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Strategic Energy Purchases

Sylvain Chassang
Princeton University

02. June 2022
Markus Brunnermeier

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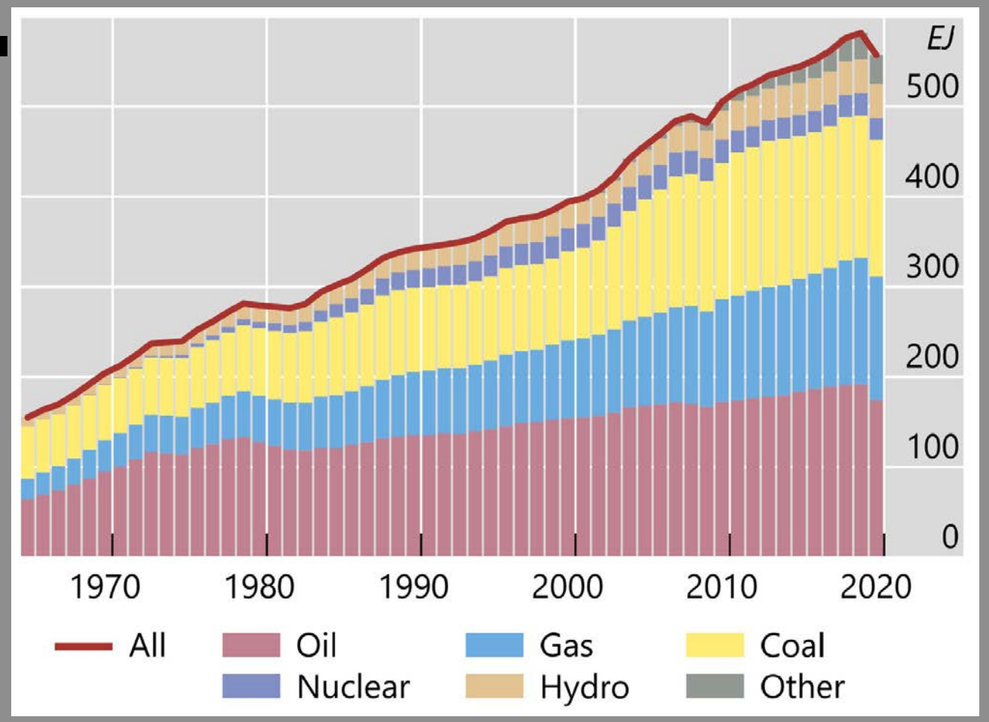
World Energy Dependency & Resource Interdependency



Source: BIS, presentation by Hyun Shin

- Interdependency: Renewable
  - Higher weather volatility
    ⇒ higher demand for natural gas ⬆

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Oil Price Volatility

- Production costs, demand elasticity

Poll

1. Do you think that energy prices are excessively volatile?
   a. Yes
   b. No
2. Can you decrease prices by increasing demand?
   a. Yes
   b. No
3. Would OPEC increase supply if Europe reduced oil imports from Russia?
   a. Yes
   b. No
4. Would contracting a fixed energy price in advance be easier if it is for domestic producers rather than foreign?
   a. Yes
   b. No

