

Trade Costs in U.S. Food Manufacturing Industries

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Project Summary

The objective of this study is to measure trade costs incurred by major U.S. regions when trading manufactured food products with other countries. Trade costs in this study's context refer to all factors limiting exchange of goods and services among countries, e.g. policy, geographic and institutional barriers. Such costs are often measured as frictions in a micro-founded gravity model as in Anderson and van Wincoop (2004) and Jacks et al. (2011). In this study, the gravity framework is extended to identify regional trade costs in the U.S. food manufacturing industry. The new measures of trade costs not only capture the variation over time in trade frictions among countries, but also allow for further examination of their underlying sources: policy, geographic and institutional factors.

Specific Objectives

This study allows for variation of trade costs among regions, since a single trade costs measure may not appreciate the large number and diverse regions of the United States through which trade in food manufacturing occurs.

The specific objectives of this study are to:

- derive a micro-founded gravity model for assessing symmetric trade costs at the regional level, and
- measure bilateral trade costs for major U.S. regions with each of their trading partners in food manufacturing industries from 1998 through 2009.

Future work include an analysis of the sources of variation in regional trade costs: policy, geographic and institutional factors, and their relative contribution to trade frictions.

Data and Methods

- Our trade cost measure is a function of bilateral trade volumes (Z_{ij} and Z_{ji}) and market potential (Z_{ii} and Z_{jj}), which is the output of a region that is potentially tradable but not yet traded (Coughlin and Novy 2009):

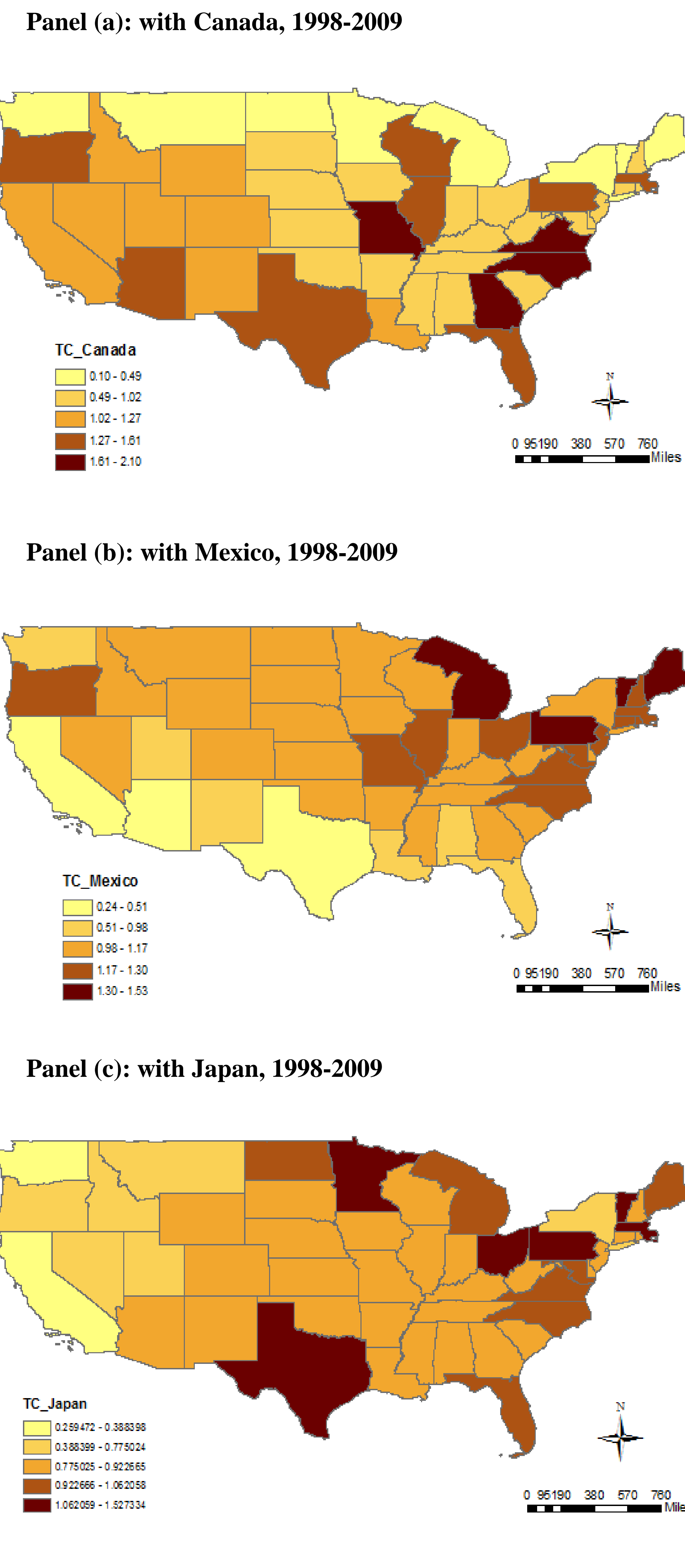
$$\tau_{ij} = \left(\frac{Z_{ii}Z_{jj}}{Z_{ij}Z_{ji}} \right)^{\frac{1}{2(\sigma-1)}} - 1$$

