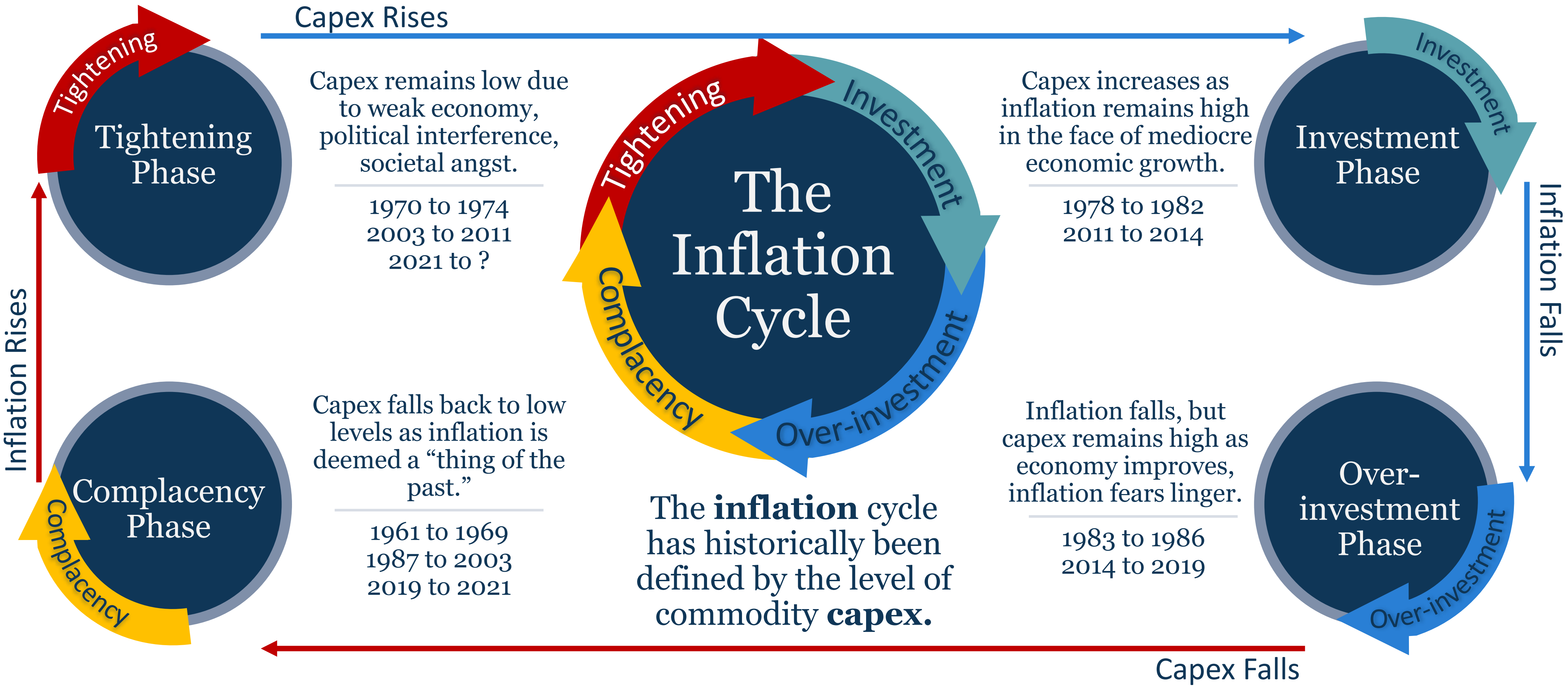
Inflation: a product of the commodity **capex** cycle



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1960s: Low postwar inflation, oil production overcapacity bred **low capex** and **complacency**

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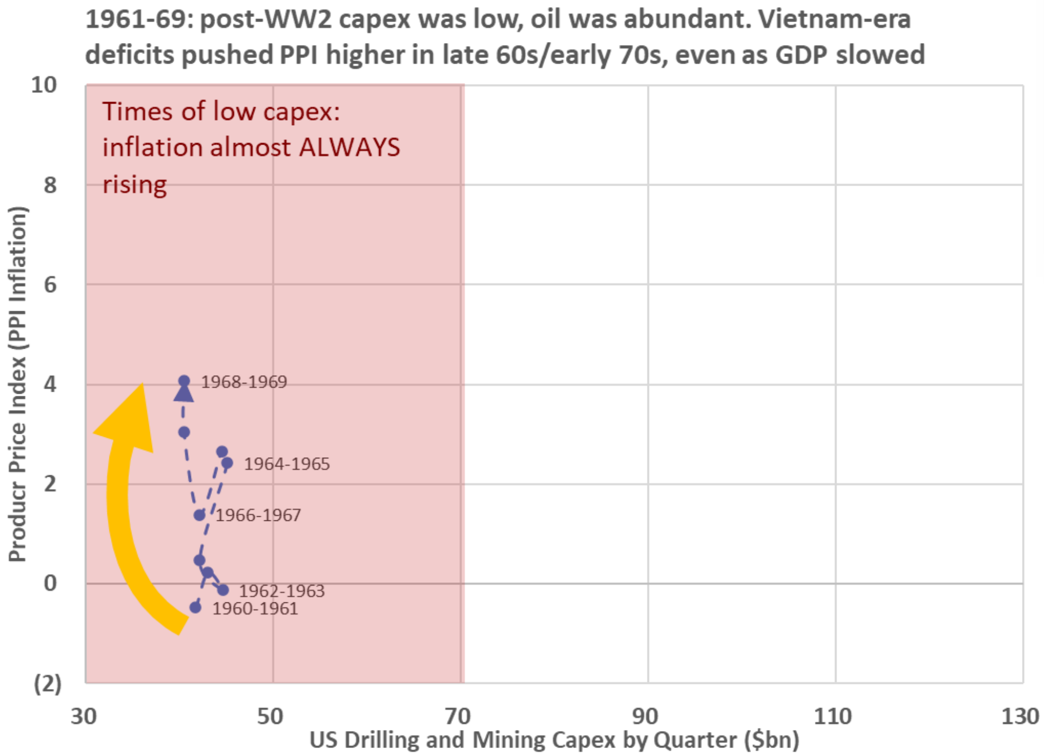
Artificial prices, low capex, low inflation: WWII created excess US oil production capacity. To avoid a postwar bust, quotas were used to support prices. **Capex** was low given excess capacity. CEOs expressed discomfort with price floors and low capex, but supported quotas, fearing a flood of foreign imports and a collapse in domestic profits. Political support grew for subsidy cuts.

Capital Spending (Capex) vs. Inflation:



Headlines: cracks appear in postwar lull

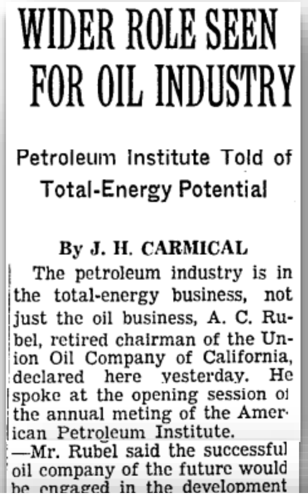
__1964 (below):__ warnings of under-investment, in part due to complacency from quota-protected US oil prices

Depressed Prices for Crude Oil Aggravate Situation in Market

U.S. Aide Cites Impairment of Industry's Financing for New Reserves

CHICAGO, Nov. 11 (AP) — A Federal official said today the oil industry could expect continued depressed crude oil prices despite the need for increased emphasis on the search for new oil reserves.

"There can be little doubt the crude-oil price structure will continue to be depressed by the operations of the market forces now bearing on the industry,"



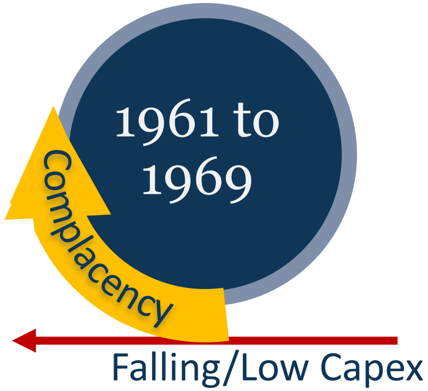
WIDER ROLE SEEN FOR OIL INDUSTRY

Petroleum Institute Told of Total-Energy Potential

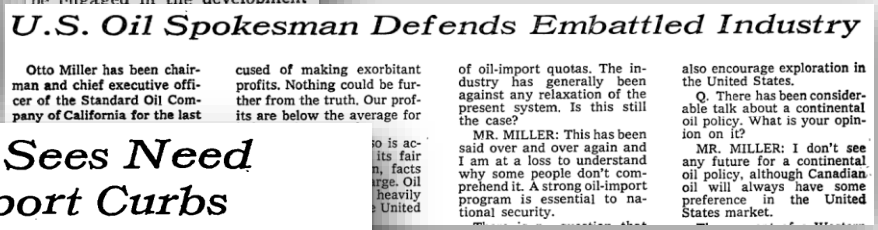
By J. H. CARMICAL

The petroleum industry is in the total-energy business, not just the oil business, A. C. Rubel, retired chairman of the Union Oil Company of California, declared here yesterday. He spoke at the opening session of the annual meting of the American Petroleum Institute.

—Mr. Rubel said the successful oil company of the future would be engaged in the development



__1966 (below):__ insiders express need to move beyond oil into nuke, shale, coal, solar, to diversify away from gov. control



U.S. Oil Spokesman Defends Embattled Industry

Otto Miller has been chairman and chief executive officer of the Standard Oil Company of California for the last

cused of making exorbitant profits. Nothing could be further from the truth. Our profits are below the average for

of oil-import quotas. The industry has generally been against any relaxation of the present system. Is this still the case?

MR. MILLER: This has been said over and over again and I am at a loss to understand why some people don't comprehend it. A strong oil-import program is essential to national security.

also encourage exploration in the United States.

Q. There has been considerable talk about a continental oil policy. What is your opinion on it?

MR. MILLER: I don't see any future for a continental oil policy, although Canadian oil will always have some preference in the United States market.

__1968 (right):__ CEO of Esso (Exxon) says ending import quotas would destroy US energy independence, putting the US in "the position Western European countries are in... they sure would love to get out of it."

Esso Chief Sees Need For Oil Import Curbs

By WILLIAM D. SMITH

Michael L. Haider is a man who speaks directly and with authority.

The authority comes from the fact that he runs the world's largest oil enterprise, the Standard Oil Company (New Jersey).

And being direct is just Mike Haider's way.

An executive of a competing company has commented: "You will always get a straight answer out of Mike. If he can't give you the answer, he'll let you know why"

In a recent interview Mr. Haider, Jersey Standard's chairman and chief executive officer, met many of the industry's most important issues head-on and seemed to enjoy every minute of it. He had no battery of lawyers to shield him. A public relations man was present, but his sole task seemed to be to take care of the coffee.

Question: Mr. Haider, at present there is a furor over the nation's oil import laws. What is your position on imports?

Answer: The United States needs an import restriction program for reasons of national security, and that is the hard truth of the matter. I don't like import restrictions on principle because I am basically a free trader. For me, no barriers on any commodity anywhere is the ideal situation, but oil is vital to the nation's security and its future supply must be guaranteed.

Q. If import restrictions were lifted, how would this affect the nation's security?

A. Well, there is a hell of lot of oil in the world — tremendous producing capacity. If foreign oil were to flood the United States, perhaps 50 per cent of the domestic producing capacity would shut down for economic reasons.

The United States would quickly become dependent on foreign oil for survival since 75 per cent of the nation's energy is supplied by oil and gas. Foreign countries could use oil as a political weapon.

If we put ourselves in this position we should have our heads examined. Maybe you shouldn't quote me on that. No, go ahead. It's the truth.

Look at Europe. This is the position the Western European countries are in, and they sure would love to get out of it.

Q. Opponents of oil import restrictions contend that prices on oil products would go down sharply if crude were allowed to come into

__1969 (above):__ in a refrain that will be heard from oil companies for decades to come, ex-CEO of Esso California (Chevron) expresses frustration that oil industry is "poorly understood," its "profits are below average," it is "accused of not paying its fair share of taxes," and admits "we haven't tried very hard to explain ourselves to the public."

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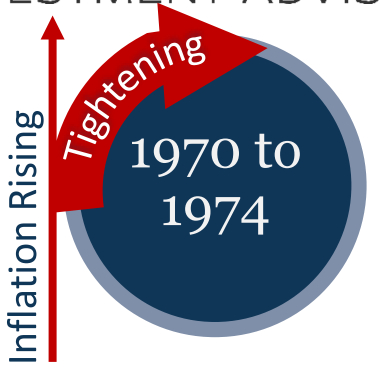
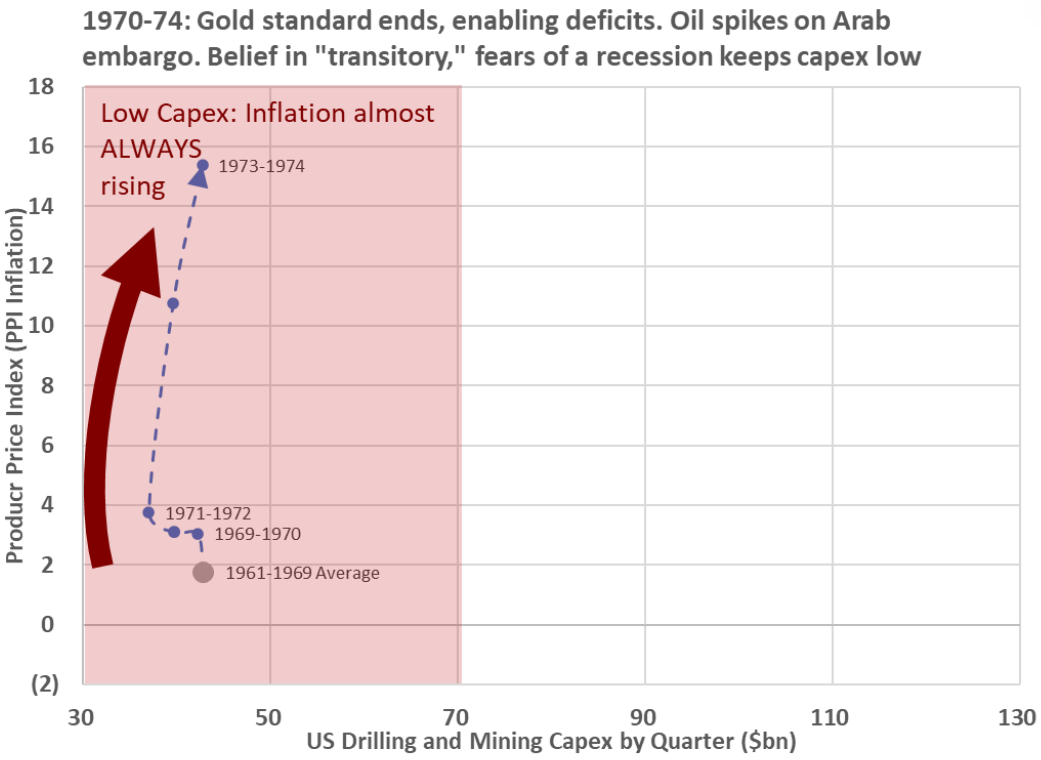
Early 1970s: Despite inflation and an oil shock, **tightening** economic conditions restrained **capex**



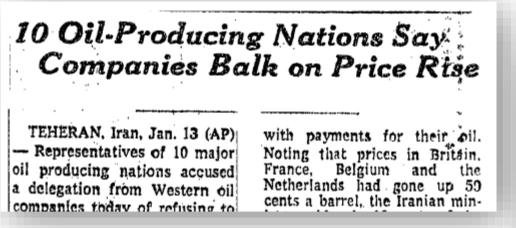
__**The economy accelerates into a oil shock:**__ While GDP soared after the 1970 recession, TX Railroad Commission warned of the end of "excess capacity." Majors' demands triggered Libyan nationalization in 1972, a prelude to 1973's Arab Oil Embargo. While 1973 is seen as a watershed, the "Energy Crisis" was front page by '71. The launch of the EPA, price controls, recession held **capex** low in 1973-74.