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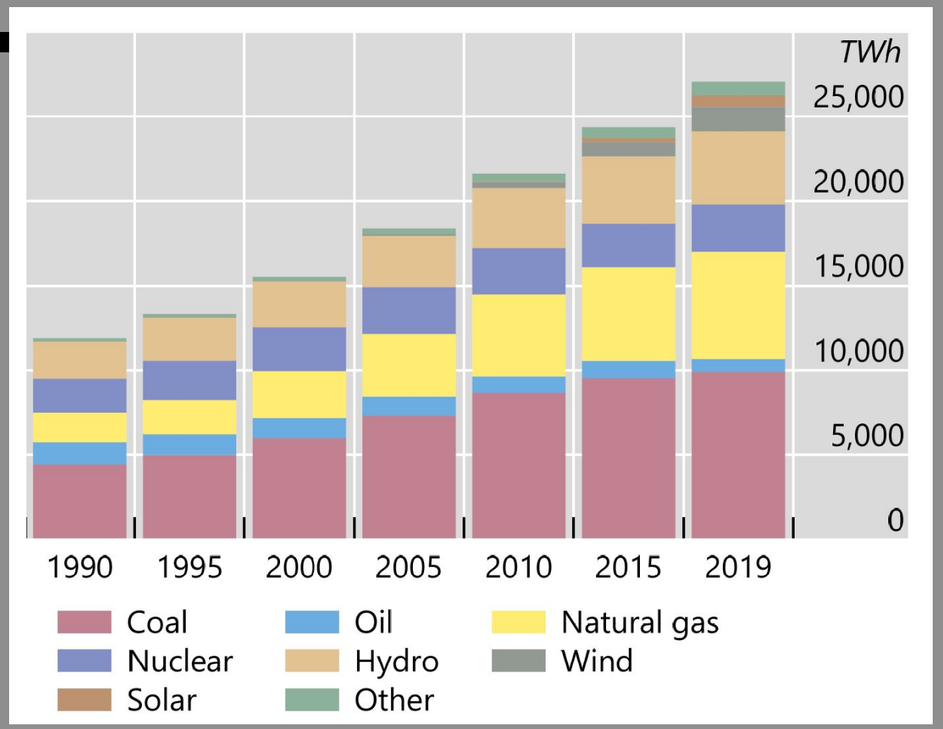
World Electricity Generation by Energy Source



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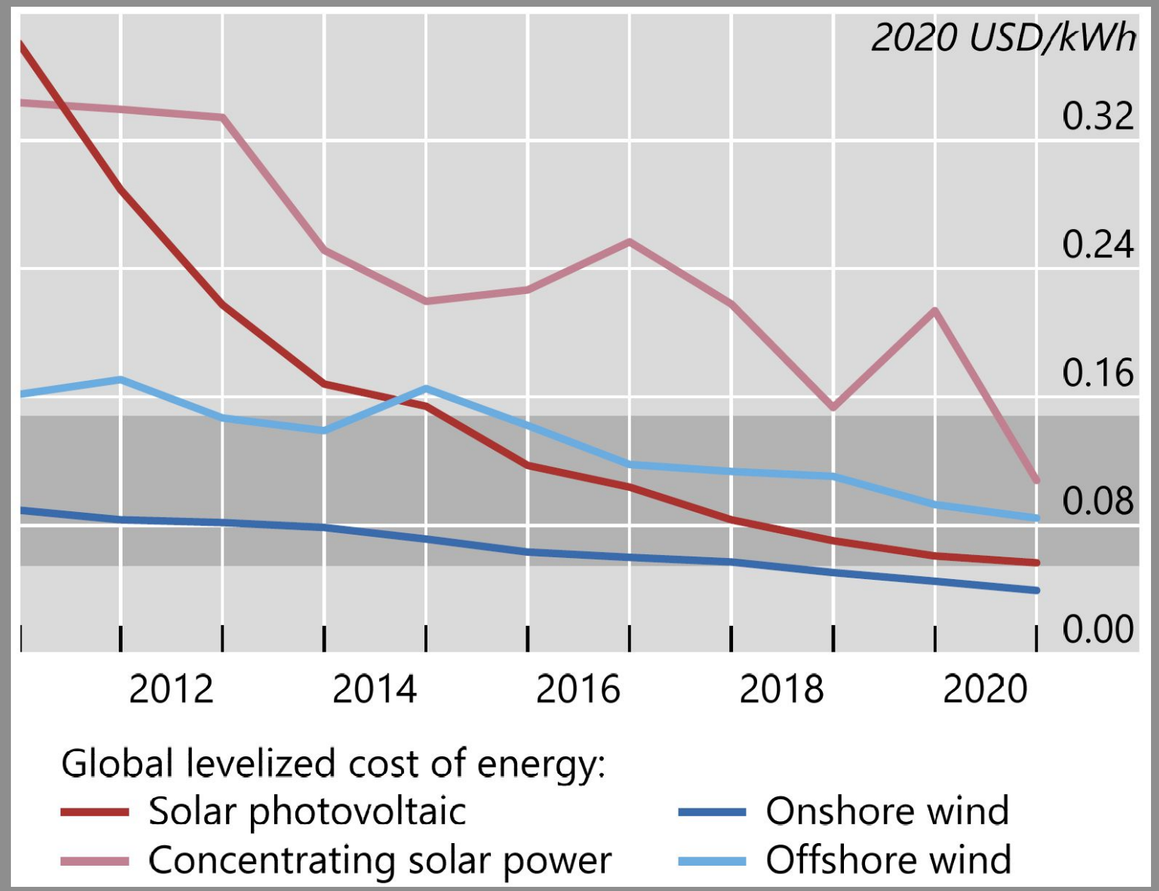
Renewable costs are Falling Into Range of Fossil Fuels



