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*How Much Did We Lose/Gain As A Result of Soybean Export Facility Opening in the Amazon?*

Efficient land use planning requires estimation of impacts from new economic incentives and resulting tradeoffs among ecosystem services. The estimation of impacts and tradeoffs can be used for benefit/cost analyses to find efficient practices that maximize net benefits from conservation and/or development. Failure in estimating the impacts of changes in economic incentives and resulting tradeoffs will likely lead to inefficient land use decisions. The estimation of impacts and tradeoffs is more important in many developing countries where they have high value of ecosystem services and people's livelihoods depend directly on natural resources for food and income. Impact assessment of new economic incentives and estimation of the resulting tradeoff value of ecosystem services will help implement efficient land use decisions that can provide income for the local people as well as other ecosystem services such as carbon sequestration. In this paper, I investigate the impact of the opening of a new soybean export facility on deforestation and resulting tradeoff between agricultural production and carbon sequestration in the municipality of Santarém and Belterra (S&B), Brazil. In 2003, the agricultural multinational company Cargill opened a soybean export facility in Santarém within the northern region of the Brazilian Amazon. I run time specific effect and difference-in-differences regressions to estimate the impact of the port facility opening on deforestation. Then, I compare the tradeoff between agricultural production and carbon sequestration by constructing a counterfactual land-use land-cover map using the results from the regressions. I find that the average deforestation rate increased by 7.8% in 2003 and 2004, which is equivalent to the area of 164 km<sup>2</sup> as a result of soybean export facility opening. The value of lost carbon in the study area exceeds the value of increased agricultural production at 3% discount rate and corresponding social cost of carbon (IWG 2015) while agricultural value becomes higher than carbon value at 5% discount rate. I also find that the break-even price of carbon for farmers to compensate for their loss of agricultural profit is \$92.4 and \$55.4 per ton of carbon in 2004 US dollars, assuming 3% and 5% discount rates, respectively. The results suggest that careful consideration of benefits and costs prior to the opening of the port facility might have increased net benefits from ecosystem services. The comparison of tradeoff between agricultural production and carbon sequestration implies that considering other ecosystem services such as water purification might change the net benefit to be negative. The estimates of break-even price of carbon provide quantitative estimates of how much we should compensate farmers if we were to preserve those lands to increase net benefits from various ecosystem services. This study can inform policies for efficient use of land that promote both economic development for the poor and provision of other ecosystem services. It will help land use decisions not only for governments but also for other stakeholders including private companies and global initiatives such as United Nation's program on Reducing Emissions from Deforestation and Forest Degradation.