where σ is the elasticity of substitution between goods of different origins.

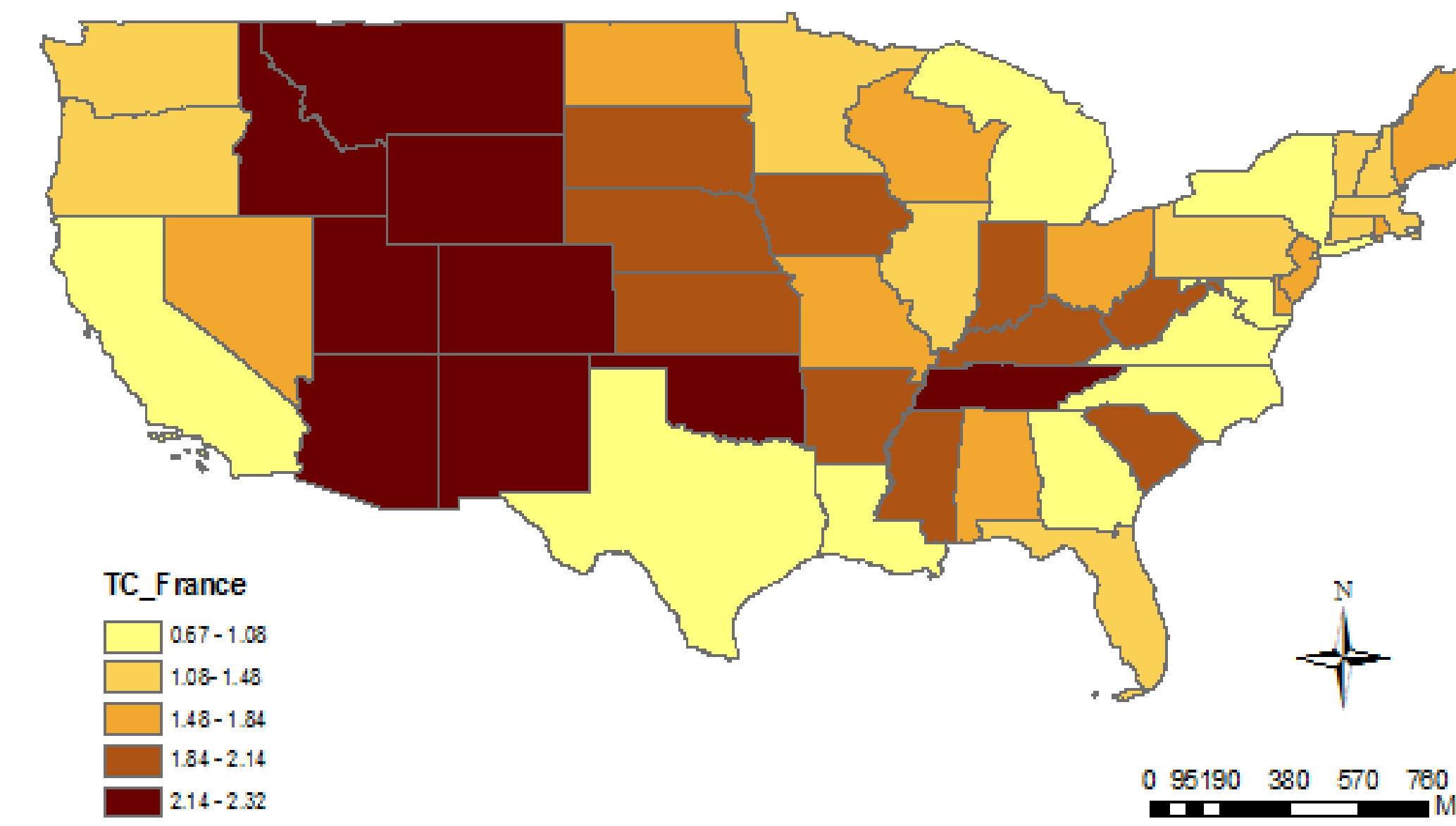
- Bilateral trade flow data come from the *U.S. Imports of Merchandise and U.S. Exports of Merchandise database*.
- Country-level trade and output data are taken from the *ISDB database* of UNIDO, and the *COMTRADE database* from the United Nations.

