



Transition Dynamics in the Nascent Bioproducts Industry

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Problem Statement

Importance: Growing the bioproducts (chemicals from biomass) industry could support the biofuels industry, reduce carbon and other emissions associated with the U.S. chemical sector, and increase price stability in the chemical market.

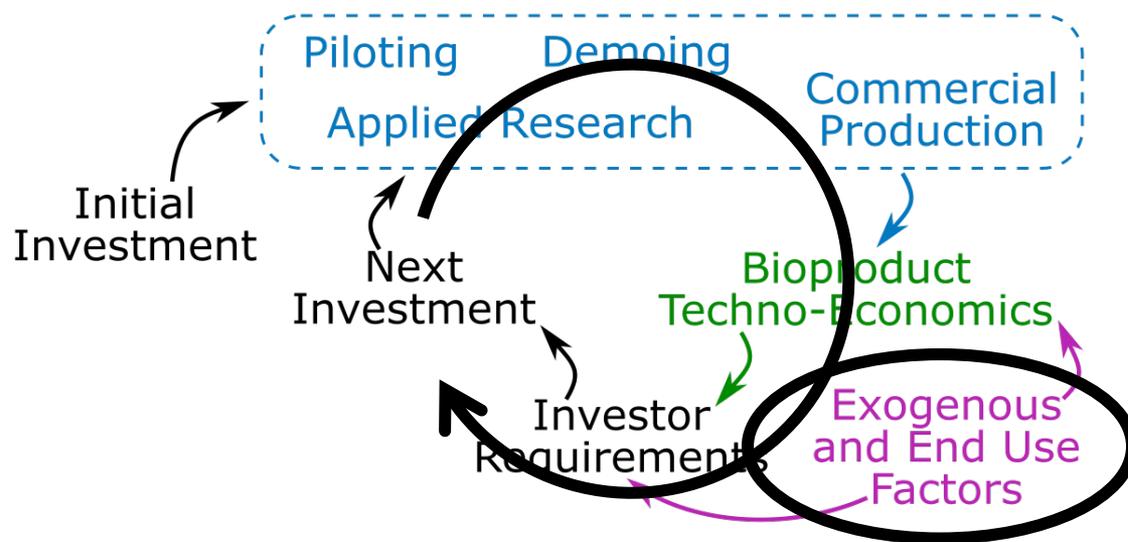
- None of these benefits can be realized without bringing more bioproducts to market, which has historically been difficult
- Currently there is a lack of knowledge around the factors that prevent or enable bioproduct commercialization

Goal: To develop a model of **early bioproduct technology development and market growth** that will be used by investors, technology developers, and government agencies to **accelerate market penetration** of bioproducts

Approach or Dynamic Hypothesis

Capture technical development (quantitative) and the related decision-making processes (semi-quantitative, qualitative) in a single model

BTD Model

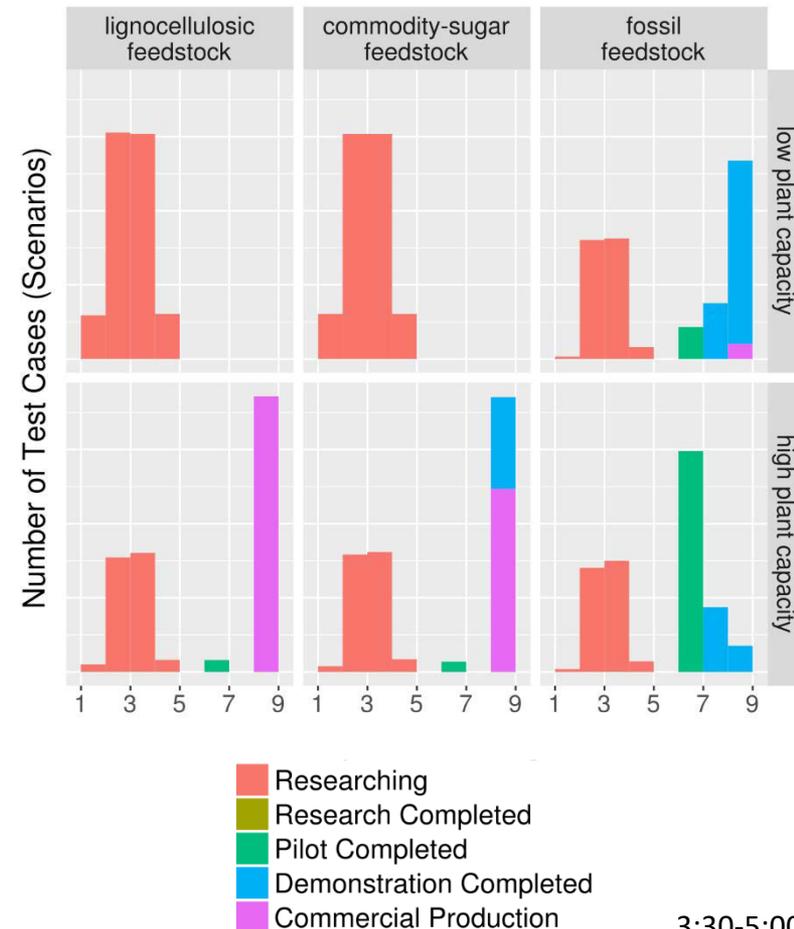


Investor decision-making is influenced by bioproduct techno-economics and development progress, which is dependent on previous investments

Exogenous factors such as feedstock prices, competing product prices, and product demand change independently over time and influence the main feedback loop

Progress and Insights to Share

- Sensitivity analysis on succinic acid scenarios: ~15 M model runs per feedstock/plant scale combination
- Successfully reproduced real-world observations about the valley of death and the benefits of economies of scale
- *Soft factors* are of critical importance especially during market development phase



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