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Poll

1. What could the most successful growth model?
   a. Import substitution
   b. Export-led growth
   c. Consumption-led growth
2. What is the biggest impact on Africa's growth?
   a. Education
   b. New forms of governance
   c. New Tech (incl. FinTech)
   d. Global trade
   e. New entrepreneurship
   f. Others
3. African demographics is more of a
   a. Opportunity
   b. Challenge

Keeping Energy Prices Manageable through Strategic Purchases

Sylvain Chassang

joint with Markus Brunnermeier & Juan Ortner

Motivation

Challenge 1: High energy prices

- help support belligerent Putin
- fuel inflation, social inequality & discontent

Challenge 2: Supply network resilience

- how to mount coordinated response to supply challenges that avoids autarky & protectionism
- ideas apply to any commodity, key input

Specific Expertise: Collusion in Procurement

- economics of cartelized markets are different
- marginal analysis of supply curve likely wrong
  misses on policy free lunches

Overview

I. Framework: Cartel Discipline

II. Policy proposal: strategic energy procurement
   - exchange currently very high, volatile prices for moderately high, stable prices
   - does not operate through demand reduction
   - seeks to directly affect industry conduct & structure via non-open-market operations
   - takes into emissions targets

III. Connection to other policies
   - Taxes
   - Price caps
   - Rationing & Demand Management

Framework – Cartel Discipline

What forces does oil producer consider when evaluating supply increase $\Delta Q > 0$

Will prefer not to increase supply iff

$$\underbrace{\Delta Q \times (P - MC)}_{\text{Profit on Marginal Unit}} + \underbrace{\Delta P \times Q}_{\substack{\text{Inframarginal} \\ \text{Price Impact}}} + \underbrace{\Delta V}_{\substack{\text{Impact on} \\ \text{Continuation Values} \\ \text{(i.e. Price Wars)}}} \leq 0$$

Price-Taking | Price-Making | Collusion

Why This Is a Good Moment for Oil Producers

Cartel in strong position (ΔV large and negative)

