



GRUPPO MOSSI & GHISOLFI



In collaborazione con:

Il Sole **24 ORE**

3rd Bio-Ethanol Conference

Etanolo di seconda generazione: una realtà in Italia
Second generation ethanol: a reality in Italy

GRUPPO **24** ORE



An international perspective on the development of new energy industries

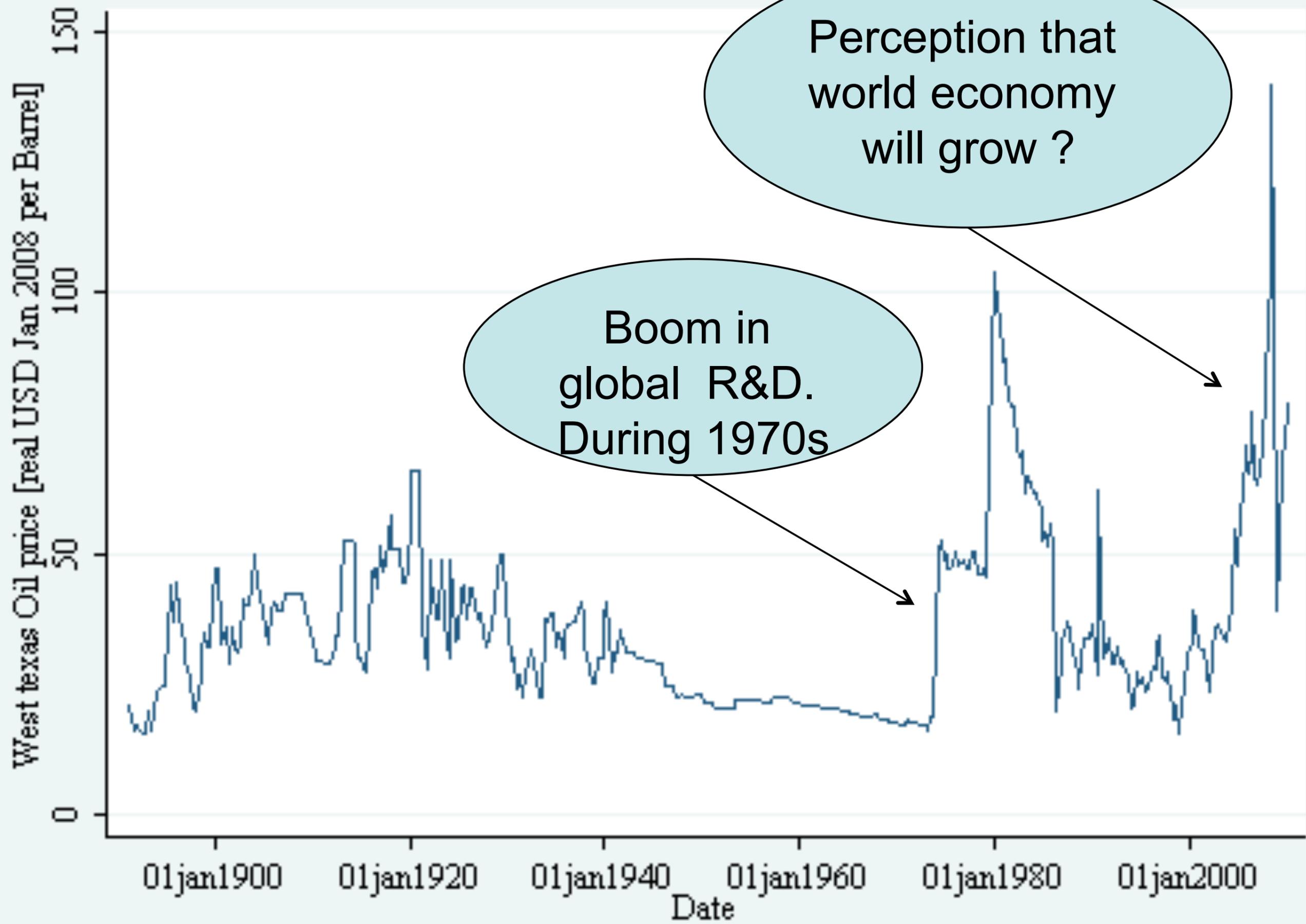
Rodrigo Wagner

PhD candidate Harvard University

joint work with Ricardo Hausmann

Center for International Development, Harvard

TORINO , March 3 2010

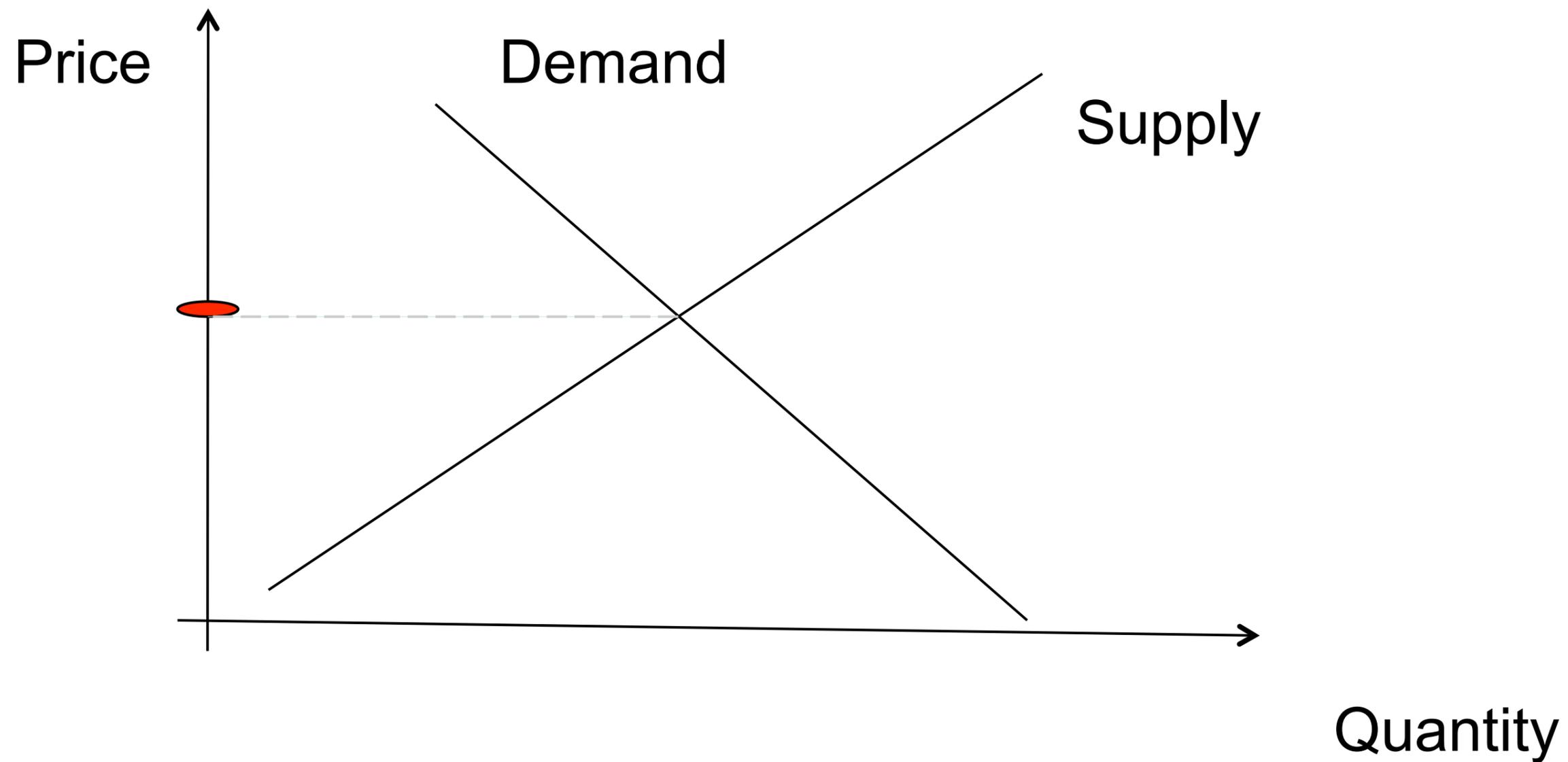


Boom in global R&D. During 1970s

Perception that world economy will grow ?

