Tools to Inform Policy Choices:

a technology policy perspective

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1. “Technology push” and “demand pull”

Technology Push: govt actions that reduce the **cost** of innovation to private actors

Demand Pull: govt actions that increase the **payoff** to successful innovation for private actors

	Technology push	**Demand pull**
Govt Target:	↑ availability of knowledge	↑ size of market
Examples:	govt R&D, tax credits, education, demonstration projects, knowledge networks	IPR, tax credits, govt procurement, technology mandates, standards, taxes on substitutes

Consensus: *both necessary, neither sufficient*

But how to allocate?

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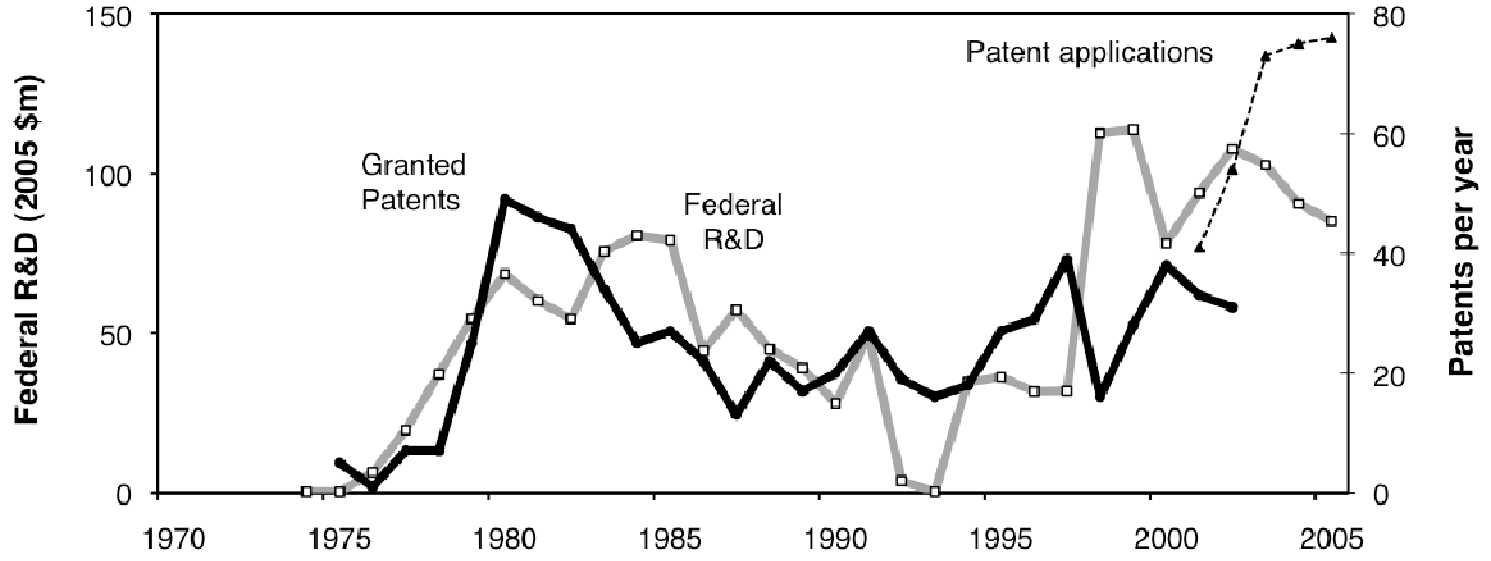
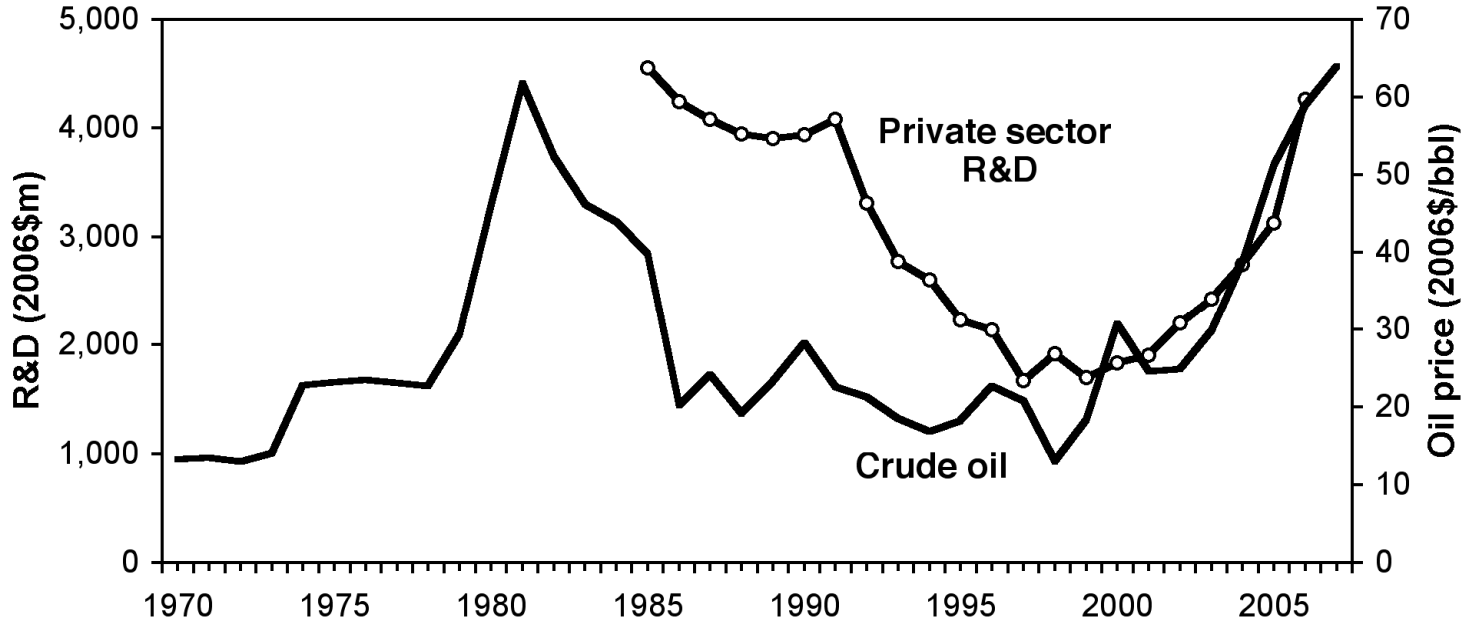
Technology Push: influences, outcomes