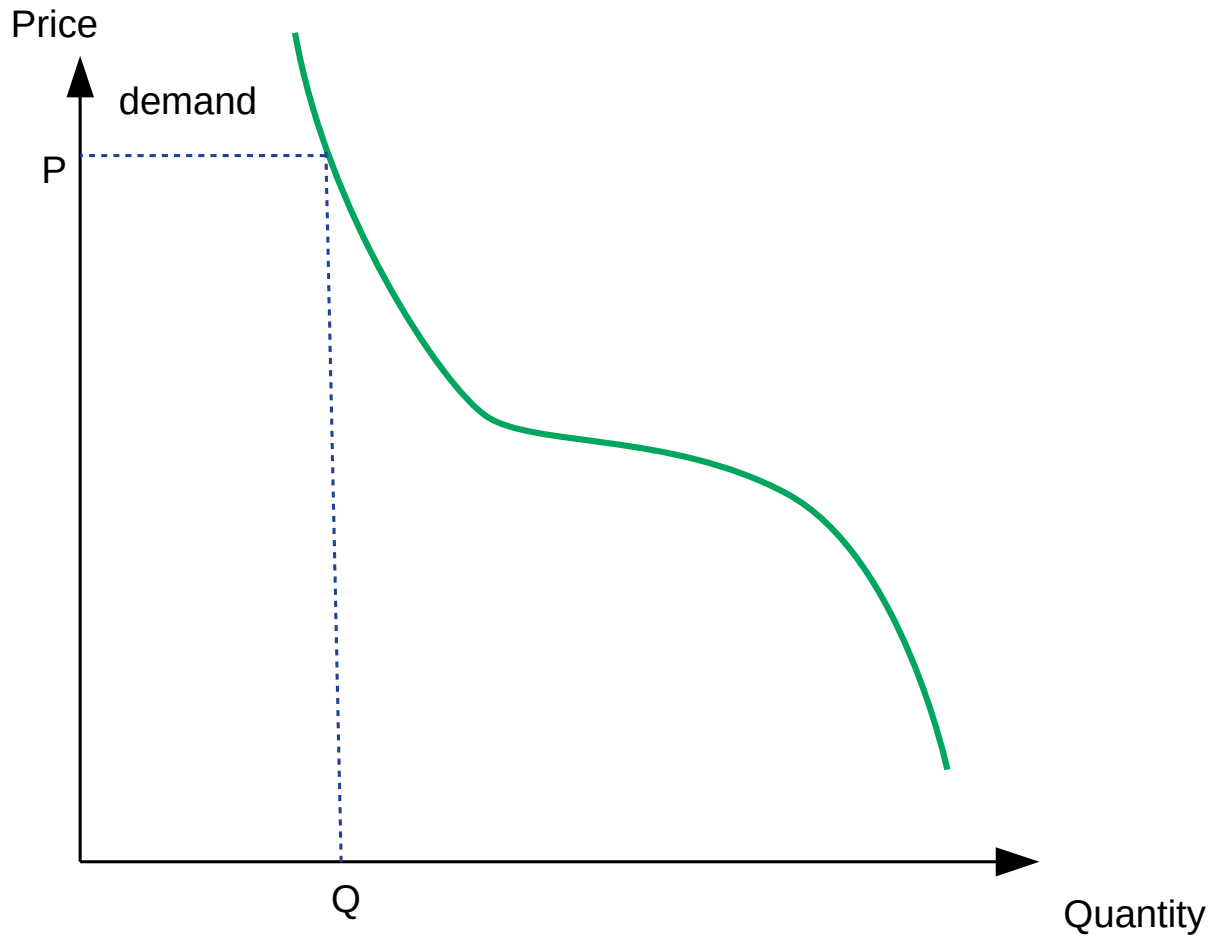
- 2020 Russia–OPEC price war has strengthened credibility

  Recent truce makes it a tricky moment for OPEC to deviate on Russia
- Following depressed pandemic demand, many cannot afford further price war + want to make up losses