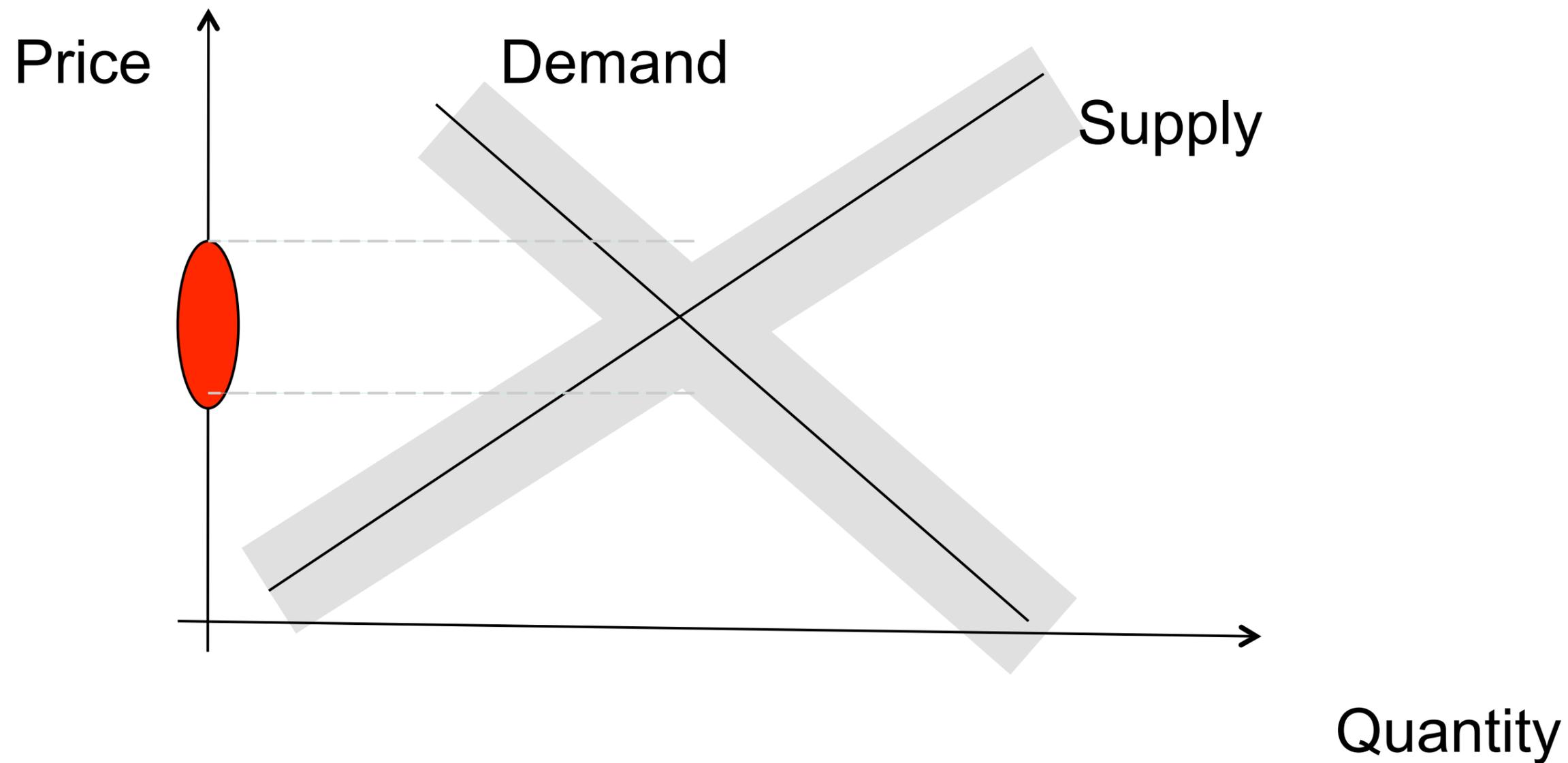


Textbook market



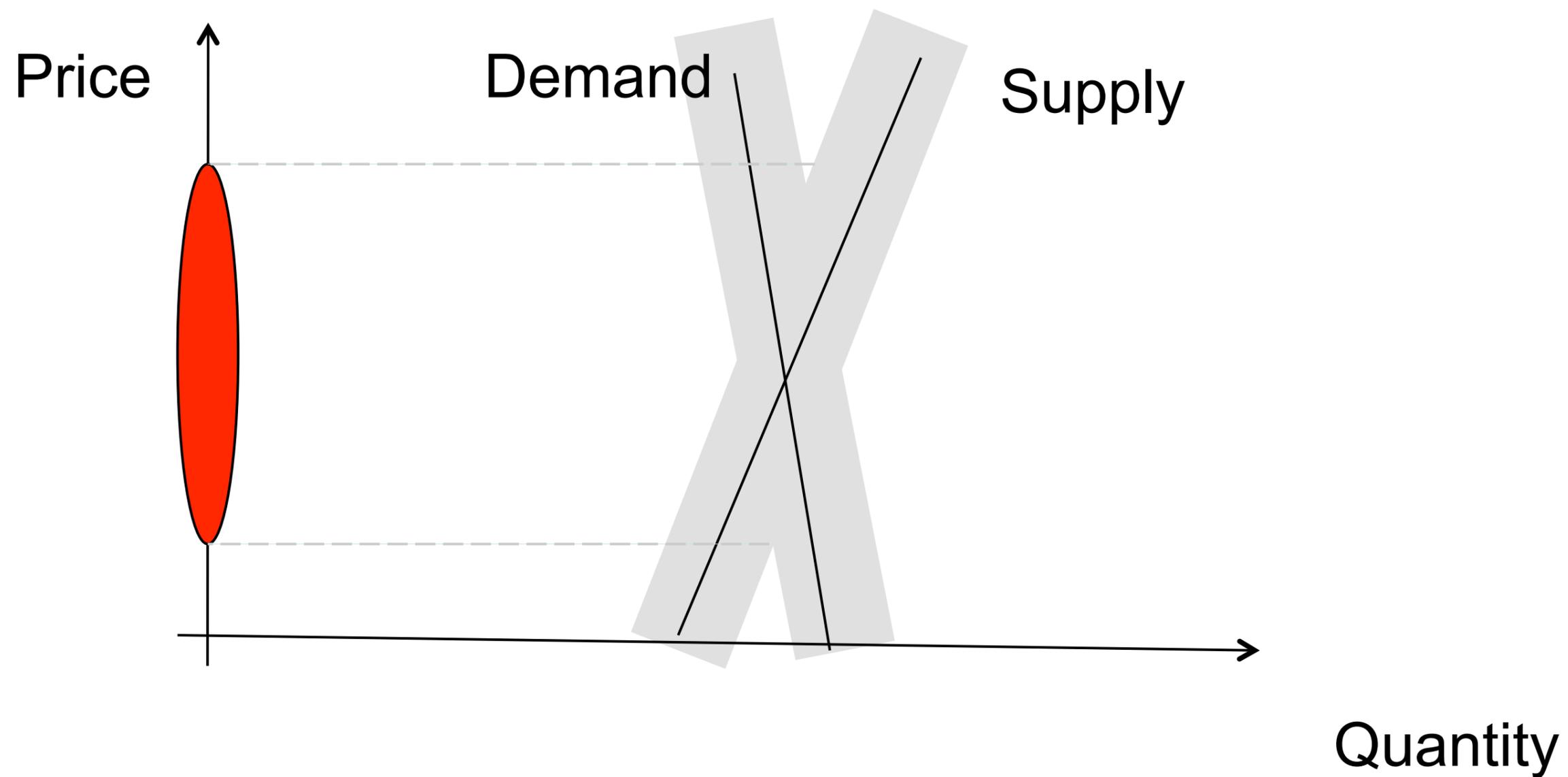


Textbook market with shocks

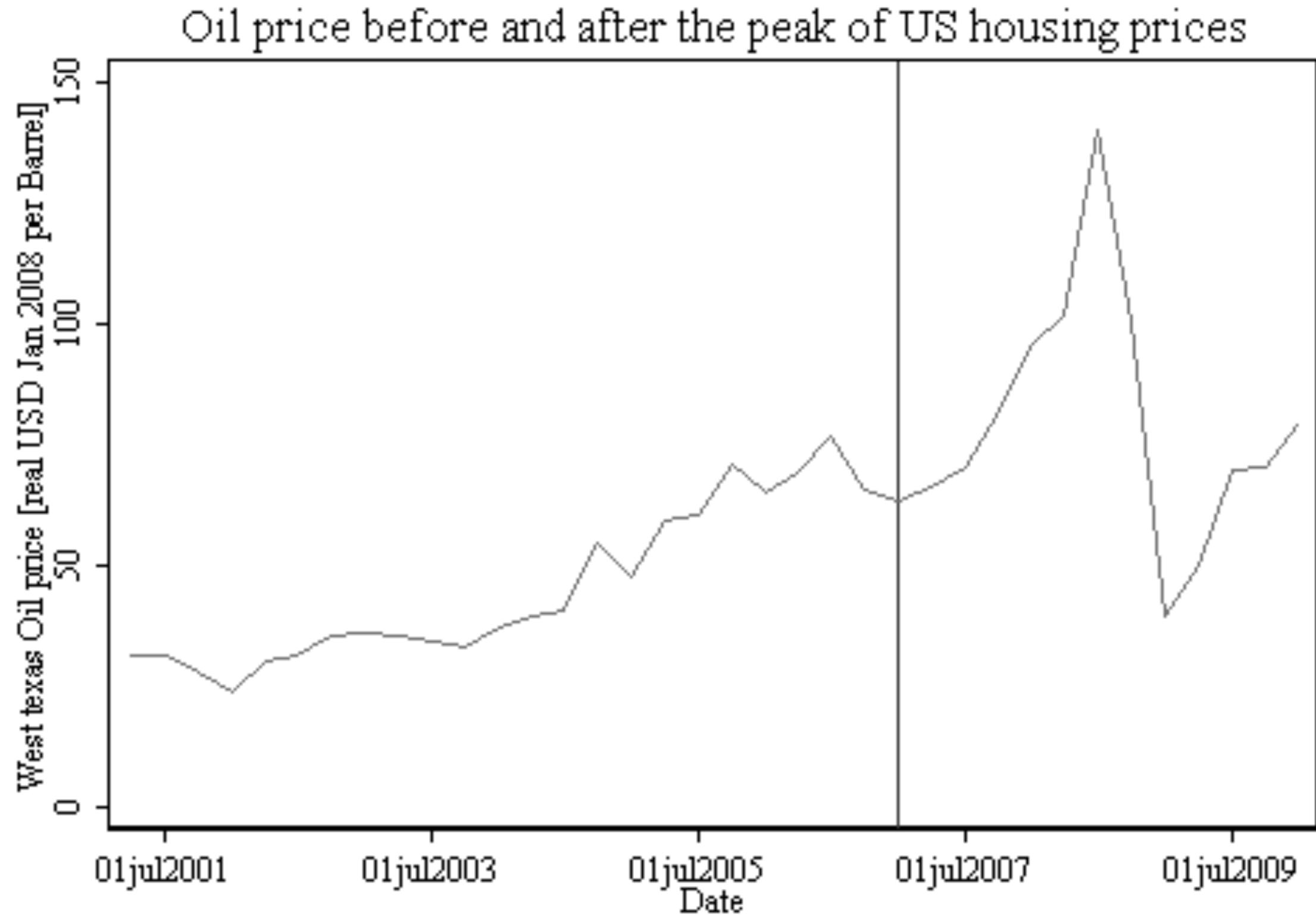




Oil Market with shocks



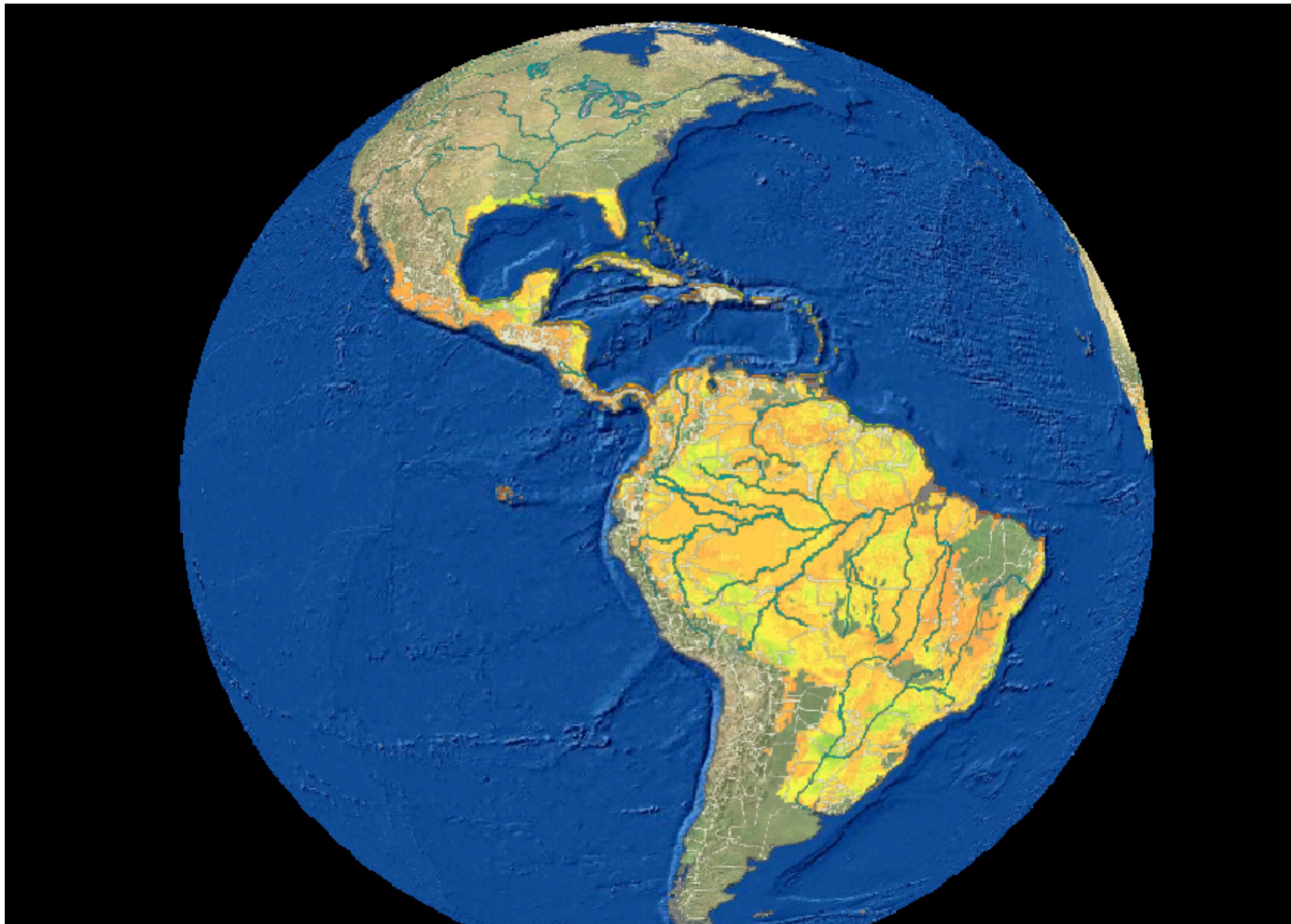
Energy is priced by (i) fundamentals or (ii) “safe store of value” ?





But good prices and natural endowments... are NOT sufficient to develop an industry

- Example: Two areas of the world with similar suitability for sugarcane







Brazil took advantage of the first boom in oil prices

- Sugar Lobby in Sao Paulo
- Politically powerful group
 - since colonization.
 - Industry was “close” to ethanol
- OK, strategy for compensation.
- But also specific regulations & coordination
- Colombia did not have that...



Prices are not the only volatile thing...