Capex vs. Inflation:



Headlines: GDP up, oil supply down

***Jan 1971**: OPEC (prior to its days as price-setter) expresses anger at receiving a fraction of oil prices received in western oilfields*



10 Oil-Producing Nations Say Companies Balk on Price Rise

TEHERAN, Iran, Jan. 13 (AP) — Representatives of 10 major oil producing nations accused a delegation from Western oil companies today of refusing to with payments for their oil. Noting that prices in Britain, France, Belgium and the Netherlands had gone up 50 cents a barrel, the Iranian min-

***Feb 1972**: TX RRC warns that state's wells are under-performing theoretical "excess capacity," threatening price stability*

TEXAS INCREASING CRUDE-OIL OUTPUT

Sets March Producing Rate at Highest in 16 Months

Special to The New York Times

AUSTIN, Tex., Feb. 17 — A mounting demand for Texas crude oil, triggered by higher costs of foreign oil, led the Texas Railroad Commission to set today a producing rate for March higher than any since November, 1970.

But the agency's chairman,

Demand for electricity will double i nthe next decade

Is U.S. Energy Flagging?

By EDWARD COWAN

WASHINGTON — Whenever the shortage of fuels and electric power is discussed these days, someone invariably asserts that what this country needs is "a national try's traditional self-sufficiency in energy.

The cornerstone of that policy is devising ways to get more energy — clean energy — from the country's enormous deposits of coal

The fuel and electric-power industries like to blame environmentalism. Natural gas spokesmen argue that Federal regulation of gas wellhead prices has kept the price artificially low in re-

***Jan 1973 (above)**: calls for new supply from offshore and Alaska as demand is doubling every ~15 years given energy-intensive US GDP*

***May 1972 (below)**: oil CEOs strike negative tone on geopolitics, tighter environmental policies*

PESSIMISM SHOWN AT OIL MEETINGS

Officials Address Seminars and Holders' Sessions

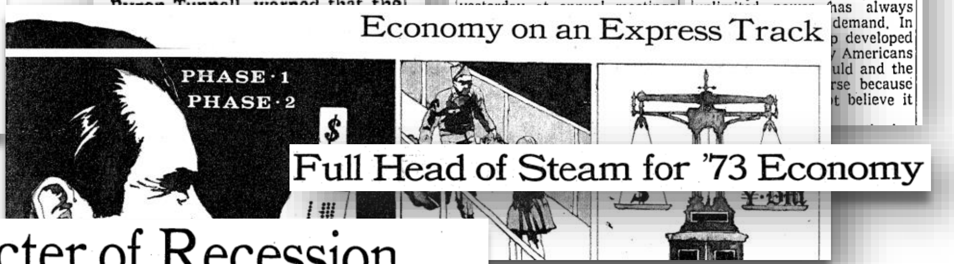
By WILLIAM D. SMITH

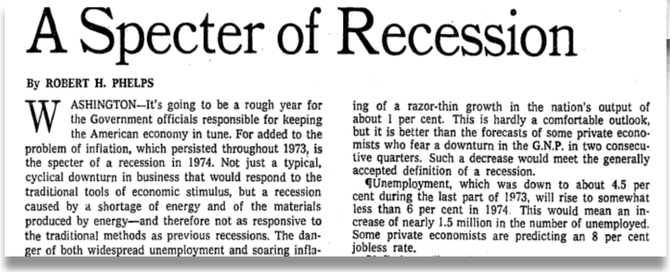
Oil executives were busy

crisis," lower prices for fuel oil and gasoline, environmental conflicts and the growing strength of the producing nations.

In New York, Rawleigh Warner Jr., chairman of the Mobil Oil Corporation, told stockholders that environmentalists were retarding oil and gas development in the face of what could become the worst peacetime energy shortage in the history of the United States.

"The situation is confusing to many Americans, for whom





A Specter of Recession

By ROBERT H. PHELPS

WASHINGTON—It's going to be a rough year for the Government officials responsible for keeping the American economy in tune. For added to the problem of inflation, which persisted throughout 1973, is the specter of a recession in 1974. Not just a typical, cyclical downturn in business that would respond to the traditional tools of economic stimulus, but a recession caused by a shortage of energy and of the materials produced by energy—and therefore not as responsive to the traditional methods as previous recessions. The danger of both widespread unemployment and soaring infla- ing of a razor-thin growth in the nation's output of about 1 per cent. This is hardly a comfortable outlook, but it is better than the forecasts of some private economists who fear a downturn in the G.N.P. in two consecutive quarters. Such a decrease would meet the generally accepted definition of a recession.

¶Unemployment, which was down to about 4.5 per cent during the last part of 1973, will rise to somewhat less than 6 per cent in 1974. This would mean an increase of nearly 1.5 million in the number of unemployed. Some private economists are predicting an 8 per cent jobless rate.

***From 1972 to 1974**: ebullient assessments in 1972-73 (above) give way to dour forecasts of a sharp recession driven by higher oil prices by early 1974 (left)*

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1974-1979: Regulations tighten and stocks are volatile despite strong profitability. Low **capex** extends inflation cycle

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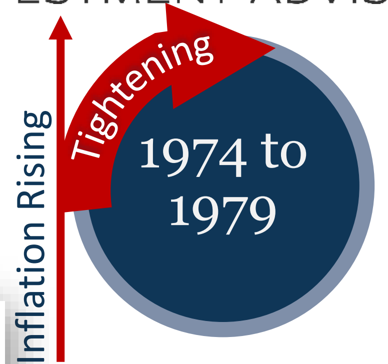
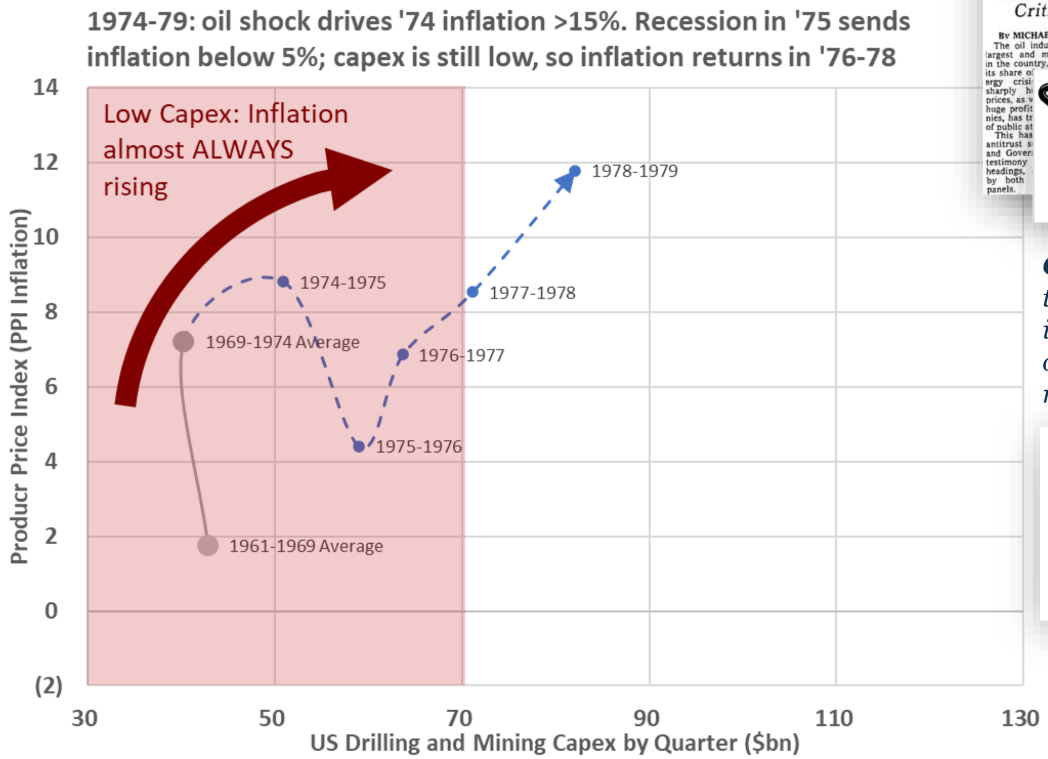
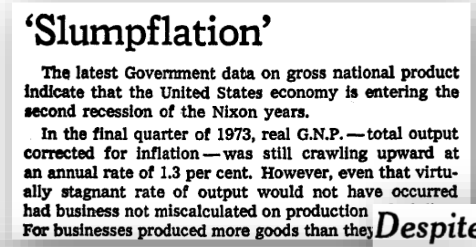


Inflation falls with GDP: in a lesson to today's policymakers, falling GDP and rising rates increased economic concerns and costs, prolonging underinvestment. After backing price floors for years, Big Oil is victimized by US gov't price-setting as floors became caps. Price caps were partially removed in 1973-75, but **capex** stayed low until the Carter WH committed to price "decontrol" in 1978.

Capex vs. Inflation:



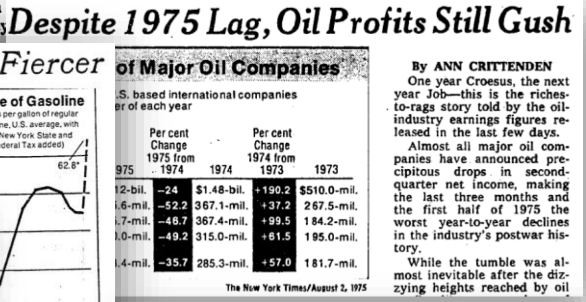
Headlines: weak GDP, oil profits, angst


'Slumpflation'

The latest Government data on gross national product indicate that the United States economy is entering the second recession of the Nixon years.

In the final quarter of 1973, real G.N.P.—total output corrected for inflation—was still crawling upward at an annual rate of 1.3 per cent. However, even that virtually stagnant rate of output would not have occurred had business not miscalculated on production. For businesses produced more goods than they

__1974 (left)__: "Tight money policies were intended to bring inflation under control, but had the effect of wrecking the housing market. And despite the money squeeze, inflation worsened"


Despite 1975 Lag, Oil Profits Still Gush

of Major Oil Companies

By ANN CRITTENDEN

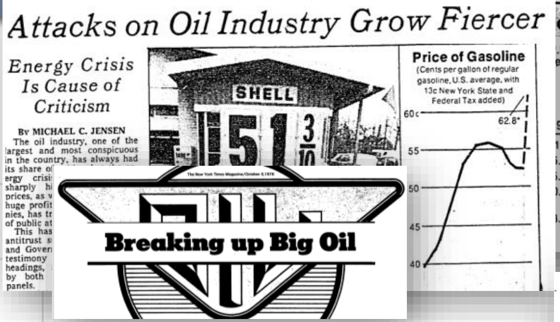
One year Croesus, the next year Job—this is the riches-to-rags story told by the oil-industry earnings figures released in the last few days.

Almost all major oil companies have announced precipitous drops in second-quarter net income, making the last three months and the first half of 1975 the worst year-to-year declines in the industry's postwar history.

While the tumble was almost inevitable after the dizzying heights reached by oil

The New York Times/August 2, 1975

__Aug 1975 (left)__: "For all its problems, the oil industry remains one of the most profitable in the US." Politicians attack the oil industry as it grapples with the recession, discouraging capex.


Attacks on Oil Industry Grow Fiercer

Energy Crisis Is Cause of Criticism

By MICHAEL C. JENSEN

Price of Gasoline

Breaking up Big Oil

__Oct 1976 (above)__: Constant threats to break up, sue, or tax "the petroleum industry, to which ordinary pressures of economics, law, and patriotism seem not to apply…"


U.S. Ponders Arab Pricing Suit

Attorney General Edward H. Levi says he has hired "one of the best antitrust lawyers in the country—namely me"—to determine whether the Justice Department should bring suit in the Federal courts against the Arab oil-producing countries for conspiring to fix oil prices.

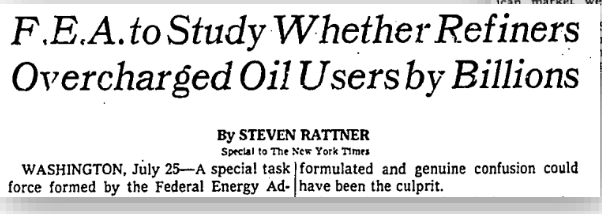
"If we had foreign concerns making price-fixing agreements which affect the American market we would say

compensation guaranteed by the Constitution."

The Series B preferred stock and common stock that U.S.R.A. would have Conrail issue for the railway assets is "worthless," Mr. Berger declared. He said he would "resort to the courts" to assure Penn Central's stockholders of a "full measure of just compensation."

Jack F. Bennett, who recently resigned as Under Secretary of the Treasury after almost four years in Washington, has been elected a senior vice president and director of the Exxon Corporation. Mr. Bennett, when he

__Jul 1975 (left)__: Reflecting one of the stages of grief, politicians discuss "punishing" rather than fixing inflation, floating the idea of suing OPEC for uncompetitive price-fixing practices

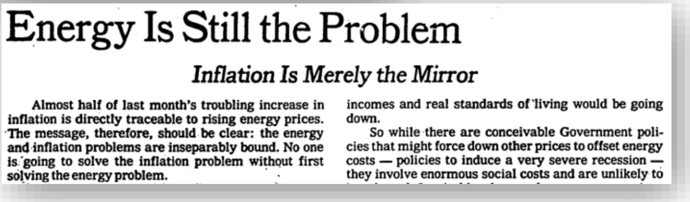

F.E.A. to Study Whether Refiners Overcharged Oil Users by Billions

By STEVEN RATTNER

Special to The New York Times

WASHINGTON, July 25—A special task force formed by the Federal Energy Ad- | formulated and genuine confusion could have been the culprit.

__Jul 1977 (above):__ As in every inflationary cycle, economically unfounded claims of "gouging" are pushed by politicians to bully energy suppliers.


Energy Is Still the Problem

Inflation Is Merely the Mirror

Almost half of last month's troubling increase in inflation is directly traceable to rising energy prices. The message, therefore, should be clear: the energy and inflation problems are inseparably bound. No one is going to solve the inflation problem without first solving the energy problem.

incomes and real standards of living would be going down.