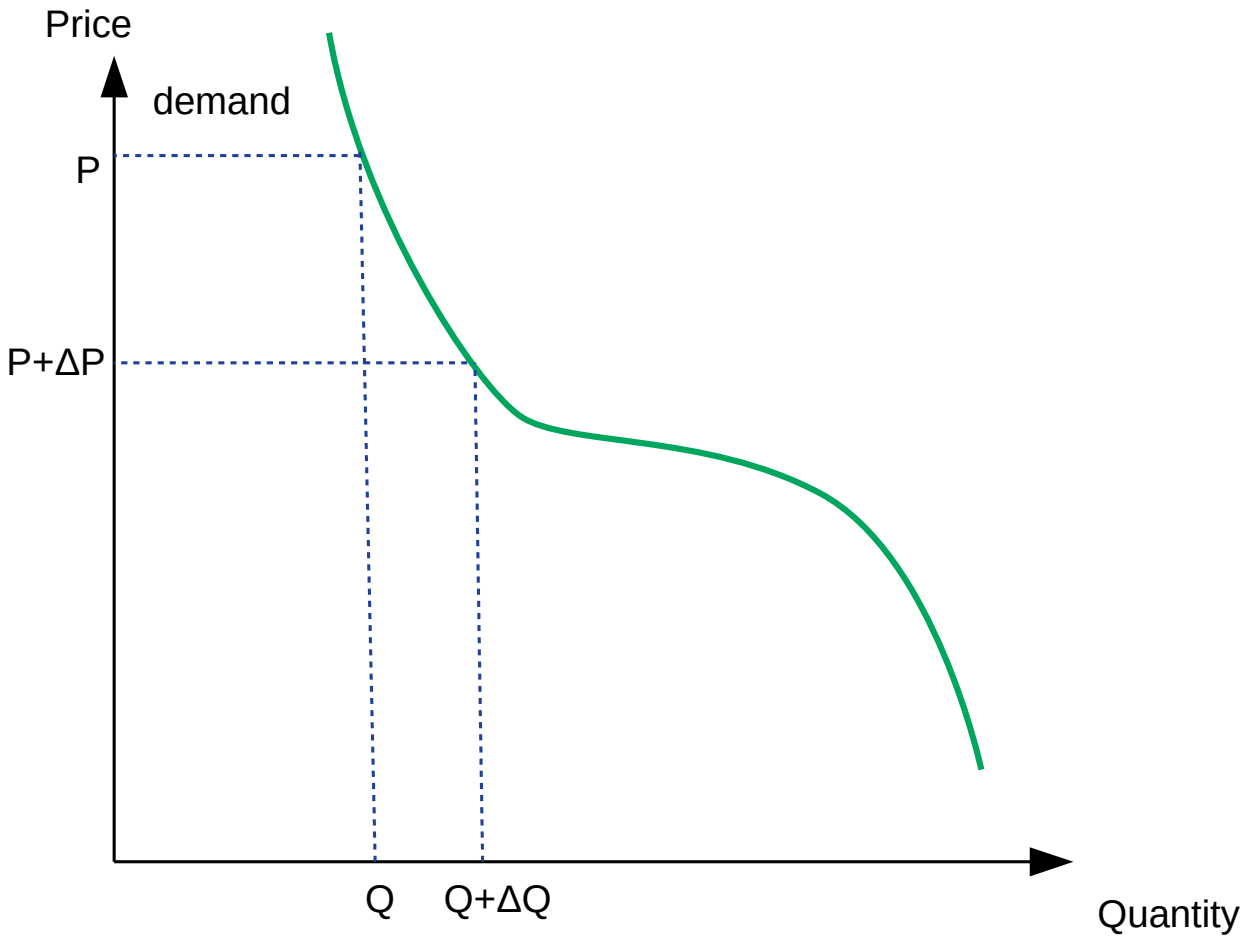
Price impact large (ΔP large and negative; speculative)

- At current prices, demand appears inelastic $\Rightarrow$ changes in supply have a large price impact

Why This Is a Good Moment for Oil Producers



Why This Is a Good Moment for Oil Producers



Cartel Discipline is Strong

$$\Delta Q \times (P - MC) + \underbrace{\Delta P}_{\substack{\text{Large \&} \\ \text{negative}}} \times Q + \underbrace{\Delta V}_{\substack{\text{Large \&} \\ \text{negative}}} \leq 0$$

Note:

- Focus on OPEC+
- European electricity markets are likely affected by tacit collusion
- Points made for oil market also relevant for natural gas if applied to electricity market

Proposal: Strategic Energy Procurement Board

- Supranational entity able to make discretionary Advance Purchase Commitments

  Member countries mandate board to make long-term purchases at high but reasonable target price (e.g. USD 70/barrel)

- Board strategically uses its demand to affect industry conduct
  1. encourage entry
  2. weaken cartel discipline
  3. encourage self-regulation by cartel