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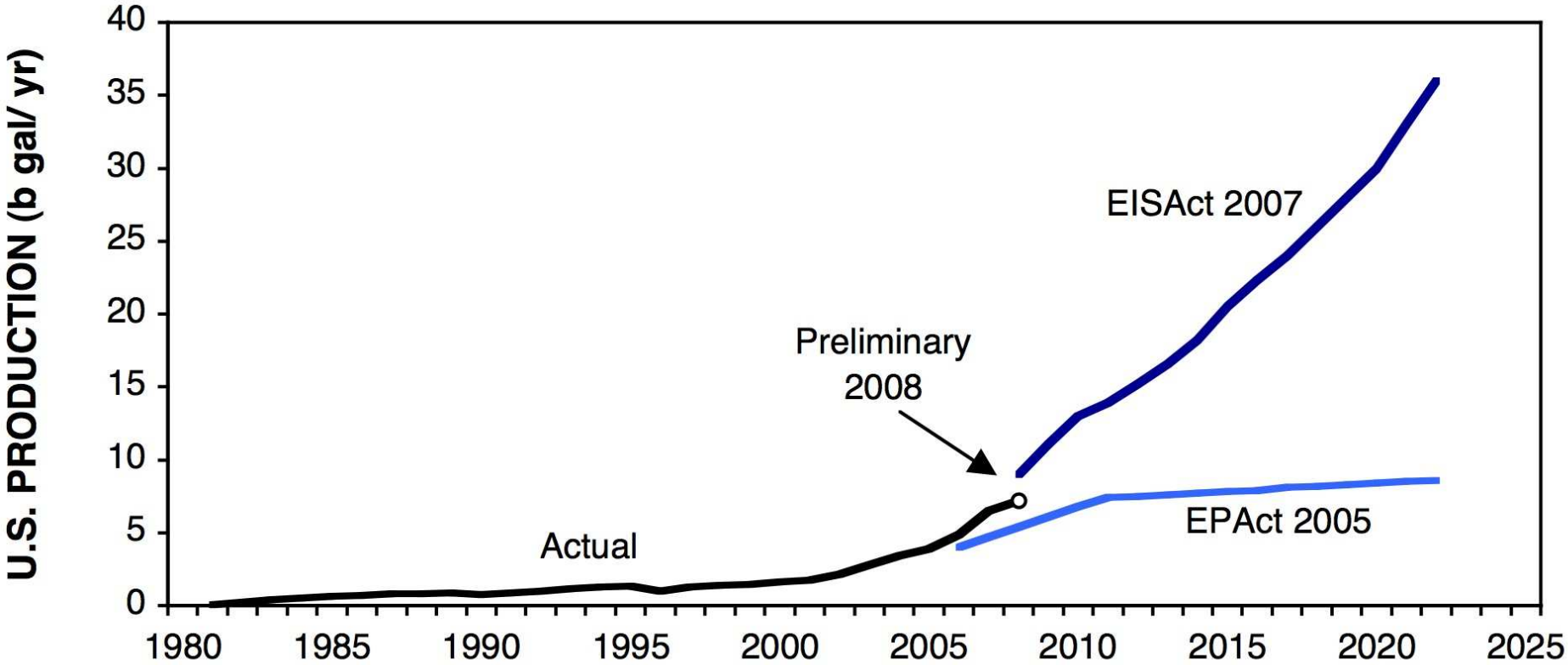
Demand Pull: U.S. ethanol