So while there are conceivable Government policies that might force down other prices to offset energy costs — policies to induce a very severe recession — they involve enormous social costs and are unlikely to

__Jul 1979 (above)__: After a brief respite during the 1977 recession, inflation returned stronger.

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1979-1982: There is **A New Hope** and it's not only at the box office – **capex** surges as regulations loosen

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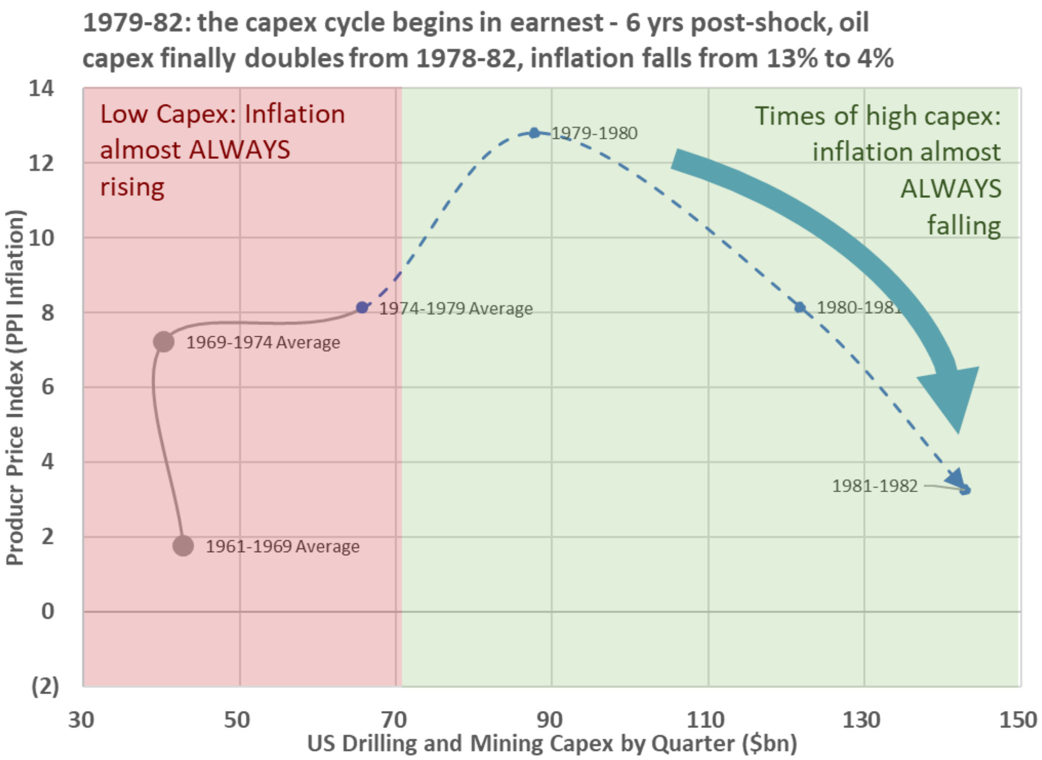
Controls end, capex becomes the cure: after years of alternating between strategies of "hope" and "price controls" as cures for inflation, 13% inflation ends the denial stage of grief, and in 1978-79, Washington accepts that ending price caps ("decontrol") is key to more **capex**, and **capex** is the only long-term cure for inflation. The result is surging capex every year from 1978 through 1982.

Capex vs. Inflation:



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Headlines: denial ends, capex begins

***Mar 1979 (right)**: Accepting that prices would likely rise in the short-term, the Carter WH accepts that ending the adversarial relationship with Big Oil and removing price controls is the only long-term fix for inflation*


CARTER CONSIDERING GRADUAL DECONTROL OF OIL AND NEW TAX

GASOLINE PRICES WOULD RISE

Plan Meant to Bar Windfall Profits — Company Earnings Surged in '78 With Strong Finish

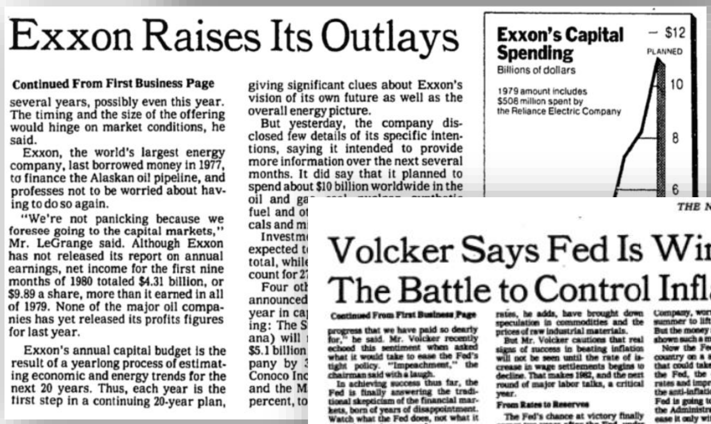
***Feb 1981 (below)**: Inflation exceeds 13%, and the acceptance phase begins: "For years [inflation] crept along silently like a cat... Then it grew bolder... In the US, where high incomes limited its impact, it seemed only foreigners had seen inflation's savage side. Now the beast is visible, a killer, public enemy No. 1"*


Inflation at 13.3 %: What Is This Rapacious Thing?

By ROBERT D. HERSHEY Jr.

30 Years Of Rising Prices

***Jan 1981 (right)**: Exxon's aggressive capex reflects response to "decontrol" of oil prices, with 30-50% Y/Y capex raises common for industry*


Exxon Raises Its Outlays

***Oct 1981 (below)**: Volcker takes credit for slowing inflation, while Fed governors note "slower increases in oil prices... contributed the most to decline in inflation to single-digit levels"*


THE NEW YORK TIMES, FRIDAY, OCTOBER 2, 1981

Volcker Says Fed Is Winning The Battle to Control Inflation

Paul A. Volcker, chairman of the Federal Reserve Board.

1982-1986: Not the hero cited in textbooks… Big oil's **capex** blitz actually collapsed inflation… while Volcker got the credit

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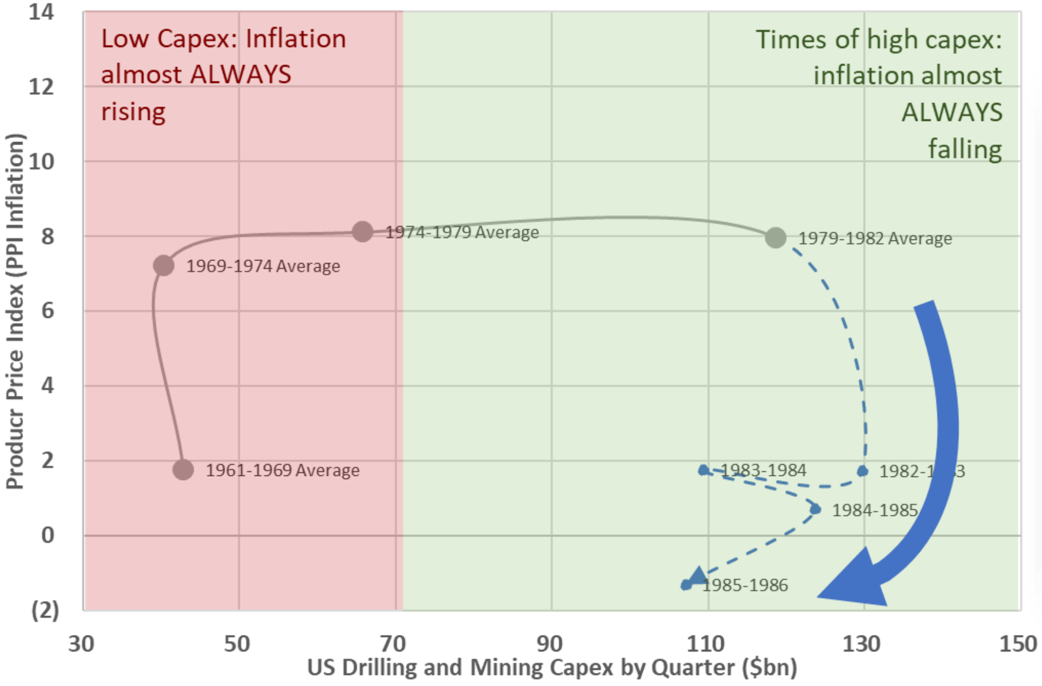
Long-cycle capex pushes inflation to zero: by the late 1980s, Big Oil traveled full circle from backbone of the postwar economy, to symbol of obscene global capitalism, to a necessary evil, and finally an existential threat to the Western world. Yet, Big Oil's unprecedented capex blitz ended inflation, resulting in a 70% collapse in oil price and a 1980s GDP boom, free of inflationary threats.

Capex vs. Inflation:

1982-86: unable to believe the inflationary danger has passed, industry pours near-peak capex into a problem already solved



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Headlines: after oil collapse, GDP surges

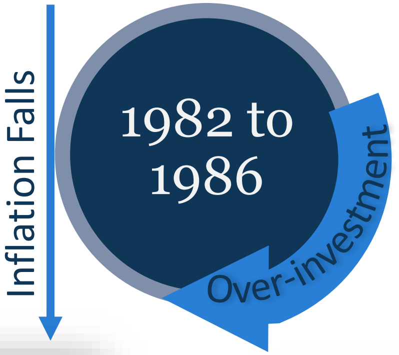
***Nov 1983 (below)**: GDP was expected to stay weak, given sky-high interest rates. As GDP shot up and inflation stayed low, Volcker got the credit.*

A Classic Recovery, After All

The one-year old is healthy, despite a huge deficit and high interest rates.

By WINSTON WILLIAMS

Following a Pattern



***Aug 1982 (below)**: a prescient article laid out fundamental reasons why oil would likely reverse after a 10x move to $34/bbl.*

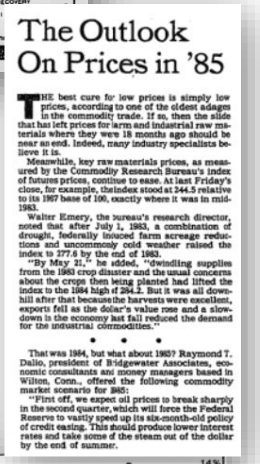
Twilight Nears for the Age of Oil

Industry's horizons have been sharply lowered by oversupply, humbling sheiks and U.S. oilmen.

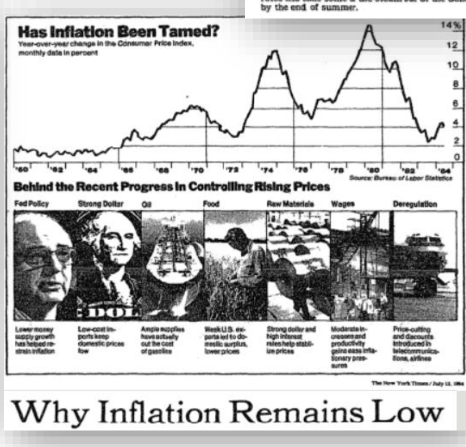
By DOUGLAS MARTIN

Why the Nightmare Is Ending

***Dec 1984 (right)**: Then-unknown investor Ray Dalio explains how declines in oil will prompt rapid rate cuts in 1985, fueling further growth.*



The Outlook On Prices in '85



Has Inflation Been Tamed?

Behind the Recent Progress in Controlling Rising Prices

Why Inflation Remains Low

***Dec 1984 (right)**: OPEC members struggle to agree on plan to stem the decline in oil prices. Concerns about the "credibility of OPEC."*

***Jul 1984 (left)**: Articles on falling inflation highlight the role of the Fed, with less mention of the crucial decline in oil prices.*

More Drops Forecast for Costs of Oil

Analysts Cite OPEC Split on Shift in Pricing

By JOHN TAGLIABUE

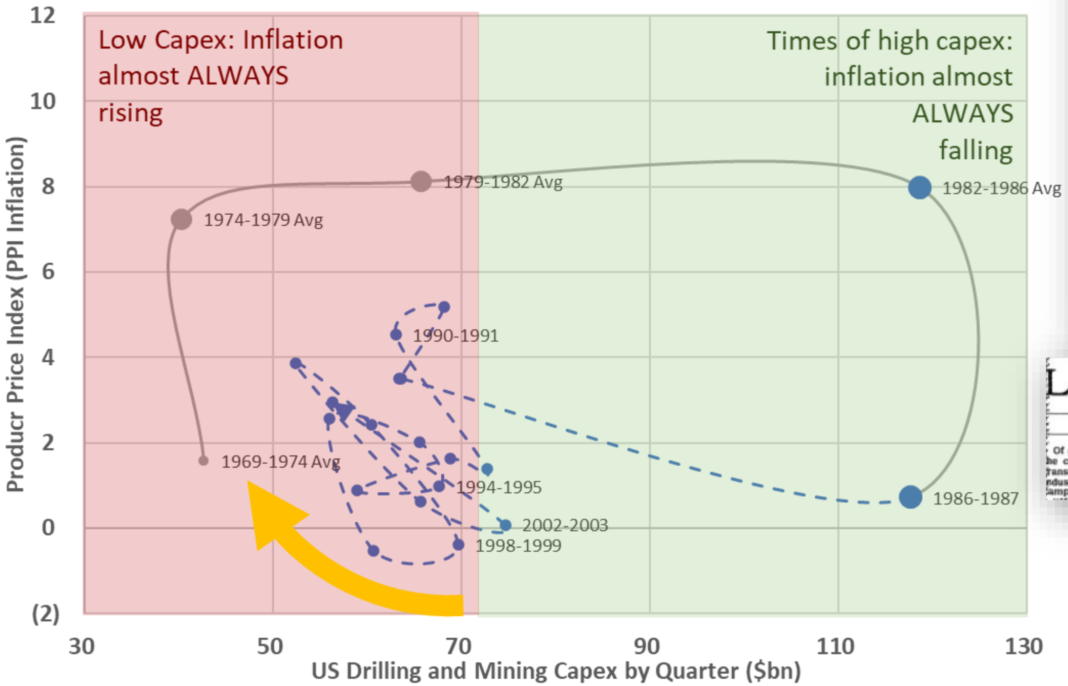
1986-2003: Lengthy period of price stability from the 1980s to 2000s led to a wave of mega-mergers, low organic **capex**

RECURRENT INVESTMENT ADVISORS

Almost 2 decades without inflation: the epic overinvestment of the 1980s led to nearly 2 decades of relatively smooth economic sailing with PPI inflation remaining between -1% and 4% from 1981 through 2003, despite sustained GDP growth. Structural inflation was gone, even with capex near 1960s lows, providing the world with ample room to accommodate emerging market growth.

Capex vs. Inflation:

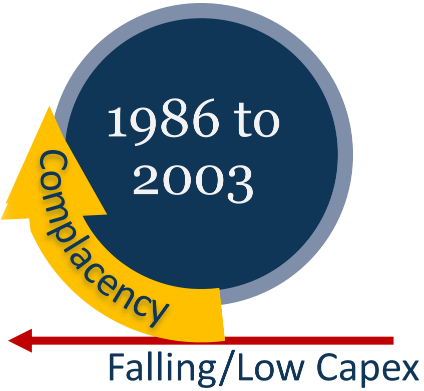
1986-2003: "The Great Moderation" - was 15 years of low inflation the result of the Fed or Chinese labor? Or was it excessive oil capex?