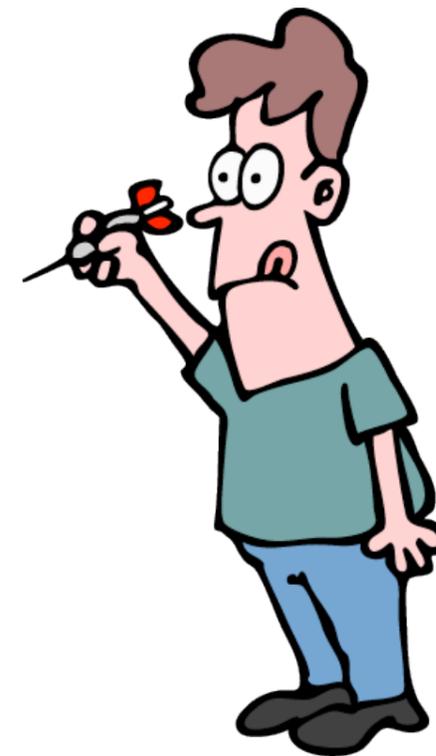
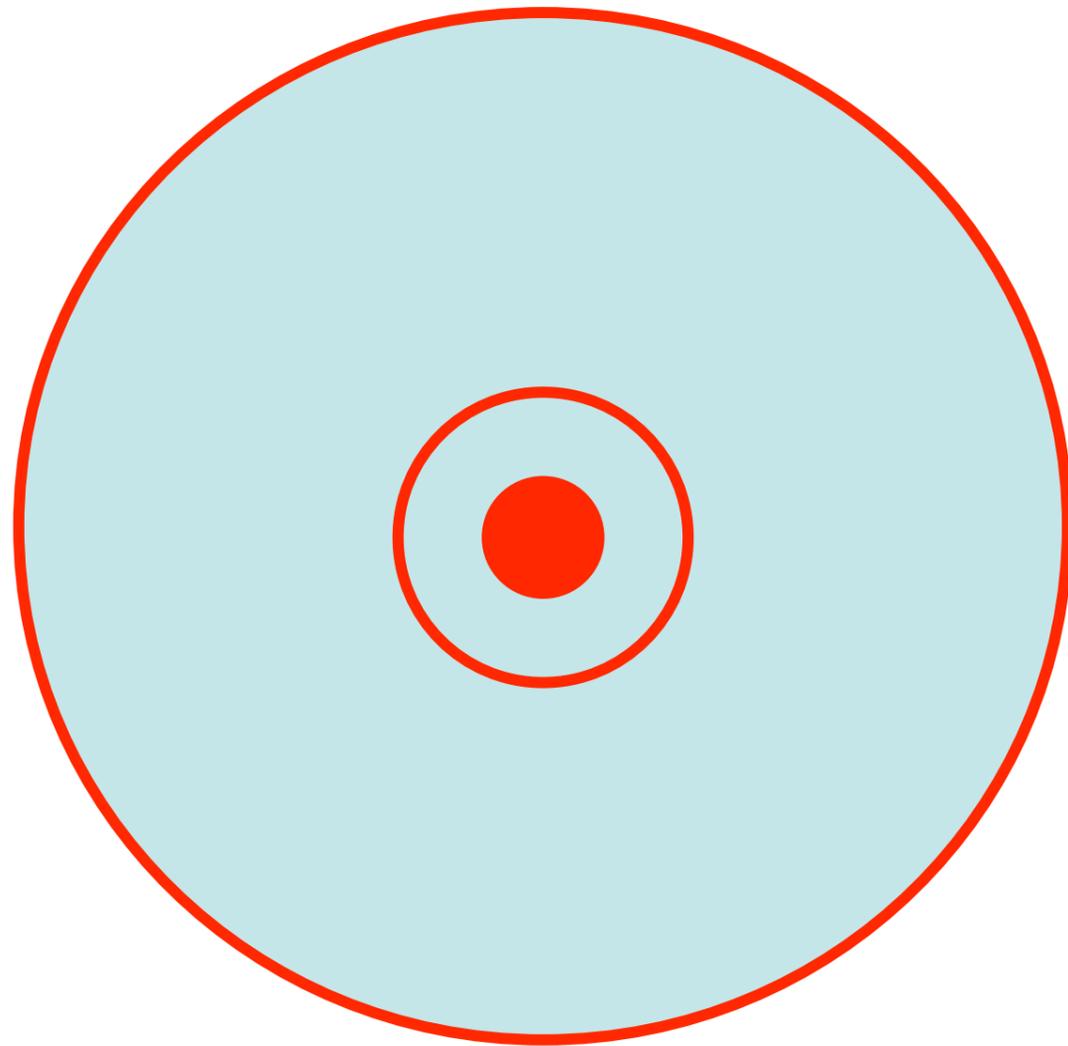
Global regulations are less than clear



Why so volatile ? Regulatory Uncertainty

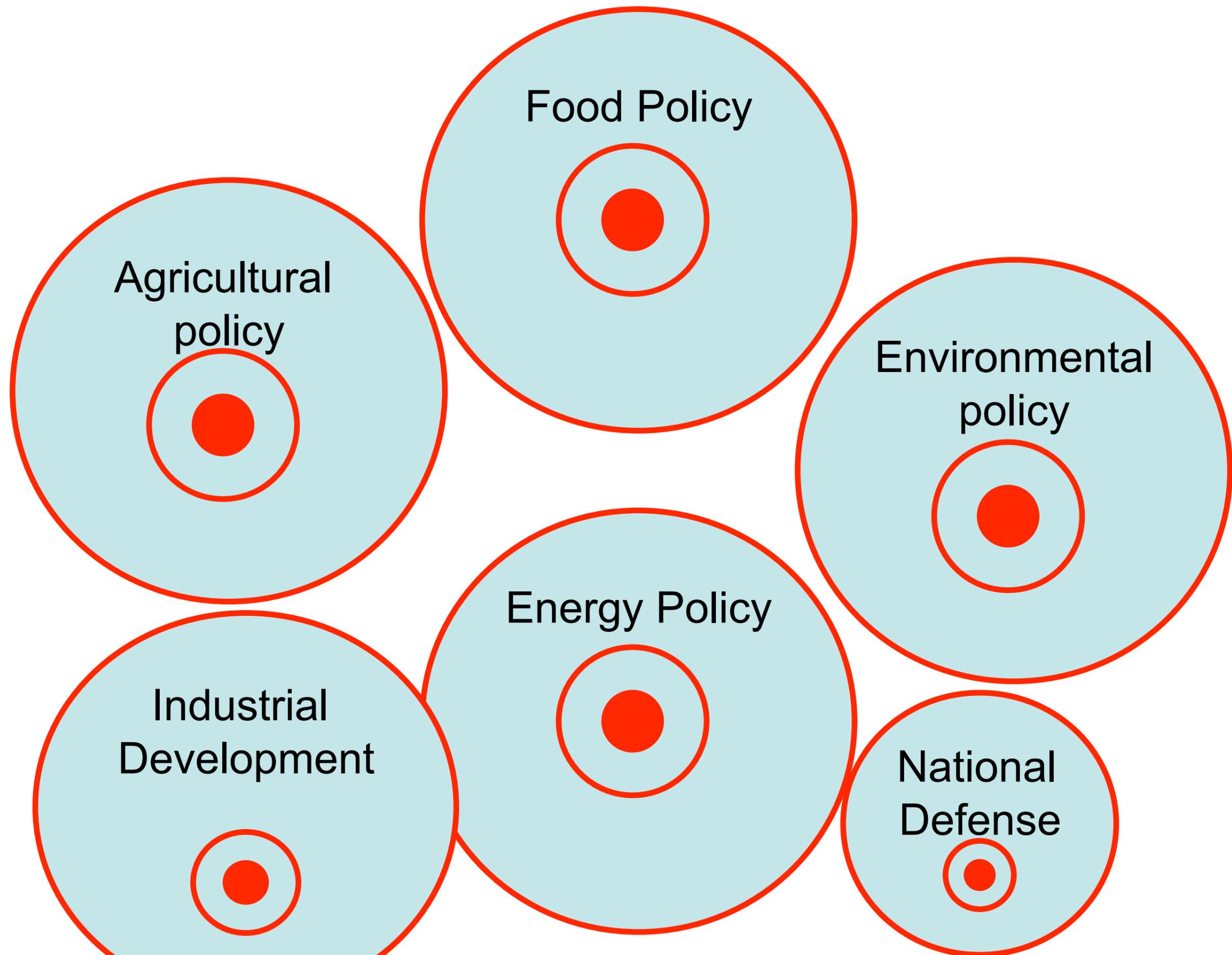
- US /EU Politics and compensation
 - Pork is paid in corn !
- Global Food Prices
 - India or Thailand vs. US or EU.
 - When food price goes to the roof governments start intervening.