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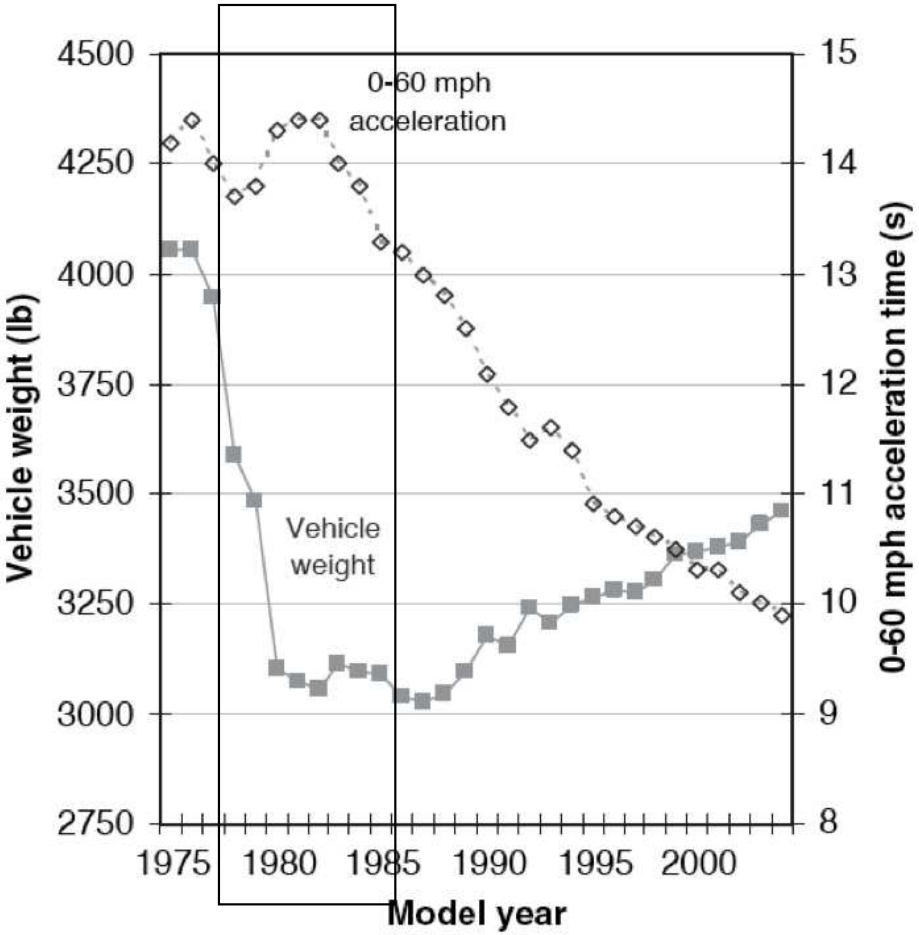