Headlines: few mourn the fall in oil

Jan 1986 (below): *collapse in oil prices gives rise to deflationary warnings as excessive capex drove oil prices down nearly 70% in 1986*

1986-2003 (below): *A series of mega-mergers across ~15 years were viewed as necessary to survive (and cut capex). BP bought Sohio (1987), Amoco (1998) and ARCO (2001); Chevron bought Texaco (2001); Exxon joined Mobil (1998); Conoco was spun by Dupont (1998), to merge with Phillips (2001).*




The Dark Side of Oil-Price Reductions
By Walter J. Levy and Milton Lipton
A concerted effort to brake a collapse is desirable
Create a predictable floor
B.P. in $7.82 Billion Deal for Standard
By ROBERT J. COLE
Wall Street Sees Possibility Of a New Suitor for Conoco
With No Price Premium, Talk of Counterbid
British Petroleum Is Buying Amoco in $48.2 Billion Deal
An Oil Merger That Assumes That Bigger Is Not Just Better, It's Necessary
By NEELA BANERJEE
More complex drilling
Long Term Appears Turbulent for Oil
By KENNETH N. GILPIN
EXXON AND MOBIL ANNOUNCE $80 BILLION DEAL TO CREATE WORLD'S LARGEST COMPANY
9,000 TO LOSE JOBS
Plan to Link Oil Giants Will Draw Close Look From U.S. Officials
In a Texaco Deal, Chevron Wants Control
Merger Talks Continue, With a Sticking Point
By AGIS SALPUKAS

Dec 1999 (above): *In a lesson that has been re-taught over and over again, GDP growth – and the then-longest expansion since WW2 - did little to stimulate oil price.*

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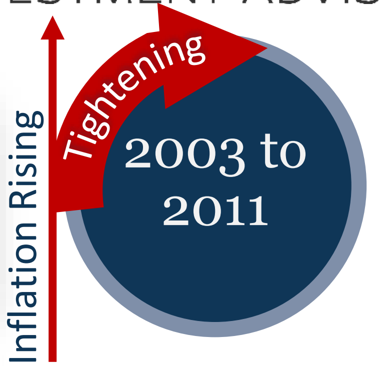
2003-2011: Decades of underinvestment and global demand growth started a brief inflationary cycle; capex quickly surged

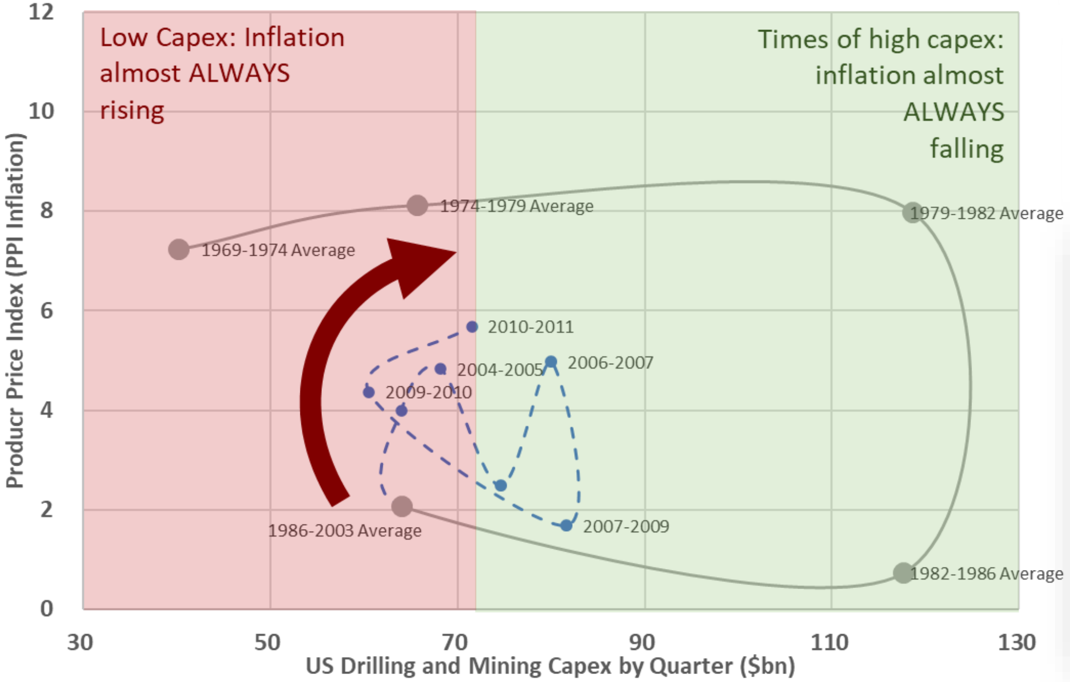
RECURRENT INVESTMENT ADVISORS



China pushes oil to 1970s levels: With an extremely dovish Fed, tightening conditions in the 2000s came as a result of the Great Financial Crisis. Despite weak GDP growth and EU debt crises, PPI made post-1986 highs in 2011. In stark contrast to the 1970s and 1980s, politicians and Wall Street welcomed capex, accelerating Shale development and limiting inflationary fallout.

Capex vs. Inflation:

2003-2011: Great Financial Crisis pushes capex down to 1980s lows, leading to elevated post-Crisis inflation, despite sov debt crises



Headlines: oil in a geopolitical lens

***Jan 2003 (below)**: Disruptions in Venezuela, Iraq drag on supply*

Venezuela Crisis Complicates Iraq Situation, Experts Say

Give this article

By James Dao and Neela Banerjee

Jan. 11, 2003

Opinion

OP-ED CONTRIBUTORS

How to Weaken the Power of Foreign Oil

***Dec 2006 (right)**: Shale oil begins to attract attention*

A cautious boom in oil shale in the United States - Business - International Herald Tribune

Give this article

By Clifford Krauss

Dec. 21, 2006

GRAND JUNCTION, Colorado — Oil shale has never made an American company more than a few cents; quite a few, in fact,

***Sep 2011 (above)**: national security experts focus imports of foreign oil*

***Oct 2011 (below)**: Oil markets begin to re-orient to a new bi-polar world where Chinese and US demand are comparable*

***Dec 2008 (right)**: Recession was expected to depress oil prices…*

Oil expected to remain below $60 a barrel in 2009

Give this article

ce forecasts for U.S. crude
to an average of $58.48 as a
ldwide, a Reuters poll

Awash in Oil, Canada Looks Toward China

Give this article

By Ian Austen

Oct. 11, 2011

OTTAWA — Ever s
Canada a significan
business here has r

SPECIAL REPORT: ENERGY

$70 a Barrel: A New Floor for the Oil Industry?

Give this article

By Jad Mouawad

Oct. 19, 2009

NEW YORK — After years of volatility, oil prices have found a level that seems to satisfy producing nations, oil companies and major consumers.

But in the wake of the economic crisis and the collapse in demand, a new reality has also set across the petroleum industry. Today's price of around $70 a barrel is increasingly viewed as a new floor for the industry.

Oct 2009 (left)**: …but oil's recovery post-GFC was surprisingly rapid, due to tight supply after a lengthy period of **low capex

***Jun 2011 (right)**: US releases SPR barrels in light of oil price strength through Euro-zone Crisis.*

Opinion

EDITORIAL

Tapping the Oil Reserve

June 25, 2011

Give this article

We have never been enthusiastic about quick fixes. But the Obama administration's decision to release 30 million barrels of oil from the Strategic Petroleum Reserve — the nation's emergency stockpiles — makes sense.

It should provide a modest boost to the American economy. It will help consumers at the pump as they head into the summer vacation season. And it sends an important message to the Organization of the Petroleum Exporting Countries that the United States is capable of protecting its domestic market, at least in the short term, even when those countries refuse to increase production.

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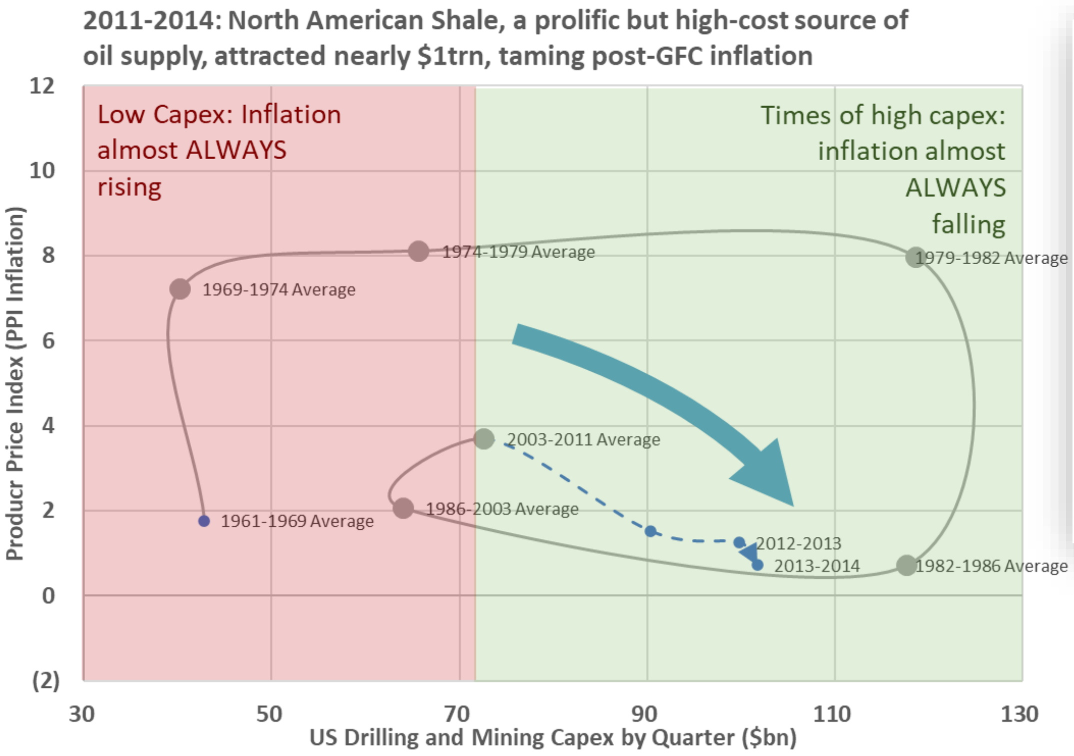
2011-2014: With the support of Wall Street and a supportive regulatory environment, **capex** ramps back to near-peak levels

RECURRENT INVESTMENT ADVISORS

Shale "breakthrough" incites capex binge: Constantly vigilant of inflationary threats after the nightmare of the 1970s and 1980s, and in-line with America's post-9/11 anti-OPEC stance, Wall Street and policymakers encourage an aggressive **capex** response to $100/bbl oil. Mid-2000s success in gas Shale development grows into a nearly-$1 trillion drilling boom by 2014.

Capex vs. Inflation:



Headlines: Shale surges, upending markets

***Dec 2013 (right)**: Obama WH proposes an end to the 40-year old oil export ban, a recognition of increased US oil production capacity.*

Energy Secretary Calls Oil Export Ban Dated

Give this article

By Clifford Krauss

Dec. 13, 2013

Houston — Signaling a possible break with 40 years of energy policy, Energy Secretary Ernest Moniz has suggested that it may be time for the Obama administration to reconsider the nation's ban on exporting domestically produced crude oil.

***Nov 2013 (below)**: wrongheaded belief that Shale was 1) low-cost, 2) "too small to matter" helped contribute to excessive **capex** despite low inflation.*

Shale's Effect on Oil Supply Is Forecast to Be Brief

Give this article

...ted to grow until the late 2010s, and then drop

Opinion

American Bull

By Roger Cohen

Dec. 13, 2012

Give this article

London

WITH the United States running a huge deficit, the incomes of the "99 percent" stalled, the fiscal cliff approaching fast, the nation's dependence on external financing from China acute, and Washington gridlock a recurrent political condition, this may seem like an odd moment to be bullish on America. But I am.

The main reason is the huge shift already underway in the politics of energy and oil. The change has been underappreciated. It may be summed up in a single sentence buried in the 166-page study [pdf] just published by the U.S. National Intelligence Council: "By 2020, the U.S. could emerge as a major energy exporter."

***Dec 2012 (left)**: Shockingly, with inflation low and the War on Terror winding down, few non-specialized commentators noted the potential for a seismic shift as North America went from oil importer to exporter.*

***Mar 2014 (below)**: before the oil price crash, there was brief bi-partisan hope that US oil could be a tool for the promotion of peace and democracy*

***Jun 2014 (right)**: Over 10 years after the commercialization of gas Shale, the potential for Shale to transform the US into a 1960s-style export-driven economy gained wider acceptance.*

Opinion

A New Map, Defined by Gas

By Vali R. Nasr

June 10, 2014

Give this article

WASHINGTON — Get ready for a new map of glo[bal] power, this one redrawn by American shale gas. It landscape in two ways: reviving hope for America[n] manufacturing, and prompting an American-Russi[an] the export of energy to Europe and Asia.

America's Natural Gas Lever

By Michael Wara

March 7, 2014

STANFORD, Calif. — The news that the Obama administration wants to use America's new natural gas abundance as a lever against Russia offers a chance to change a long-term dynamic in Europe, which allows an undemocratic petrostate to dictate terms to our closest allies.

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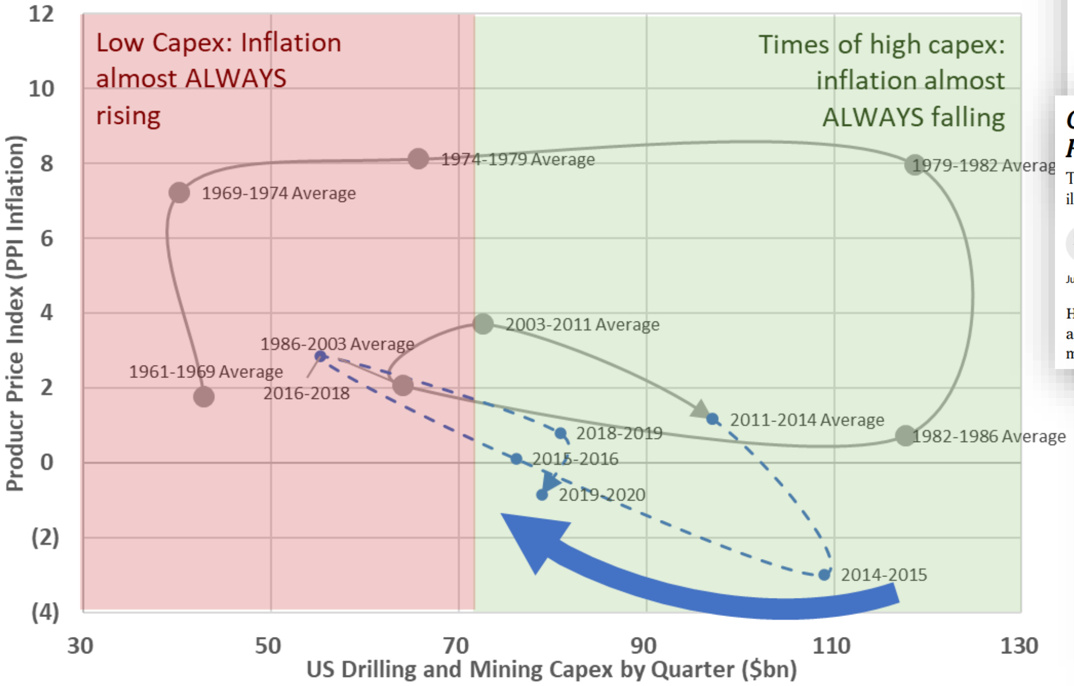
2014-2020: *"Great historic facts appear twice: first as tragedy, second as farce"*: Shale drives **capex** to 1980s levels

RECURRENT INVESTMENT ADVISORS

Shale-driven overinvestment crushes oil: If 1970s regulations restrained **capex**, causing a 10-year inflation cycle, the 2010s saw a 1980s-style **capex** surge, despite low inflation and weak oil prices. Without demand to match shale's production surge, from 2018-2020 the industry sold an illusory low-cost story to Wall Street, using low interest rates to fund high **capex** despite near-zero inflation.

