Title
Aviation Networks: Disease Spread and Links to Global Supply Chains

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Abstract
We are using aviation network data to map the global spread of the COVID-19 virus, starting from its origin in Wuhan, China. Density of flight connections will be used to predict the spread of the virus from country to country. The model will incorporate data on spread within individual nodes (countries) based on a SIR (Susceptible-Infected-Recovered) model, with local containment/suppression parameters. Spread between nodes will be affected by border suppression measures (flight or travel restrictions).

As a second stage of this work, we will link the density of aviation connections between nodes to international supply chains, with the intention of assessing the degree to which supply chain links, particularly between continents, are facilitating or speeding pandemic spread. We intend also to look at the effects on Trade and GDP, as well as on longer-term supply chain diversification strategies.

Data description
Bilateral flight data (ICAO), supplemented with more recent disaggregated flight data.
Data on spread of the COVID-19 virus.
Data on virus-related restrictions.
Bilateral trade data with sectoral disaggregation.

JEL codes for the project
F69, F02, I00, I19

Key-words
Aviation networks, supply chains, virus spread