Usual case for regulation:
One instrument (e.g. certification) ...
and one Target



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Difficult with only one instrument.





Messy...

- Waiting for a coherent international regulatory framework for bioenergy...
- ...Is like waiting all your life for the perfect partner to get married.
 - But we know there are 6 billion people on Earth
- → Create certainties *at the margin*,
 - local level. (Pre-requisites)



New industries do not grow on their own

- Some inputs are private.
- But other inputs are inherently public:
 - Specific regulation for cars.
 - Authorization for plants.
 - Contracts to solve by lateral holdup
 - Processing plant has monopoly power
 - Farmer has also power...

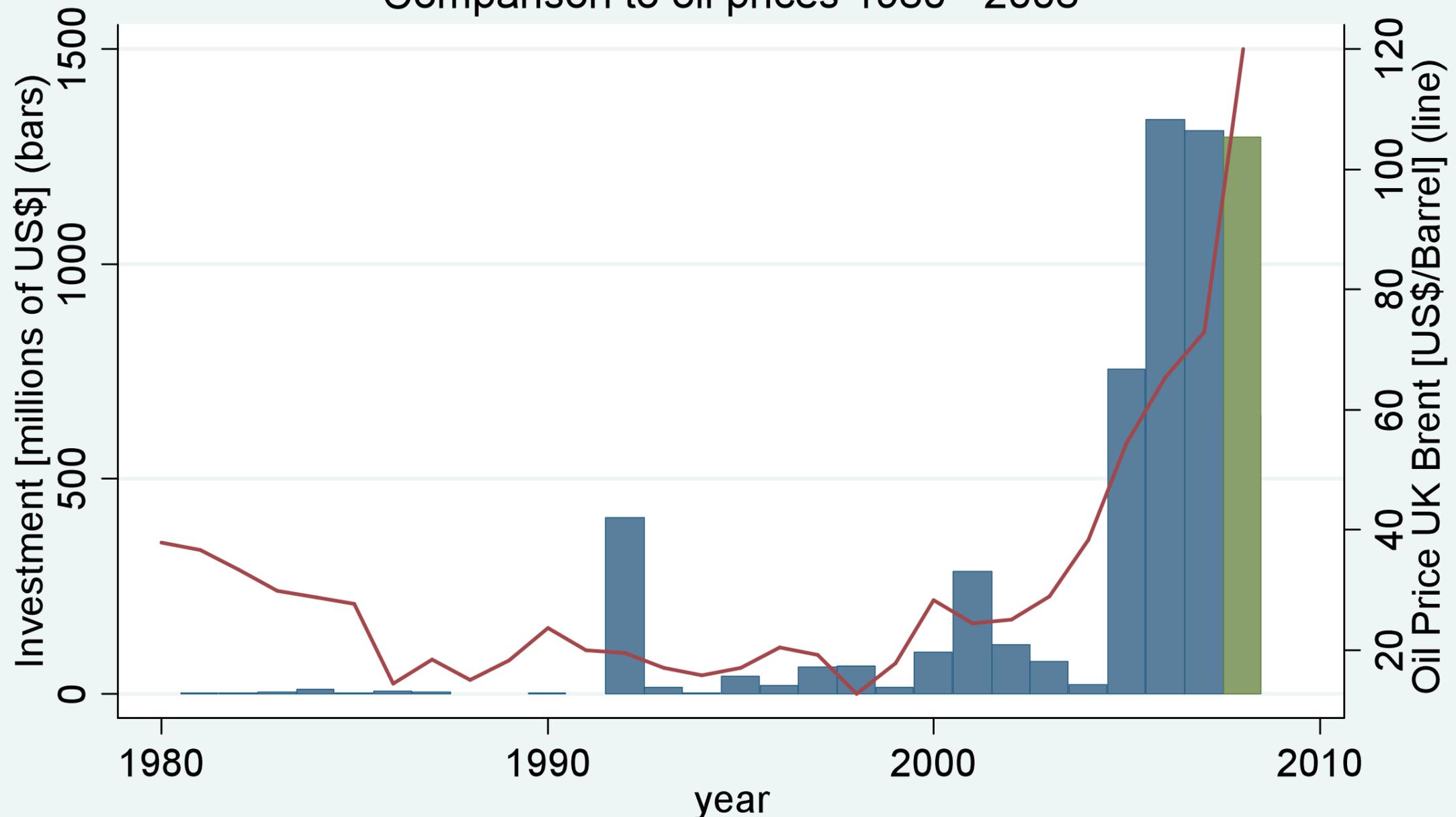


What about innovation ?

