Tropical deforestation accounts for over 10% of annual carbon emissions, more than combined emissions from the global transportation sector. Any viable effort to mitigate climate change will have to address deforestation, especially in Brazil and Indonesia, which together made up over 40% of deforestation in 2011. As part of a grand Coasian bargain, Norway pledged 1 billion dollars to Indonesia conditional on reducing emissions from deforestation. Paid on delivery. The first stage of the agreement was a moratorium on new concessions for clearing activity in natural forest, announced in May 2010 to be enacted in January 2011, but actually enacted in May 2011. The objective of this study is to assess the impact of the moratorium on the spatial distribution and overall rate of deforestation in Indonesia.

We use Borneo as our sample area, which is split into Indonesia and Malaysia. The landscape and agricultural practices are similar, facts that we verify using satellite imagery — such as elevation, slope, water accumulation, and other data sets derived from NASA's shuttle missions. These factors, along with information on soil type, are the primary inputs into agriculturalists' profit functions.

The foundational data for this study report on forest clearing activity for each 500m pixel in the humid tropics for each 16-day period through September 23, 2012. These data now form the basis for a joint initiative between the World Resources Institute and Google called Global Forest Watch. This graph shows the total deforestation rates in Malaysia (red) and Indonesia (blue) along with shaded regions indicating the three phases of the moratorium. It can be shown that the difference between the total rates of deforestation increased after the moratorium, even after controlling for agricultural prices.

Each time a pixel is marked by deforestation, it is categorized into one of two groups: (1) the emergence of a new cluster of deforstation, or (2) on the periphery of an previously existing cluster. This is similar to Weitzman's resource pools: under what economic conditions does extraction intensify in existing mines, rather than coming from new mines. This plot shows the proportion of new clearing activity that occurs in new clusters – or group 1 over group 1 plus 2.

I use a standard diff-in-diff approach to compare the outcomes in Malaysia and Indonesia. A strict assumption behind any diff-in-diff model is that the lag structure with respect to exogenous shocks is constant within and between the treatment and control groups. I propose a method in the paper that may allow this assumption to be relaxed slightly. Instead of comparing strictly vertical distances, which is core to the diff-in-diff approach, I use a non-parametric matching technique that uncovers broad trends in the time-series by utilizing lesser variation in the temporal patterns. This technique is common in time series classification and language recognition software.

Preliminary findings suggest that the moratorium did decrease the formation of new clusters, but that developers more than offset the reduction by increasing deforestation within existing clusters.

Thanks for your time.