Capex vs. Inflation:

2014-2020: Sustained excess capex, fueled by mistaken belief in near-infinite low-cost oil, drove inflation to post-WW2 lows



Headlines: oil's lost political importance

Opinion

The Next Financial Crisis Lurks Underground

Fueled by debt and years of easy credit, America's energy boom is on shaky footing.

By Bethany McLean
Ms. McLean, whose book about Enron was turned into an Oscar-nominated documentary, is the author of a new book about the fracking industry.

Sept. 1, 2018

About 20 yea… that it was p… long thought… into a horizo… — the comm…

Natural Gas Boom Fizzles as a U.S. Glut Sinks Profits

Chevron's multibillion-dollar write-down of gas assets is the most recent sign that the gas supply has far outstripped demand.

Despite Their Promises, Giant Energy Companies Burn Away Vast Amounts of Natural Gas

Chesapeake Energy, a Shale Pioneer, Files for Bankruptcy Protection

The company helped turn the United States into a gas exporter but became known for an illegal scheme to suppress the price of oil and gas leases.

By Clifford Krauss

June 28, 2020

HOUSTON — Chesapeake Energy, a pioneer in extracting natural gas from shale rock across…

Driven by Trump Policy Changes, Fracking Booms on Public Lands

The administration is auctioning off millions of acres of drilling rights and rolling back regulations, raising environmental concerns in states like Wyoming.

American Oil Drillers Were Hanging On by a Thread. Then Came the Virus.

Energy companies were major issuers of junk bonds to finance exp… in trouble as capital has dried up and oil prices have cratered.

By Matt Phillips and Clifford Krauss
Published March 20, 2020 Updated March 23, 2020

Wall Street supercharged America's energy boom of the past deca… oil companies to finance growth with cheap, borrowed money. Now… tatters as the coronavirus pandemic has driven the fastest collaps… than a generation.

Fracking Firms Fail, Rewarding Executives and Raising Climate Fears

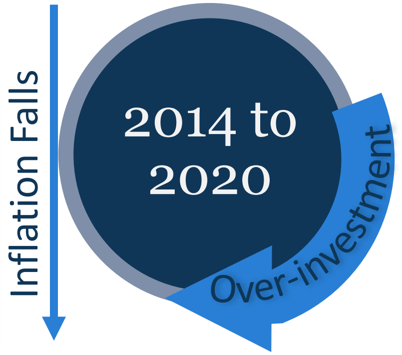
Oil and gas companies are hurtling toward bankruptcy, raising fears that wells will be left leaking planet-warming pollutants, with cleanup costs left to taxpayers.

By Hiroko Tabuchi

Published July 12, 2020 Updated July 12, 2021

The day the debt-ridden Texas oil producer MDC Energy filed for bankruptcy eight months

***2015-2020**: with the War on Terror faded from public consciousness, oil's strategic and economic importance, commonplace for 60+ years, is replaced with articles on environmental damage, greed, financial incompetence.*



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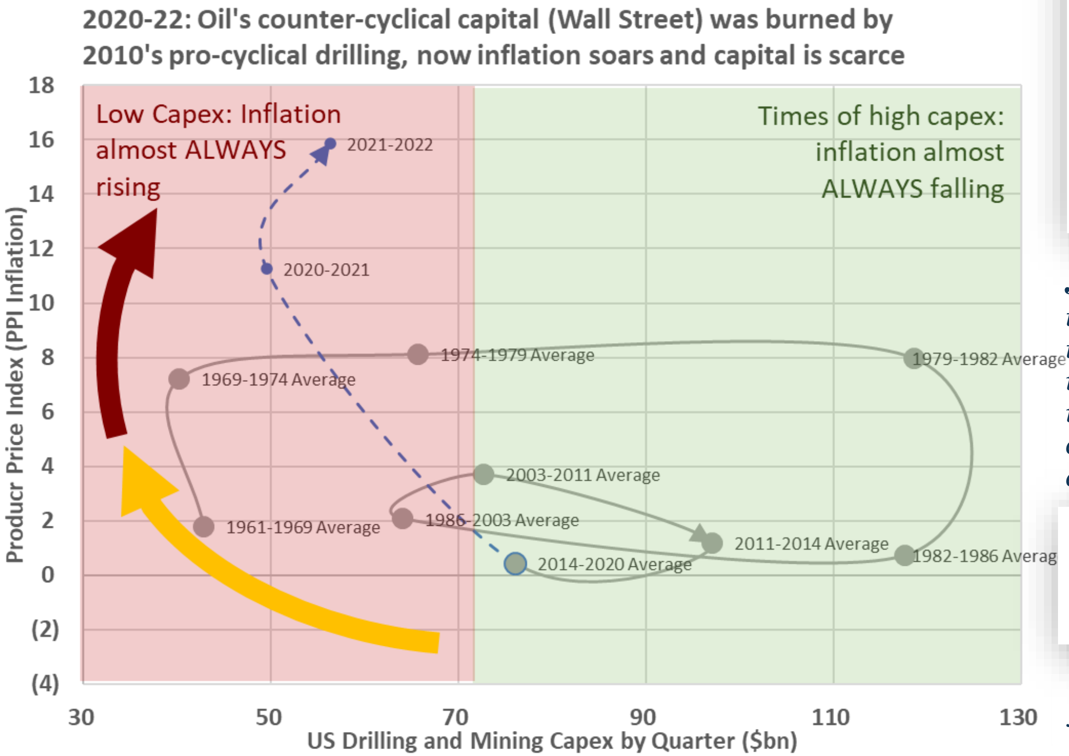
2020-2022: Capex dollars dry up after the oil industry cried wolf (and extensively over-invested) prior to the pandemic

RECURRENT INVESTMENT ADVISORS

Oil forced to self-fund at the worst time: Judging by the graph below, 2020-2022 is as bad as the worst of the 1970s-80s. Unlike the 1970s, today's low **capex** is due to Wall Street, as capital vanished after the 2014-2020 **capex** splurge. Low valuations have made equity funding prohibitive, while bank lending has tightened given large COVID-era losses, plus increased ESG-driven banking rules.

Capex vs. Inflation:

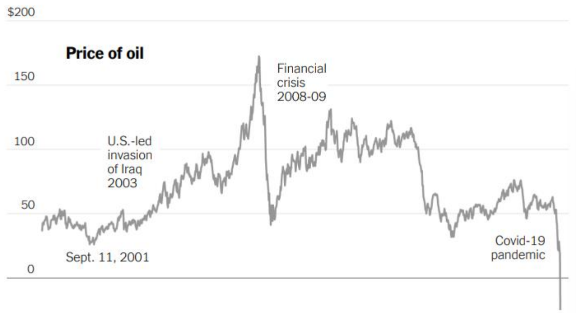


Headlines: once an albatross, energy soars

Apr 2020 (below)*: rather than the technical glitch it was, the negative price of oil was widely interpreted as a judgment on the industry's profligacy and its product's near-worthlessness.*

Too Much Oil: How a Barrel Came to Be Worth Less Than Nothing

One oil price went negative on Monday, signaling that there is no place to store all the crude the world is producing but not using.



Skyrocketing Global Fuel Prices Threaten Livelihoods and Social Stability

Around the world, from South Asia and Africa to Europe and Latin America, the cost of filling a car's tank, getting to work and cooking dinner has spiked.

By Patricia Cohen

Patricia Cohen, who covers global economics, reported from London with contributions from reporters in Latin America, Africa and Southeast Asia.

July 2, 2022

"NO ES SUFICIENTE" — It's not enough. That was the message protest leaders in Ecuador delivered to the country's president this past week after he said he would lower the price of both regular gas and diesel by 10 cents in response to riotous demonstrations over soaring fuel and food prices.

Jul 2022 (right)*: instead of regulations of the 1970s, today's low* ***capex*** *is largely explained by a movement to divest from and restrict activities of the energy industry. Improbably, it is supported by many investors. The result will be a prolonged inflationary cycle, similar to 1970s-1980s, until* ***capex*** *is once again considered financially (and socially) acceptable.*

With Gas Prices High, Calls Grow to Tap Strategic Oil Reserve

President Biden is under pressure to release oil from the Strategic Petroleum Reserve. Here's how it works, and how it might lower prices (modestly, and maybe not for long).

Oil profits soar, but the industry's future remains uncertain

Here are four climate takeaways from a dramatic turnaround — a year after a surge of shareholder activism in the industry, as well as a remarkable court ruling against Shell.

Nov 2021 (above)*: given the social unacceptability of advocating for more drilling, ineffectual short-term band-aids, such as the Strategic Petroleum Reserve, are advocated by politicians to address structural underinvestment.*

May 2022 (above)*: with energy prices soaring, the economic case is clear for more* ***capex****. Energy companies and commentators remain focused on responding to the intense social (and financial) pressure to do less, not more.*

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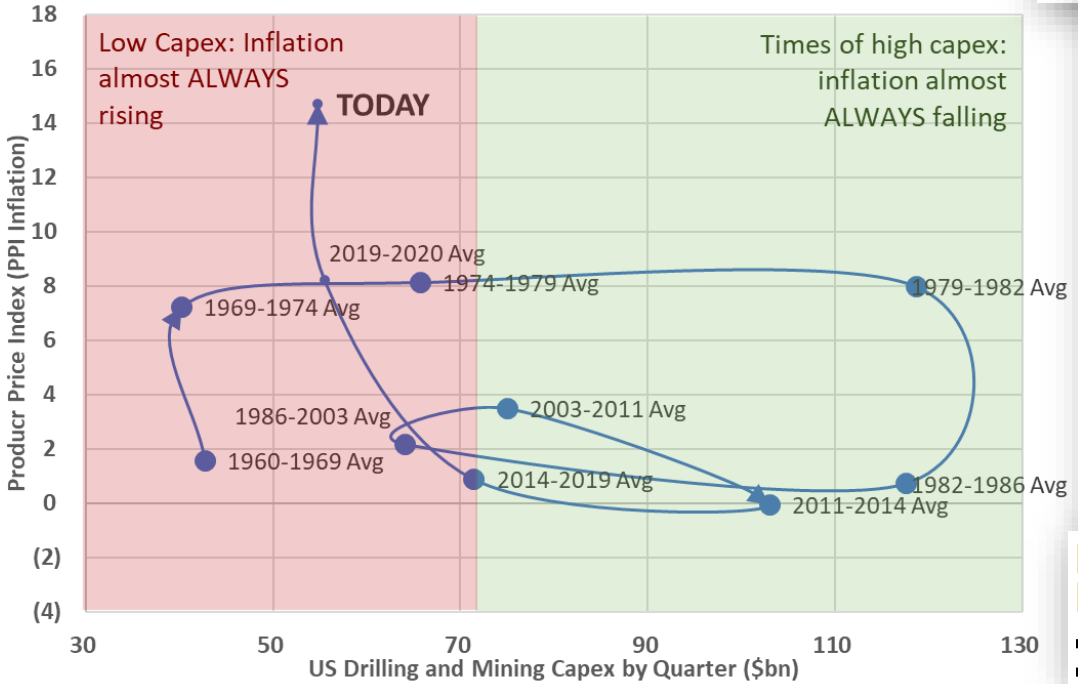
Today: Capex is undershooting the inflation rate at a level not seen since the 1970s

RECURRENT INVESTMENT ADVISORS

<u>1970s return as we repeat our mistakes:</u> Despite clear signals that underinvestment is <u>the</u> main cause of our new inflationary experience, we are sleepwalking back to the 1970s. Both eras saw disruptive geopolitics (Arab Embargo/Russia), markets remain enthralled by the last bull market (Nifty Fifty then/FAAMG now), politicians threaten taxes and price caps instead of encouraging investment.

Capex vs. Inflation:

2022: with rising rates, 30-50% oilfield inflation, slowing GDP, ESG/divestment pressure… industry is underspending like 1978



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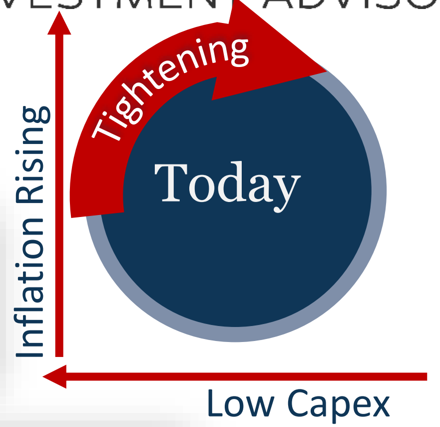
Wall St. and Washington deter capex

***2022 (below)**: unable or unwilling to learn from history, policymakers and investors view the extractive industry as cause of, rather than solution to, inflation*



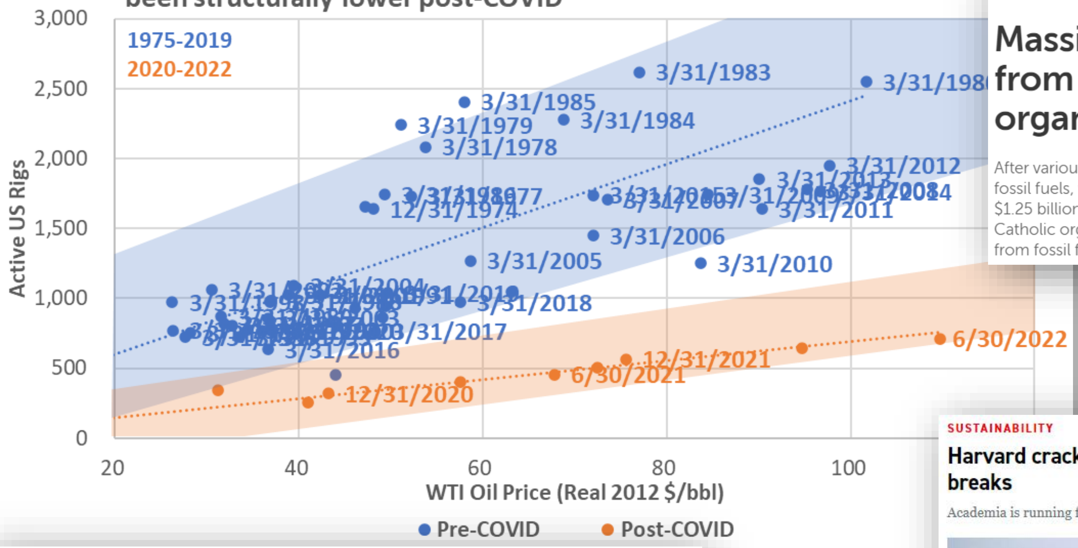
Biden slaps oil companies for profiteering at the pump.

In a letter to seven large energy firms, the president said excessive margins were "worsening that pain" for American consumers.

'Exxon Made More Money Than God': Biden Rips High Gas Prices

- A
- B

With tightening economic conditions, US energy investment has been structurally lower post-COVID



CHURCH

Massive divestment from fossil fuels by faith organizations

After various calls by the Vatican for divestment from fossil fuels, thirty-five faith institutions with more than $1.25 billion in combined assets, including some Catholic organizations, announce they are divesting from fossil fuel companies .