- Board strategically uses its supply
  1. to increase elasticity of residual demand
  2. to encourage early participation at scale by members

Demand Use 1: Encourage Entry

Goal: De-risk entry for marginal suppliers

Enter long-term bilateral forward contracts at high but reasonable prices with targeted entrants in oil, gas, and renewable electricity markets & supporting infrastructure (e.g. electricity grid)

Use bilateral contracts rather than direct operations in the futures market

Reason: can't target marginal entrant via open futures market

Limitation

- increases supply in the future rather than now
- because current and future prices are related (e.g. through stockpiling), may indirectly relax prices now

Demand Use 2: Encourage Deviations

Goal: De-risk deviations for existing producers

Enter long-term bilateral forward contracts at high but reasonable prices with targeted deviators for significant medium term production increases

Shuts down ΔP (and ΔV) for deviator

Why bilateral contracts?

- target offer to deviators
- keeps deviations more discrete
- could announce amounts, but not partners

Advantages

- increases production in the short term
- production is relatively efficient (no oil sands)
- increases in consumption decrease prices!

Demand Use 3: Encourage Self-Regulation by Producers

Goal: reach win-win-win outcome for suppliers, buyers, environment

objective is not very low energy price, it's stable reasonable prices

Concretely: condition scale of board mandate on energy prices

e.g. start with USD 40B purchase mandate (2% of oil market) scale to USD 400B if prices remain high

Encourages self-regulation by OPEC

- economically efficient
- keeps organizational costs off equilibrium path

Consistent with emission reduction goals

What to Do with the Procured Supply?

Supply Use 1: Soften Demand

- prioritize allocation to inelastic components of the demand to increase elasticity of residual demand
- inelastic consumers likely to value guaranteed prices

Supply Use 2: Encourage Participation Early and at Scale

- A priori open & voluntary participation
- Offer better supply guarantees if

  (i) early participant

  (ii) purchase commitment large relative to consumption

Feasibility: Precedents of Interest

European Steel and Coal Community (1951–2002)

- buyers' cartel setup to reduce commodity prices
- disable German coal and steel cartel
- allocate limited funds of Marshall plan effectively avoid raising price of steel and coal

Purchasing boards for medicines, vaccines . . .

International energy agency

Other Policies – Tax on Russian Oil

Usual concerns

- distributional issues & political optics
- impact on highly visible prices at a time of high inflation

Cartel View

- marginalist view: Russia keeps producing if net price > USD 6/barrel; consumers substitute to other producers
- targeted tax on Russian oil may plausibly lead to supply shutdown, even if net price greater than marginal cost
- OPEC may choose not to increase production
- May just end up with higher oil prices & little trading of Russian oil

Other Policies – Price Caps

- attractive optics
- reasonable response when facing a cartel
  competitive market $\longrightarrow$ bilateral bargaining
- may reduce incentives for entry
- may lead to rationing $\longrightarrow$ need to plan for that
- requires banning side purchases

Proposal: Price Caps + Price Floors

- increases entry and disrupts cartel discipline
  reduces both ΔP and ΔV
- favors cooperation between buyers and suppliers – the target is reasonable for both
- long-term floor supports emissions goals
- win-win-win

Other Policies – Demand Management

Industry

- could ration via a purchase permit system based on recent consumption
- constrain industry to purchase gas and oil through board target most inelastic components of demand

Retail

- price signal pretty clear for oil
- less clear for gas – prices tend to be contracted on for long durations
- can affect demand for gas by affecting electricity market

  target peak demand where gas is marginal – rewards for restraint at peak

  made feasible by substantial penetration of smart meters (> 70%)

Takeaways

- In a cartelized market, **strategic** demand can decrease prices without demand reduction
- There exists win-win-win scenario: the goal is not low prices, but stable reasonably high prices in the medium run

Further Reading

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6. Natter, A. Why NOPEC Keeps Arising as a U.S. Answer to OPEC. *The Washington Post* (May 26, 2022)