Using Dynamic Optimization to Determine Economic Effects of Climate Change on California's Forestry Sector

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Much research has been done on the impacts of climate change on different sectors. Climate change and greenhouse gas emissions are a direct result of energy consumption. In evaluating the economic effects, we take a novel adaptive approach to a classic forestry economics problem: What age should I cut a tree and what should I replant?

Goal: model people's behavior by taking a complicated problem and distilling it down to simple choices given variables that are species-specific and changing over time:

- o Environmental variables
- o Competing land uses like urbanization
- o Possible carbon payments
- o Timber prices
- o Costs

Preliminary Results: we observe increases in productivity in certain scenarios due to climate change; however, they are offset by global timber price movements.

Other applications outside of forestry:

- o Invest in a cheap plant that is costly to run or an expensive plant that is cheap to run ?
- o Buy a cheap gas guzzler or an expensive Prius?

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