SUSTAINABILITY

Harvard cracks on fossil fuels and a dam breaks

Academia is running from fossil fuels.

Pioneer CEO Sheffield Warns U.S. Shale Is Unable to Grow Much More

- Producers grappling with labor shortage, Sheffield sa
- Says only OPEC countries able to meaningfully incre

North American oil companies scramble to find workers despite boom

RECURRENT INVESTMENT ADVISORS

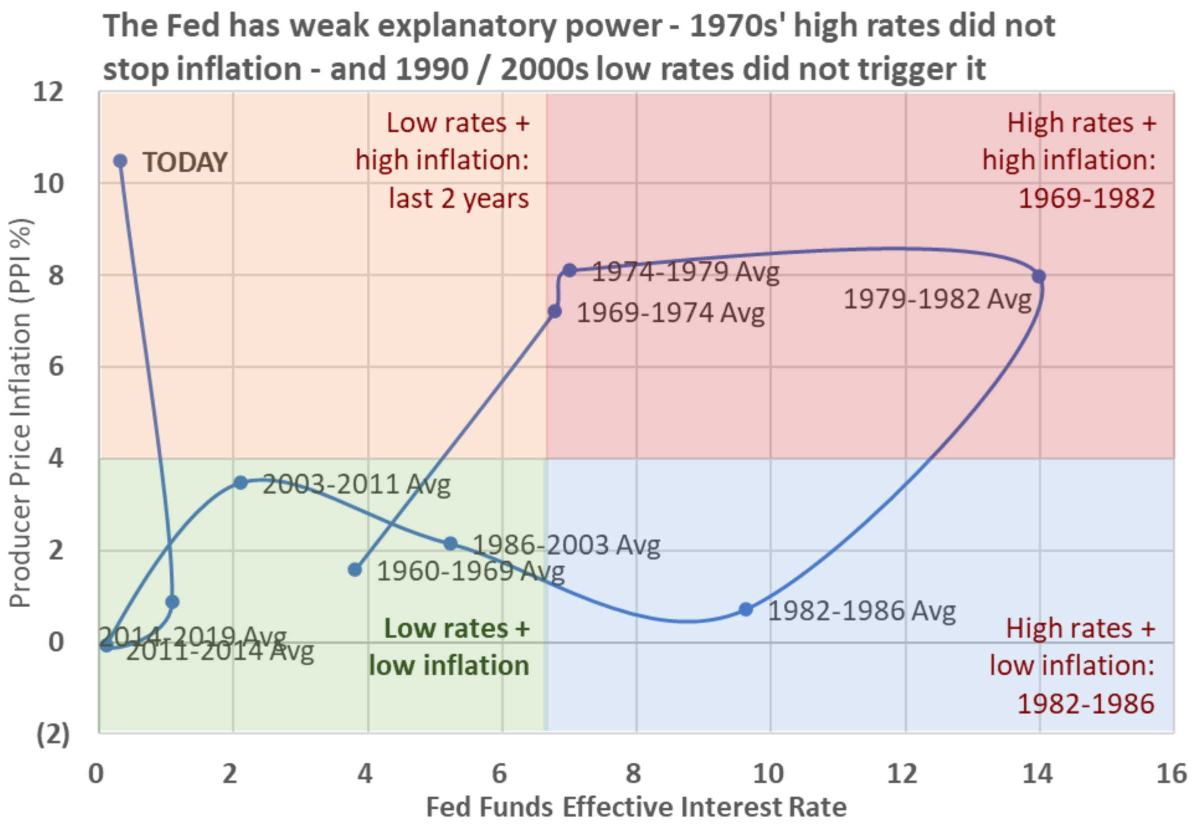
Wait… can **capex** really be more impactful than the Fed?

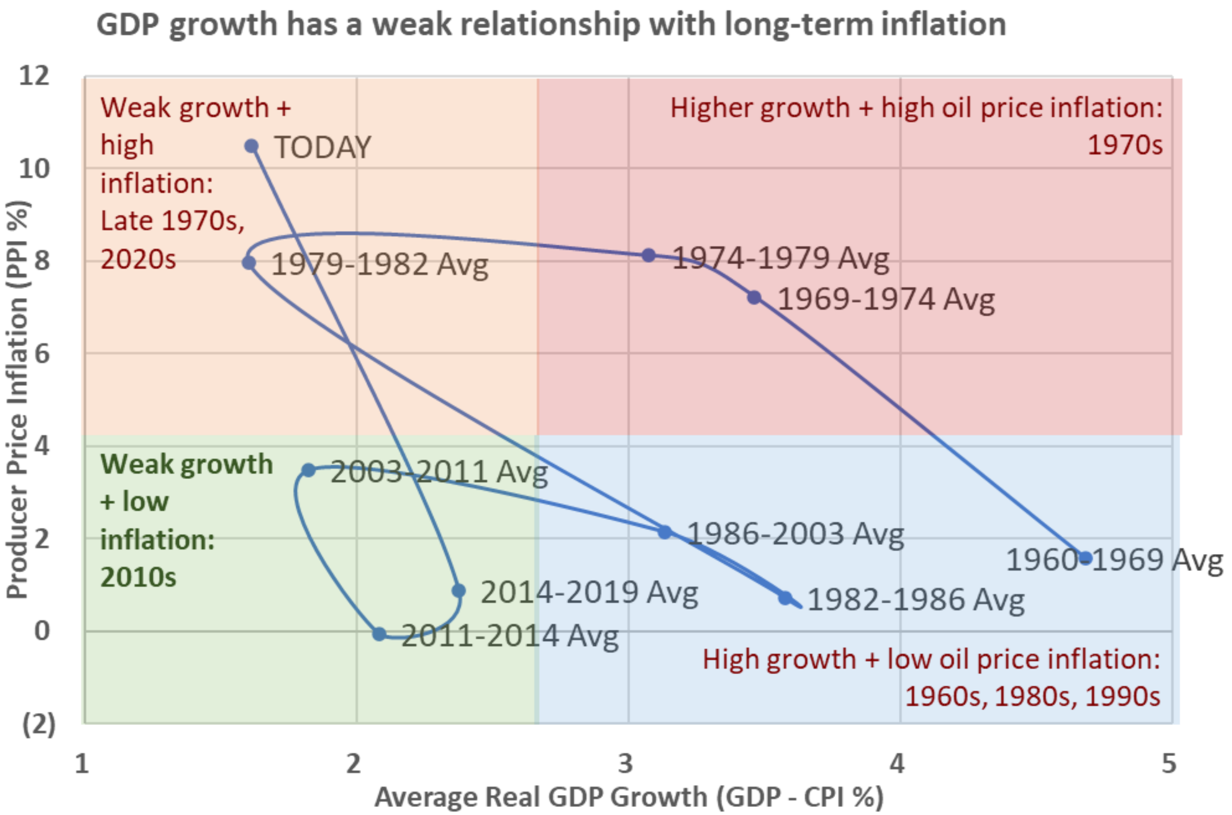
Is it possible that the Fed's much-vaunted status as "guardian against inflation" is a myth?

RECURRENT INVESTMENT ADVISORS

If GDP doesn't influence long-term inflation, why would the Fed be able to? The argument that the Fed has little control over long-term inflation isn't as controversial as it seems and there's little evidence to support the Fed's supposed control over inflation.

The Roaring 70s. Carter's economic miracle. The 2011 Sovereign Debt Boom. Doesn't ring a bell? That's because GDP and inflation show little long-term relationship. High commodity prices and elevated inflation generally weakens GDP growth. Meanwhile, strong GDP growth – 1960s, 1990s, 2010s – often coincide with weak periods for commodity prices.





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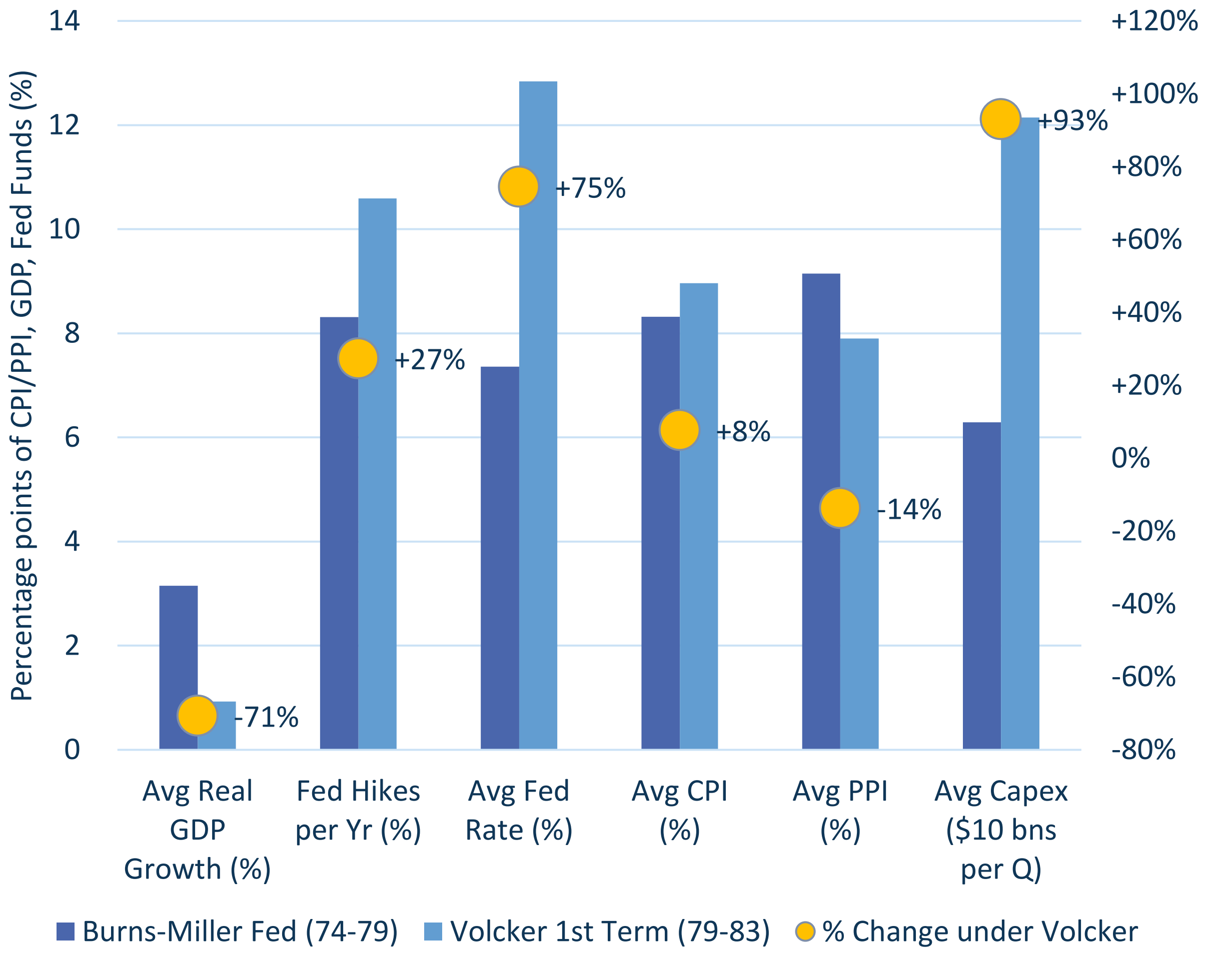
The Volcker Fed's victory over inflation, enshrined in 40 years of Federal Reserve lore, might have been just a myth

RECURRENT INVESTMENT ADVISORS

The "Do Nothing" 1970s Fed and Volcker's Fed both hiked aggressively, slowing GDP, but inflation was slow to fall. This changed when Volcker benefitted from a +93% jump in capex



Relying on economic contraction to halt steady increases in inflation, the 1970s Fed was remembered as a failure.

Volcker's Fed followed nearly the same policy, moving from a then-record 2% annual hike pace to 2.5%… GDP growth collapsed, but inflation was still slow to fall in 1979-81.

The key difference was that Volcker presided over the largest increase in drilling/mining capex in American history.

Surging capex gave Volcker a chance Burns and Miller never got – to cut rates rapidly without suffering an inflationary resurgence.

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How can the **capex** cycle help guide resource and energy investments?

GDP and the Fed appear less impactful to the commodity cycle than commonly believed… but what matters for investors?

RECURRENT INVESTMENT ADVISORS

Our case study suggests a powerful conclusion: **capex** is the key variable for understanding commodity cycles. Typical indicators – GDP growth, Fed policy – appear much less useful.

The overreliance on demand-oriented metrics has influenced investment processes as well, leading to an excessive focus on commodity price and GDP forecasting. These forecasts are not particularly useful for investors, even when done well.

We find that the patterns of **inflation** (which is driven by levels of recent-year **capex**) are similar to multi-year patterns of relative energy performance vs. broad equity markets.

One key takeaway for investors is that **when trailing capex is low, relative performance for commodity-levered investments tends to be positive.**

We believe that **longer-term investors can focus on long-term capex trends to guide investments,** with less attention on volatile demand forecasts.