... Venture Capital R&D investments depend on energy prices...

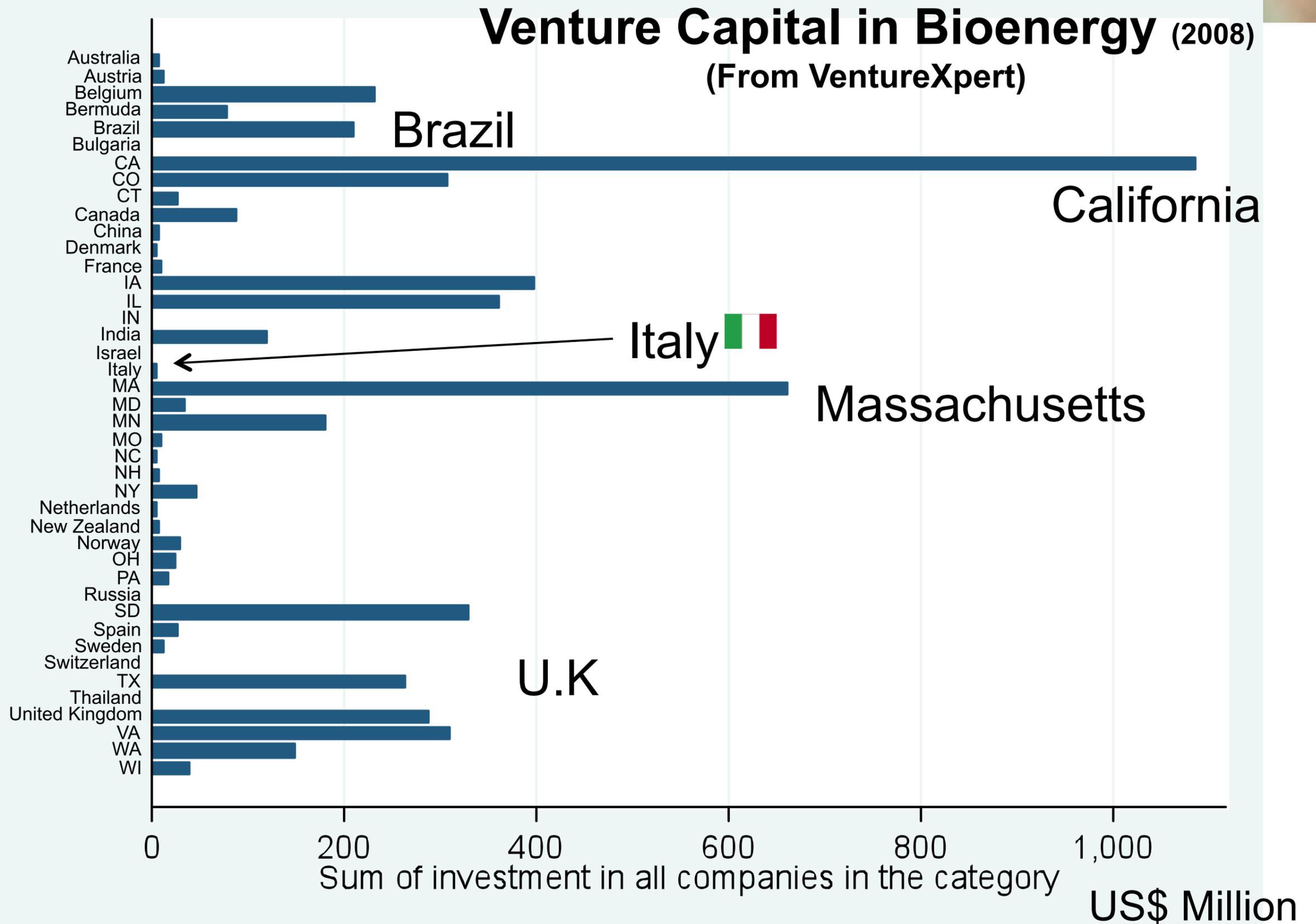
Private Equity investment in Bioenergy

Comparison to oil prices 1980 - 2008



Source: Author's calculation from Intern. Financial Stat and VentureXpert
Investment 2008 is projected doubling the amount until June.
Oil Prices added for 2007 and 2008

... But VC is NOT equally distributed in the world...





In Cellulosic, innovation may not come in small pieces

- Case A: Develop a patentable biochemical step to produce a drug against Cancer.
 - Then you sell it to a Pharmaceutical
 - Software is similar
- Case B: Develop a for Cellulosic.
 - Who will buy ? What feedstock ? No global market for product, so complex bargaining for patents....



Biotech development

- Superstars from Academia.
- Being close to demand / industry
 - Back and forth process
- Finance: Venture Capital.
 - Sometimes outside producer firms
 - Sometimes inside producer firms
- Job hoping & spillovers