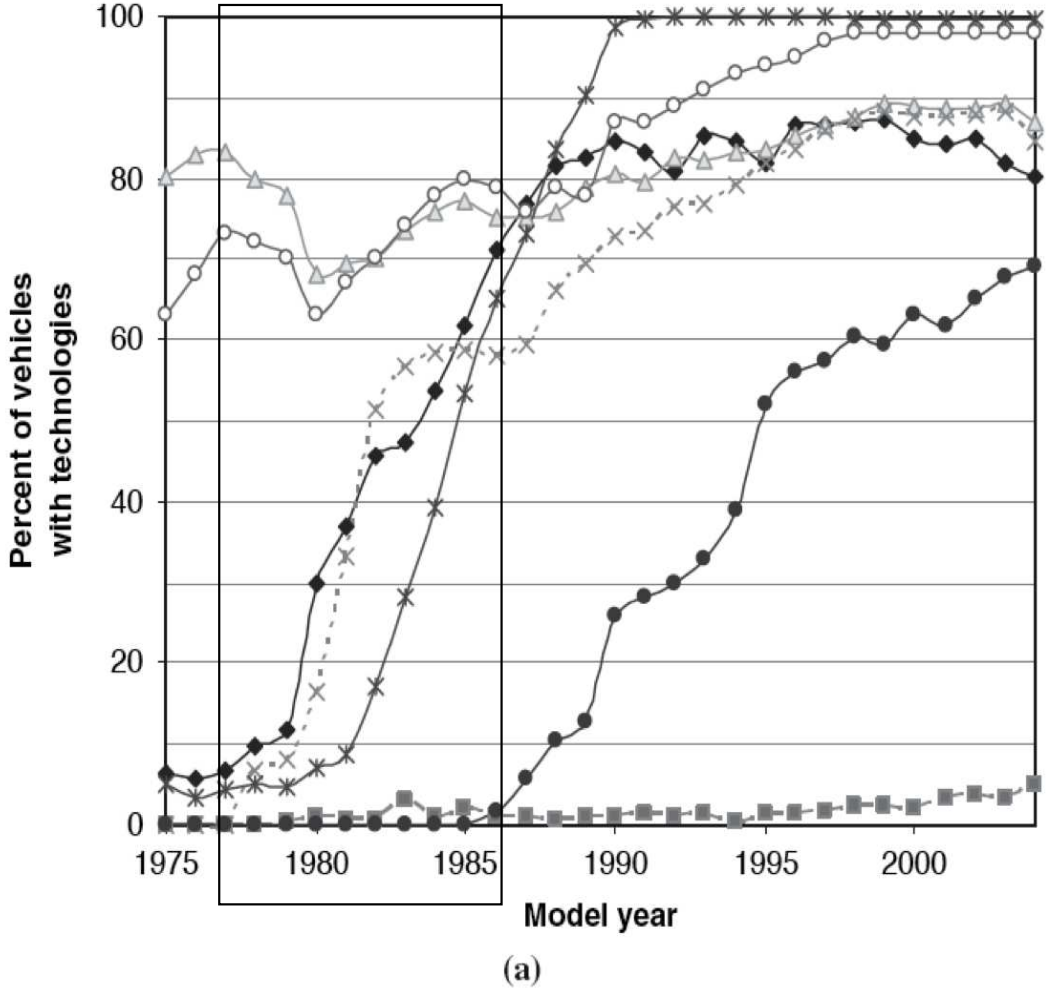
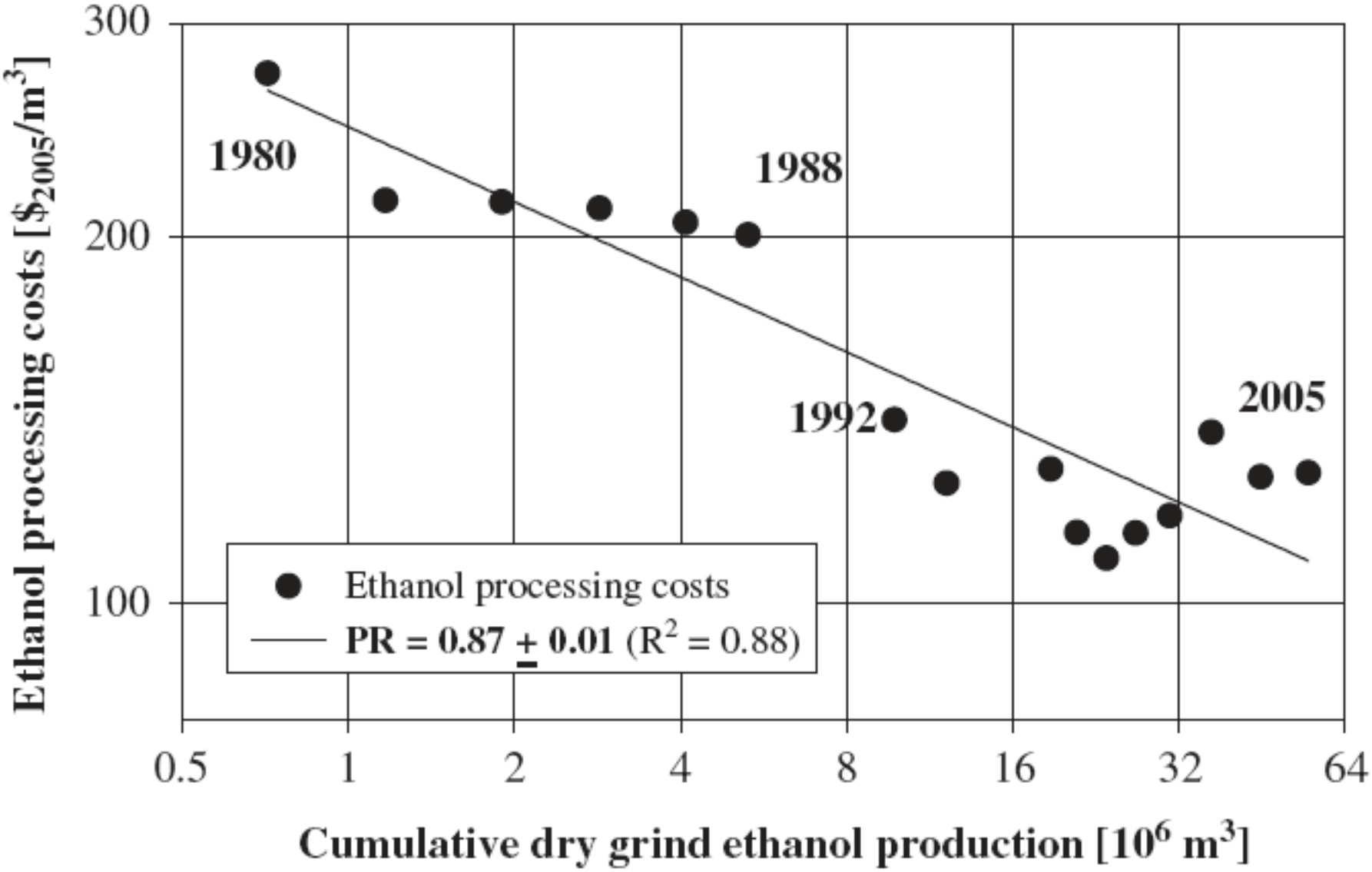
Demand Pull: U.S. CAFE standards