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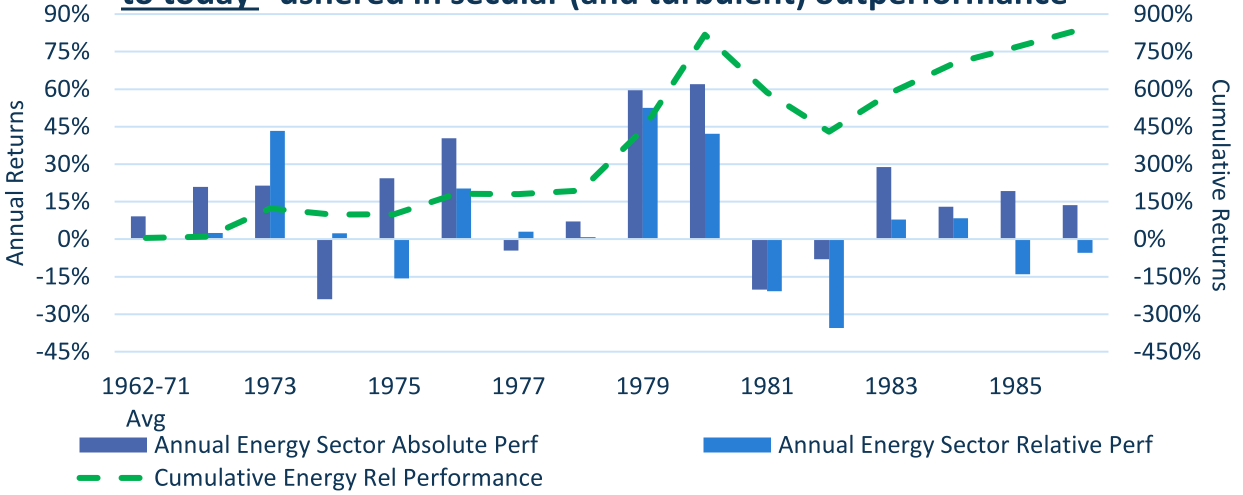
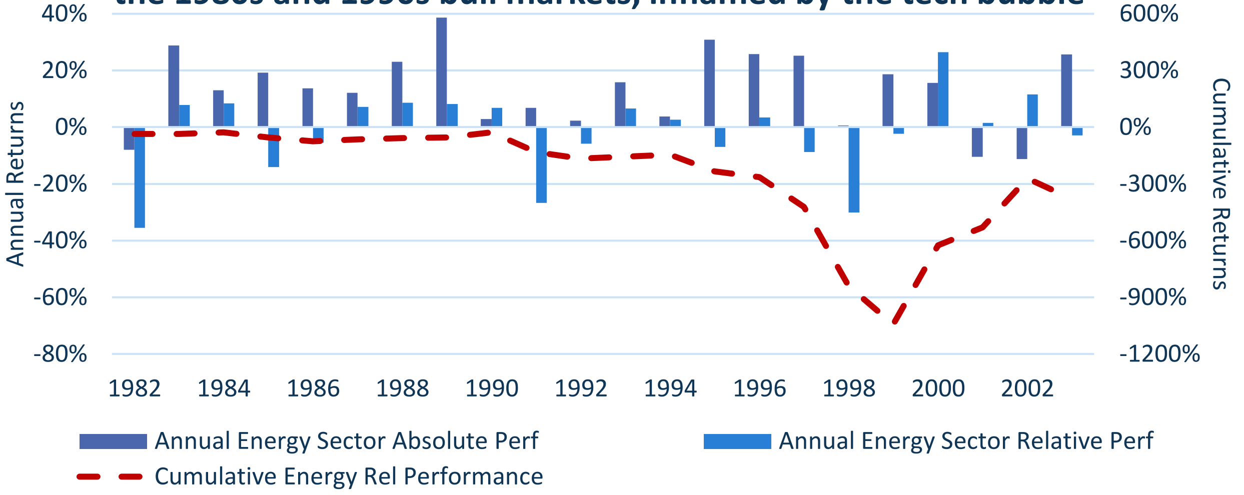
For inflation vs. capex, today's environment is comparable to early 1970s – huge energy outperformance and high volatility

RECURRENT
INVESTMENT ADVISORS

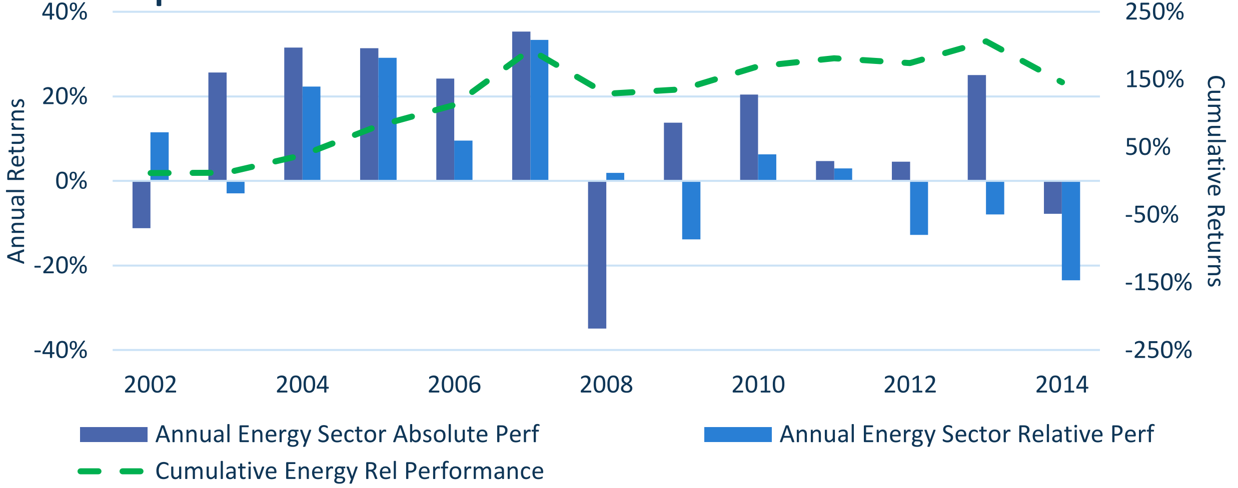
1960s-70s underinvestment era – economic conditions similar to today - ushered in secular (and turbulent) outperformance



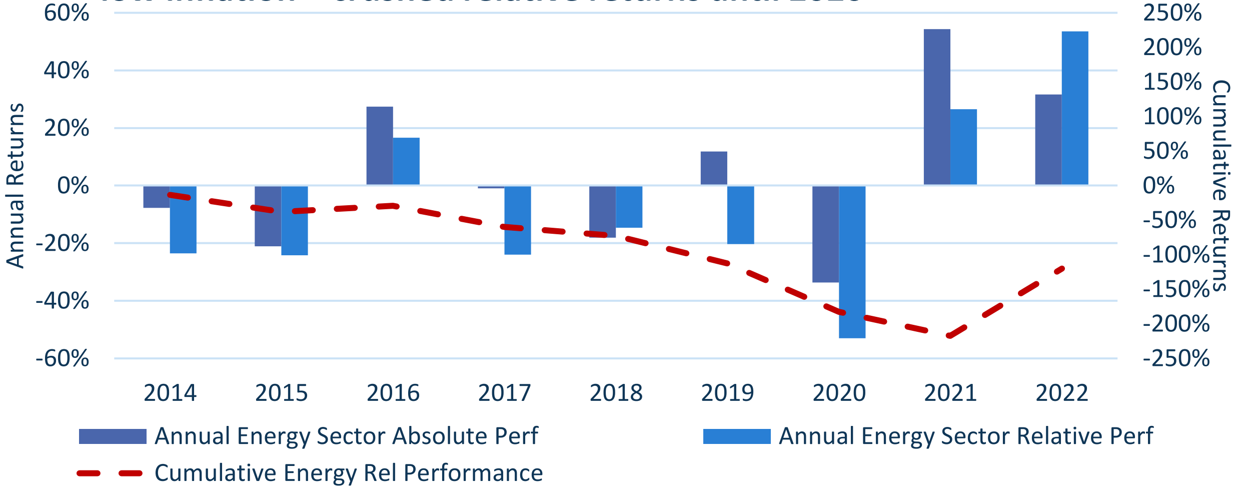
Investing at peak capex in the 80s, energy investors would lag the 1980s and 1990s bull markets, inflamed by the tech bubble



Investing in the low capex era of the early 2000s generated outperformance



The excessive capex of the shale era – in a period of already-low inflation – crushed relative returns until 2020



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60 years of data suggests capex drives inflation and relative energy equity performance – and today looks like the early 70s

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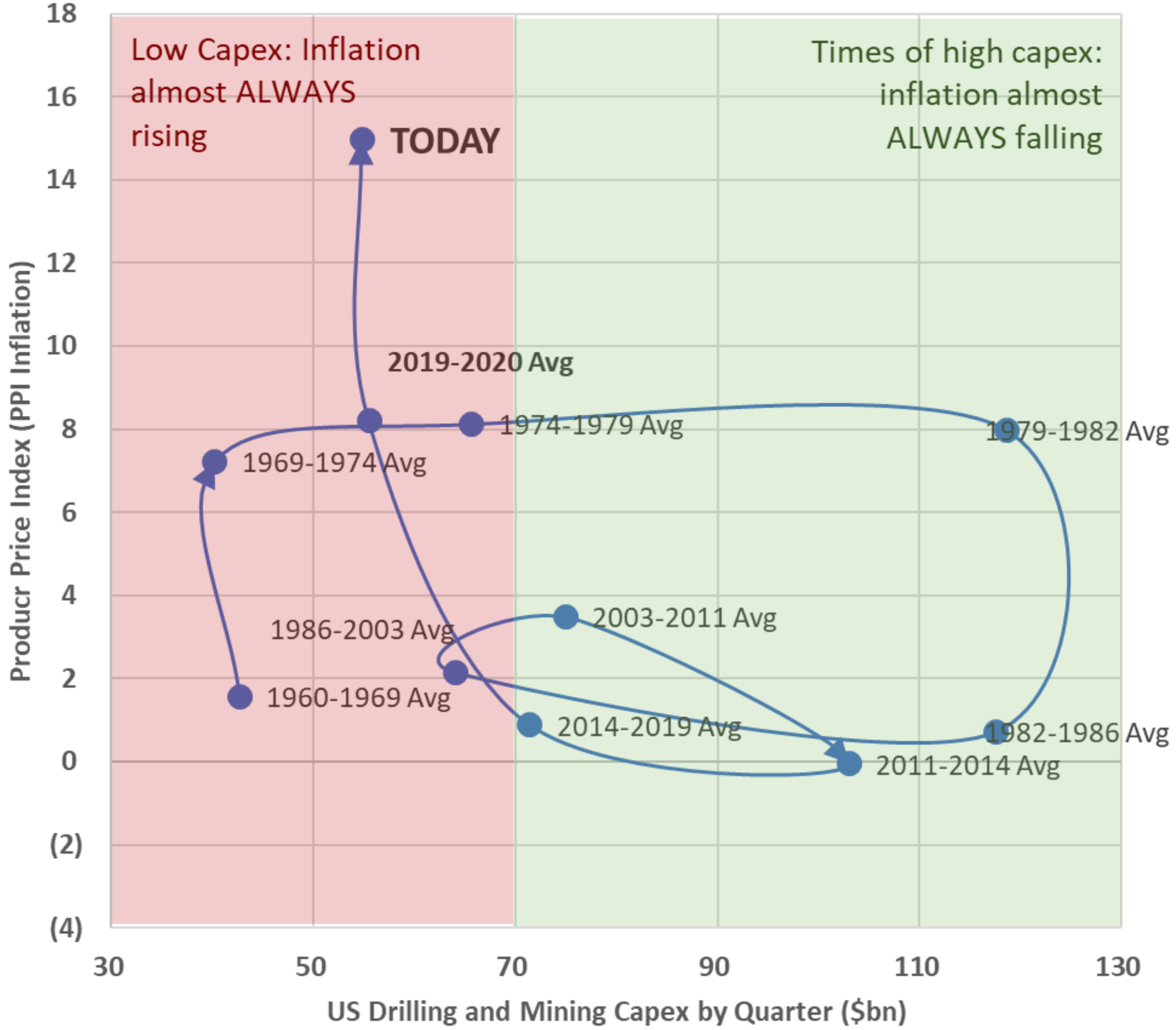
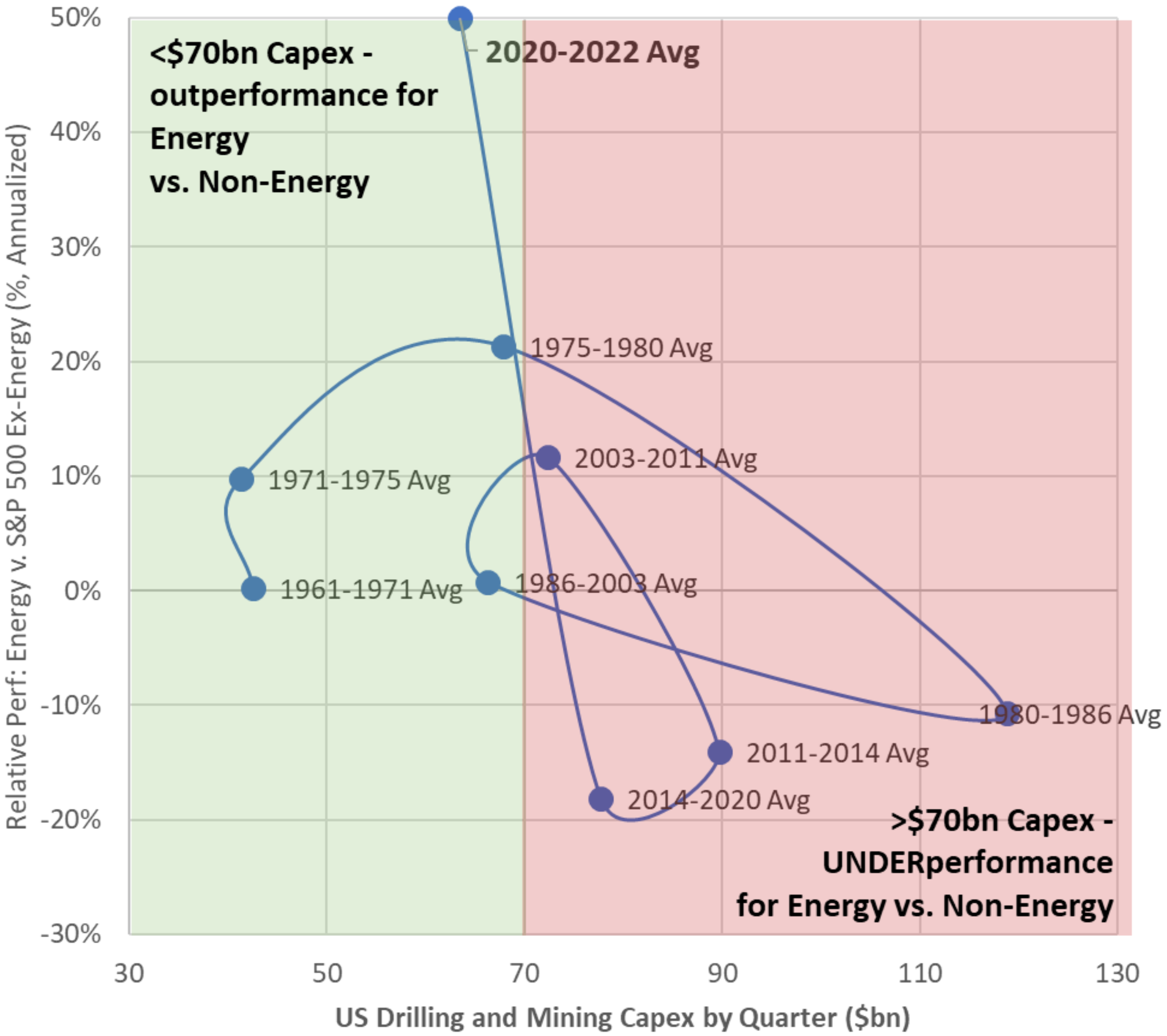
Drilling/Mining Capex vs. PPI Inflation



Drilling/Mining Capex vs. Energy Relative Performance



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Can the investing lessons from a 60-year energy dataset be extrapolated to other natural resource industries?