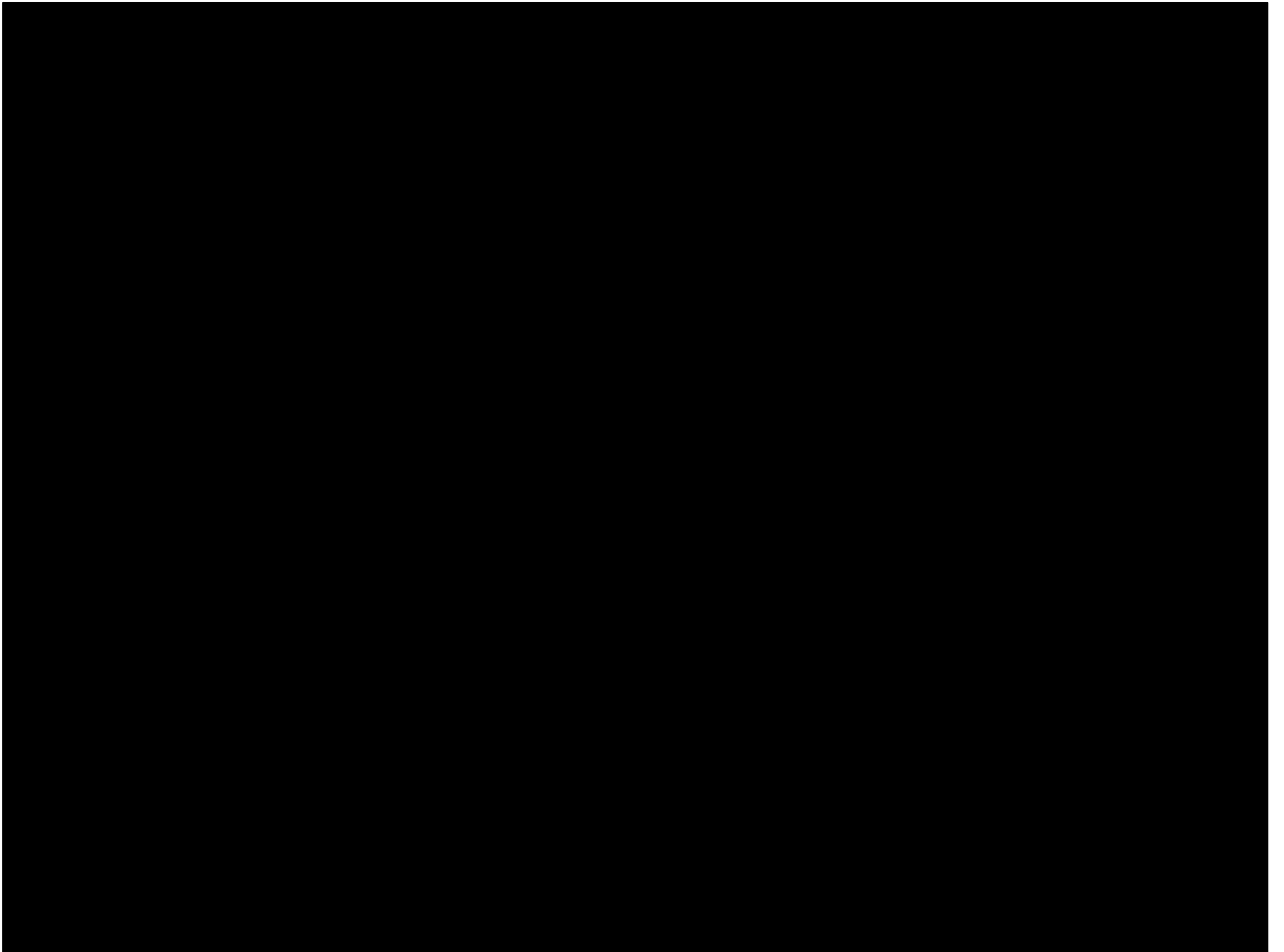
How would an industrial development hedged strategy look like ?

- Works under various regulatory scenarios
 - with or w/o international market.
- Join rural and environmental politics
 - Avoid rhetoric of “burning food”.
- New industries require public goods
- Stepping stone to Biotech.



My message

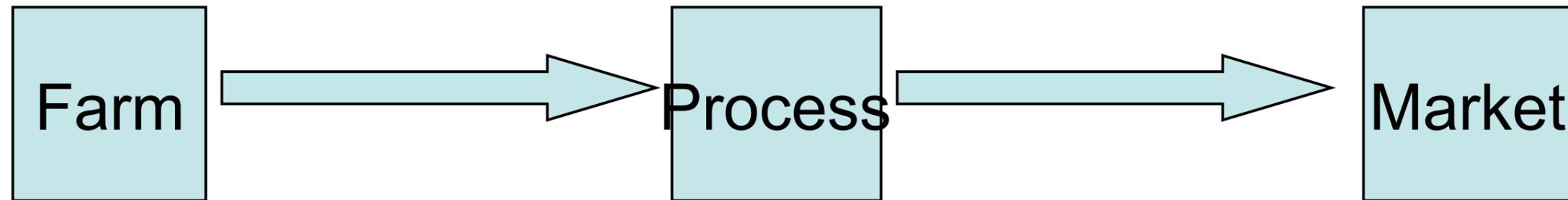
- Lots of uncertainty: prices / regulations.
 - They will continue !
- Energy industries do not grow on their own:
 - Public inputs & Specificity, Holdup, R&D.
- What to do ?
- Hedged strategy & stepping stone



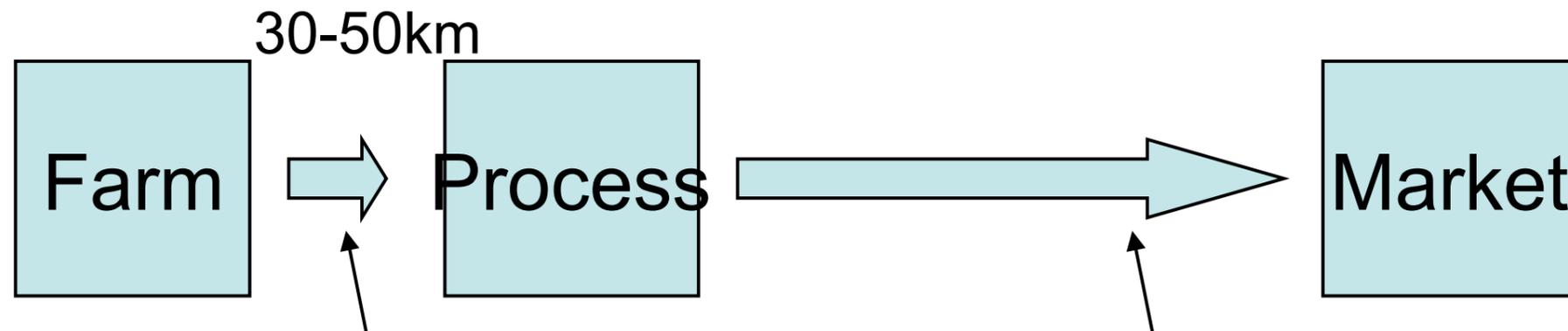
Different from usual crops

Commercial

Soybean / Wheat



Sugarcane



- Degradation
- Water & residues

-High transport cost per BTU
(w.r.t. gasoline)

- Spatial dimension matters more... Case for local development
- Similar to other biofuels (not from seeds)

Price of oil vs. Price of wheat



— West Texas Oil price [real USD Jan 2008 per Barrel]
— Wheat N 2 price [real USD Jan 2008]