Demand Pull
U.S. ethanol:



Source: Hettinger, et al. 2009

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2) Exploration vs Exploitation

Tech Push **Demand Pull**

Inherent uncertainty (technical, market, env., social)
+ TPush is cheap

→ Implication: ***Place lots of R&D bets***

But: increasing returns to technology adoption (D-Pull)
(economies of scale, learning-by-doing, network effects)
→Implication: ***Pick a winner and deploy***

→Key tension for policy makers: ***timing***
how to know when to
switch from R&D to deployment

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3) Bridging Technologies

Can tension be avoided if 1st generation creates benefits for 2nd generation technologies?

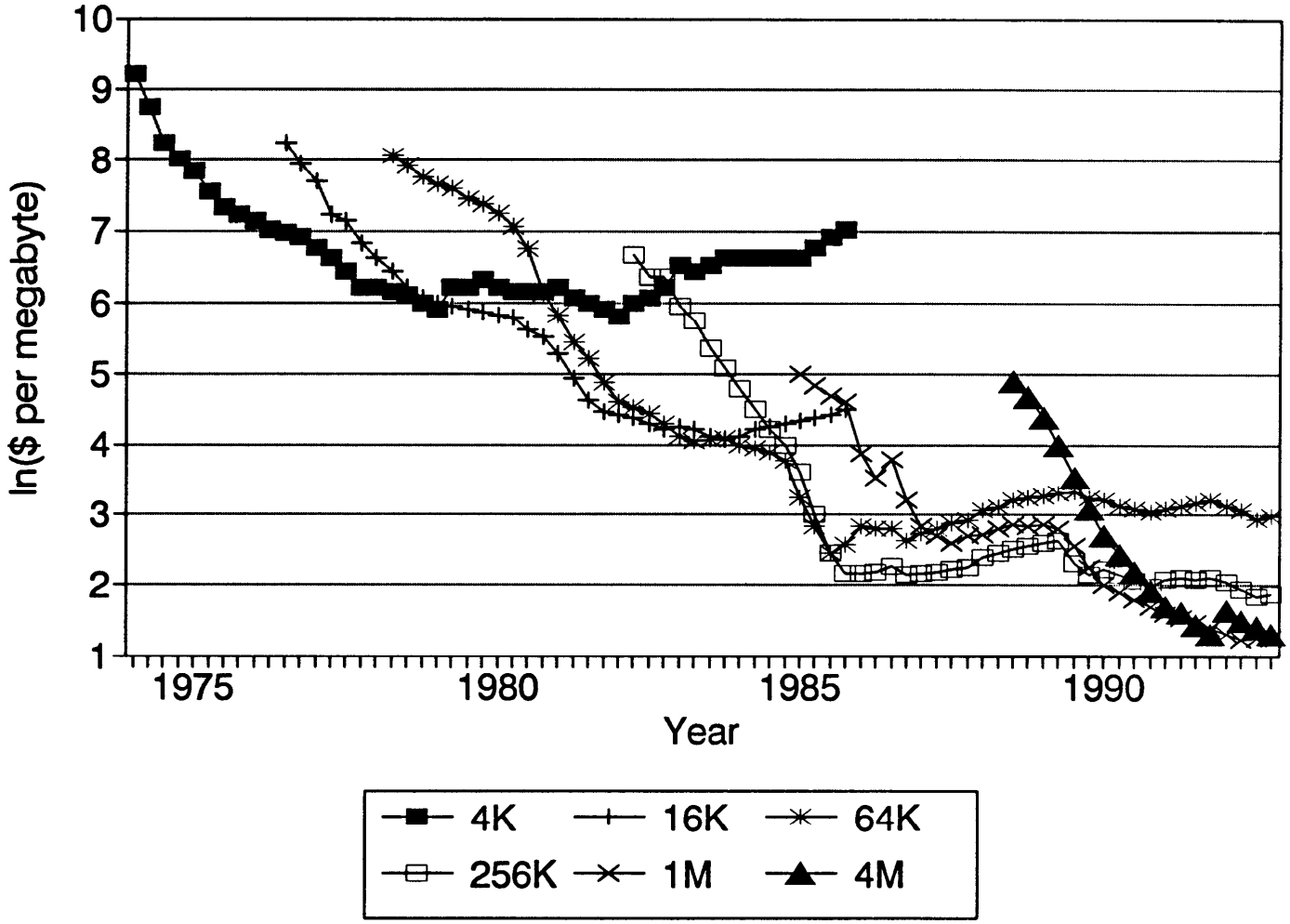

FIG. 1.—DRAM prices (source: Dataquest)

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3) Bridging Technologies

Does the deployment of flawed, immature technologies enhance the deployment of next generation?

The case for bridging

1. intergenerational knowledge flows (from lbd)
2. infrastructure, supporting technologies
3. political support
4. regulatory capacity development
5. familiarity for adopters

The case against bridging

1. Not free
2. Possibility of delayed entry for new technology (weak #1-5)
3. Policy "mistakes" are not easily forgiven

Can technology policy learn from policy experiments?