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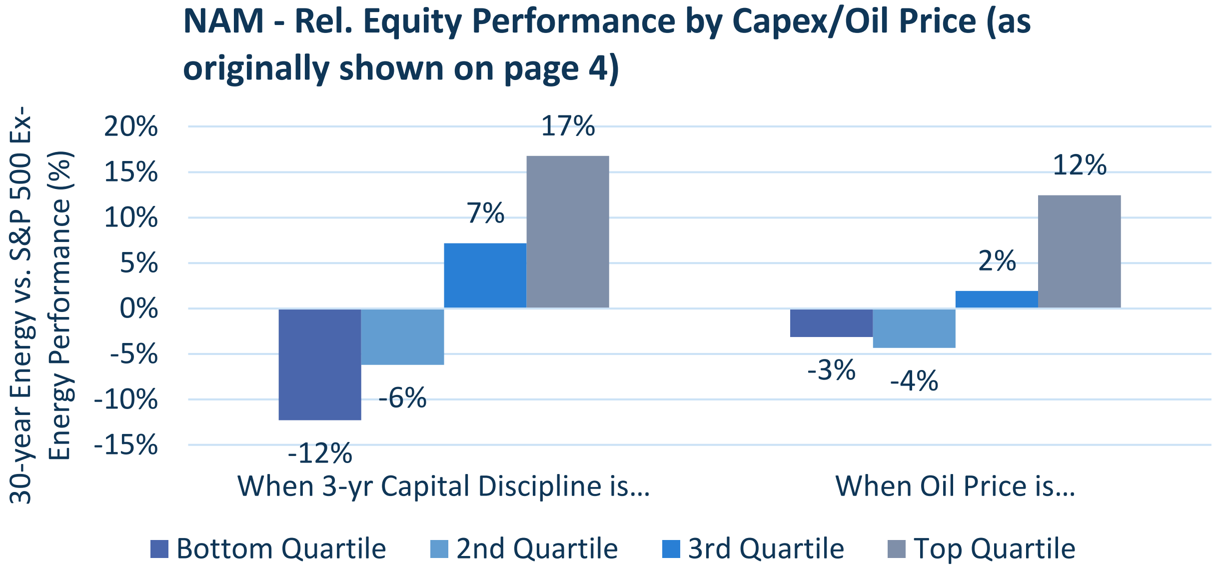

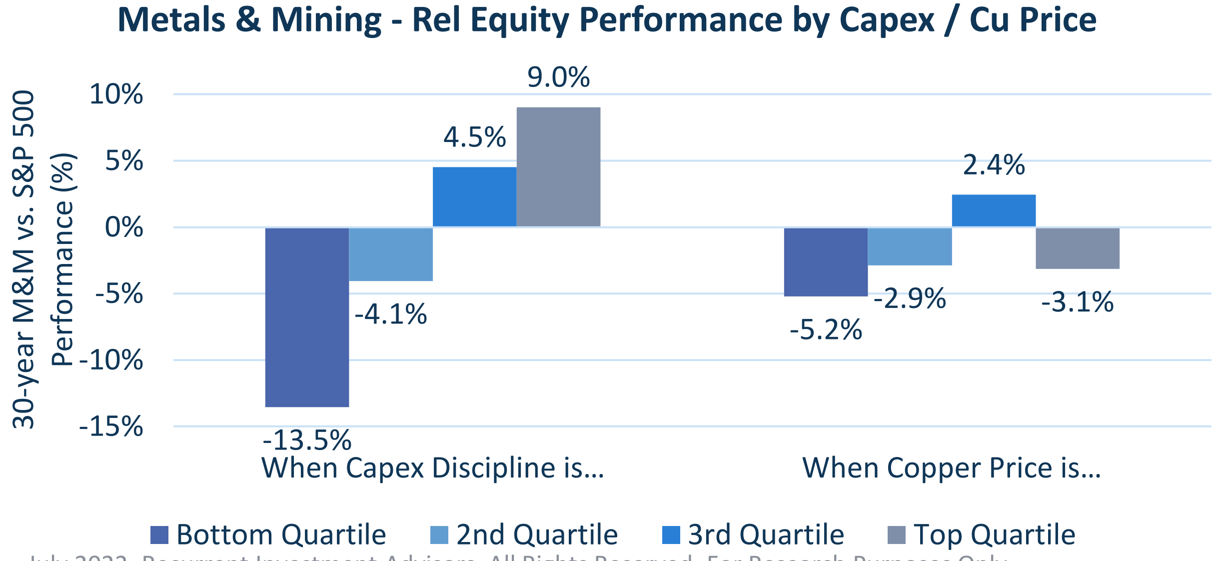

While our 60-year North American Energy dataset offers the most extensive history, we can also examine other natural resources sectors starting in 1990.

Strikingly, we find that metals and mining stocks – despite different economic exposures, commodity price cycles, and greater exposure to China – are also more sensitive to the capex level than they are to absolute commodity price.

Again, our conclusion appears to apply: the **capex cycle** appears a more useful input vs. demand-oriented commodity price forecasts.

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For global natural resource sectors outside of our 60+ year North American dataset, our powerful findings hold

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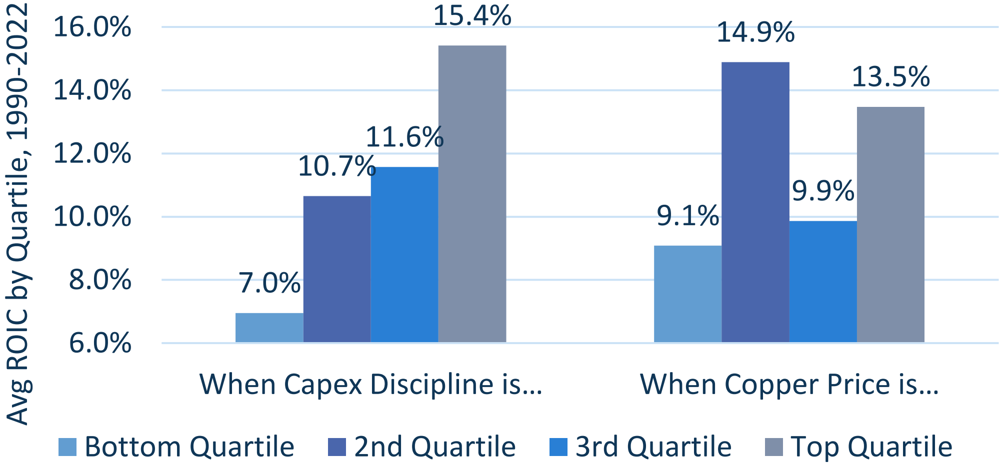
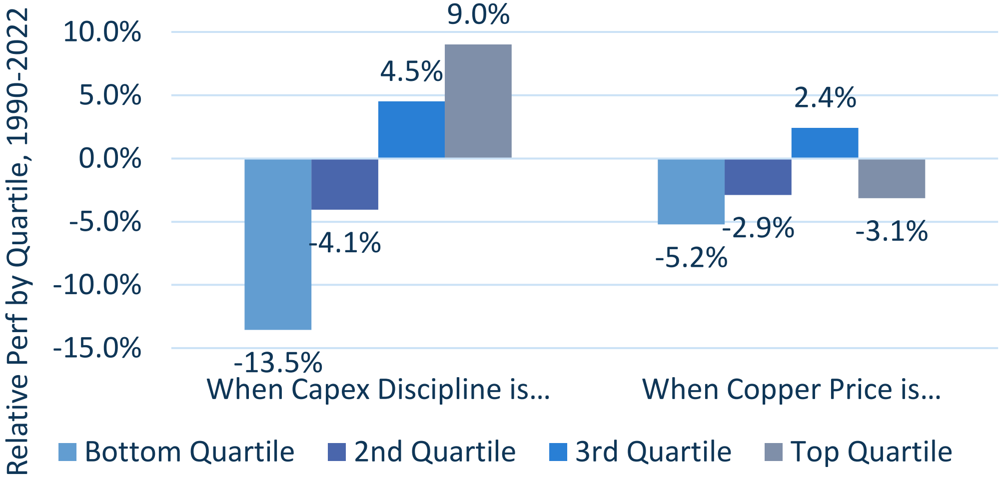
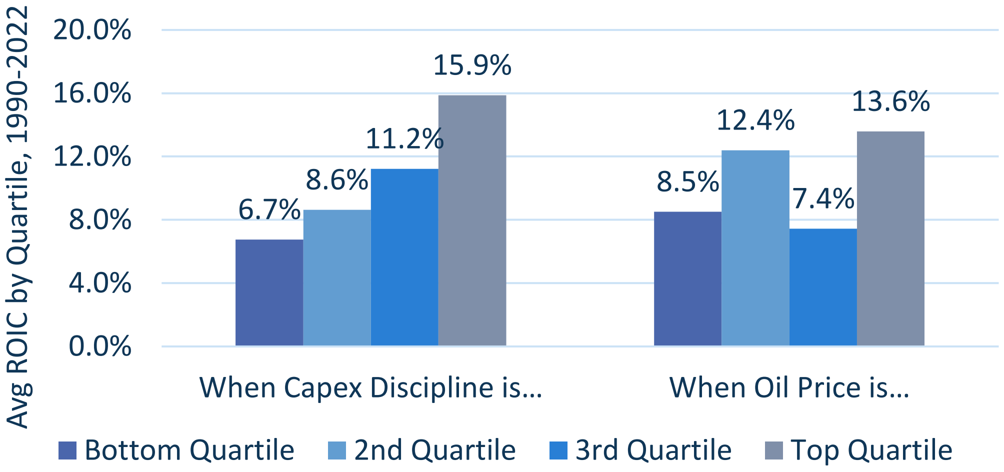
Metals & Mining - ROIC by Capex and Commod Price



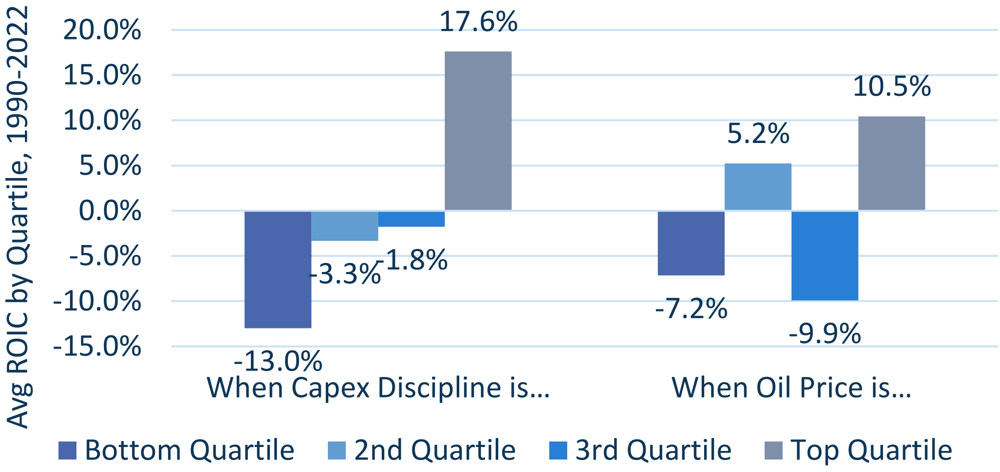
M&M - Rel Equity Performance by Capex / Commod Price



Global Oil - ROIC by Capex/Commodity Price Quartile



Global Oil - Relative Performance by Capex/Commodity Price



Capex (measured here as capex/CFFO) has been a stronger indicator of ROIC (actual corporate returns) and equity returns (stock market performance) than an accurate commodity forecast.

This suggests that there is a better way to invest than "buying commodity dips" (did not work in 1960s, 1985-95, 2015-19) or "selling commodity rallies" (did not work in 1974-78, 2005-2012).

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In conclusion – today's 1970s-style capex deficit has powerful implications for investors and politicians alike

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In this report, we have shown that capital investment – not the Fed, and not GDP growth – has driven the inflationary cycle of the last 60+ years, and is driving our current bout of inflation.

The habit of attributing inflation to demand-side forces in the economy is not only inaccurate, but counterproductive, as a demand-centric understanding of inflation encourages monetary policymakers or politicians to enact policies which can discourage capital investment.

If capital investment in commodity-oriented sectors offers the only exit from a bout of inflation, then today's 1970s-style environment – where society, government and financial markets are hostile to commodity producers – is likely to persist for the foreseeable future.

While no two cycles look exactly alike, the low-capex 1960s and 1970s ushered in a decade (and hundreds of percentage points) of commodity-levered outperformance.

Thank you, as always, for reading! **- the Recurrent Team**

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Presentation Notes and Sources

- All research presented above is a product of Recurrent Research.
- **Capex:** Long-term data US drilling/mining capex are sourced from the "Private Fixed Investment: Nonresidential structures – mining exploration shafts and wells dataset. Bureau of Economic Analysis (BEA). These data are adjusted for inflation by Bloomberg, accessed under RFPIMINI Index.
- **Inflation:** All references to inflation reflect the Producer Price Index (PPI), as compiled by the Bureau of Labor Statistics (BLS). PPI reflects costs incurred by US producers to deliver goods and services, and excludes imported goods and services purchased by Americans but includes items produced in the US for export, making PPI a suitable comparable for US drilling/mining capex.
- **Energy Equity Performance:** represented by the S&P 500 Energy Index beginning in 1989. From 1961 to 1989, the presentation uses an equal-weight index of equity returns of the largest Fortune 500 energy companies, including Exxon, Mobil, Texaco, Gulf, Amoco, Shell Oil, Atlantic Richfield, Chevron, Phillips Petroleum, Marathon Oil, Occidental Petroleum, Conoco, BP America (fmr Standard Ohio), and the Sun Oil Company.
- Slide 4 shows the coincidence of below-average Producer Price Index (PPI) inflation readings 12 months following periods of US drilling/mining capex being in the top 25% of the historical (1960-2022) range, as well as during periods when the Fed is raising rates, measured by an increase on the previous 12 months, and when GDP growth is in the bottom quartile of the 62 year range. All data accessed via Bloomberg.
- Slide 5 graphs show the coincidence of relative energy stock market returns with capex and oil price. Performance outcomes are shown for the 1961-2022 and 1990-2022 periods. "Bottom quartile" reflects when capex discipline was lowest (i.e. real capex was highest) and when real oil prices were lowest.
- Slide 8 through Slide 17: all capex and PPI metrics are as described above. All articles are pulled from the TimesMachine, New York Times digital archives.
- Slide 18 includes Bloomberg and New York Times articles, as well as a Rig Count vs. WTI Oil Price graph which includes Baker Hughes Rig Count data and was accessed from Bloomberg.
- Slide 20 includes GDP data from the BEA accessed via Bloomberg, and Fed Funds data accessed from St. Louis Fed FRED Economic Data website.
- Slide 21 includes GDP data, Fed Funds data, Consumer Price Index (CPI) and PPI inflation data, and capex data as mentioned above or from the BEA. All data accessed from Bloomberg.
- Slide 24 performance data reflects Energy Equity performance (as discussed above) vs. to the S&P 500 excluding energy. This was primarily to control for periods in the late 1970s and early 1980s, when energy approached 30% of the entire S&P 500 and heavily skewed S&P 500 Index returns. All S&P data retrieved from Bloomberg.
- Slide 25 reflects inflation, capex, and performance data as discussed above.
- Slide 26 reflects 30+ years (1990-2022) of performance compared to the real price of copper and oil, as well as compared to real industry capex over this time period. Company level capex for Metals and Mining is normalized over currencies and inflation using a measure of Capex/Depreciation. Metals and Mining includes Freeport McMoran, BHP, Rio Tinto, Glencore, Phelps Dodge (pre Freeport merger), Vale, Teck Resources, Anglo American, Fortescue Mining Group, Xtrata, First Quantum, Antofagasta, Alcoa, Southern Copper, Albemarle, and Arcelor.
- Slide 27 reflects actual financial performance (measured by ROIC = operating profit / assets net of working capital) of the oil and metals sectors, using the metals universe mentioned above, as well as an oil universe of Amoco, Mobil, Occidental, Chevron, Conoco, BP, Royal Dutch Shell, Hess, Anadarko, Equinor, Atlantic Richfield, Texaco, Unocal, Burlington Resources, Pioneer Natural Resources, Devon Energy, EOG Resources, and Chesapeake Energy.
- Company level data is sourced from Bloomberg, as well as the Department of Energy (DOE) Energy Industry Performance Profiles 1974-2009.

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