Technical failures do not imply bad policy decisions

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APPENDIX

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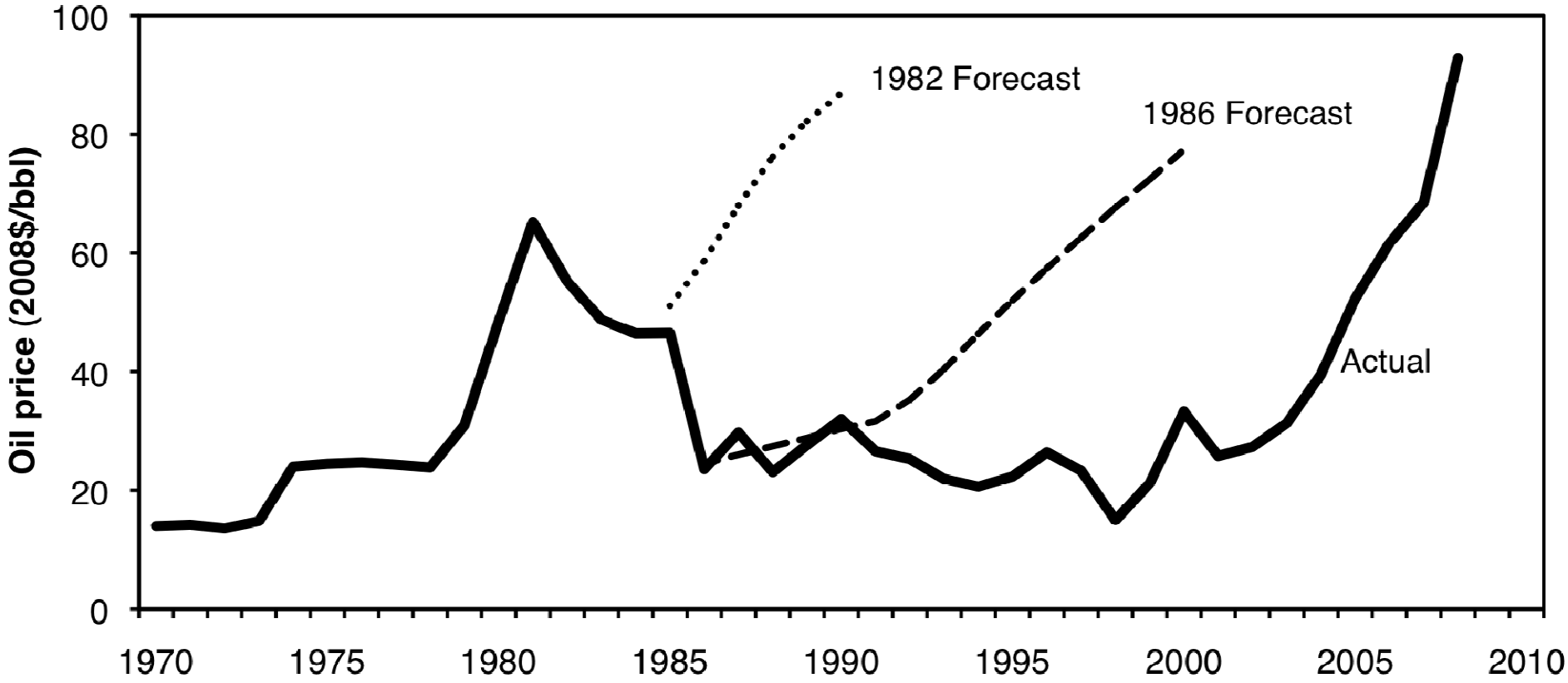
Tools to Inform Policy Choices (Panel Discussion)
Moderator: Jason Hill, University of Minnesota
What tools are available to inform policy choices? What are the strengths and weaknesses of existing tools?
o Marilyn Buford U.S. Forest Service
o Alan Hecht, U.S. Environmental Protection Agency
o Greg Nemet, University of Wisconsin
•Nathanael Greene, NRDC

Talk: energy technology perspective on decisions related to biofuels technologies
discuss use of LCA-based model results (rather than criticize them)
- Need more of this analysis
- very implementable
- need to include LCA in technology policy decision making

3 points.
1 TPush vs Dpull: First introduce a framwrok that applied more broadly but I think is still useful.
2 Exploration vs exploitation: a tradeoff, timing matters
3 Bridging technologies: how to evaluate
Tolerate technology failures: tech failure does **not** imply policy failure
Need to learn from policy failures – can we?

Synfuels



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