Preliminary Results

Figure 1: Regional bilateral trade costs with major trading partners



Panel (d): with France, 1998-2009



Panel (e): with China, 1998-2009

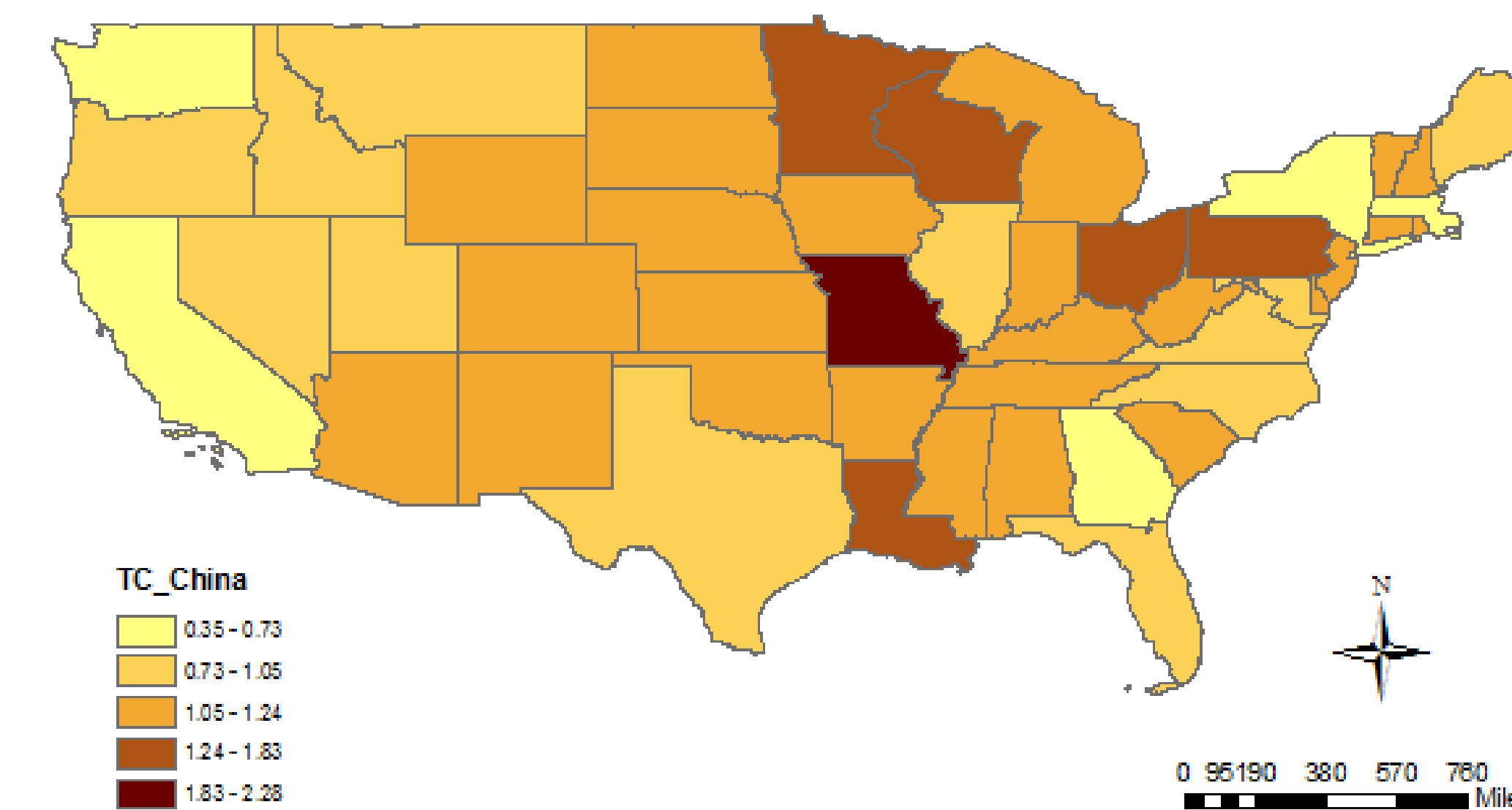
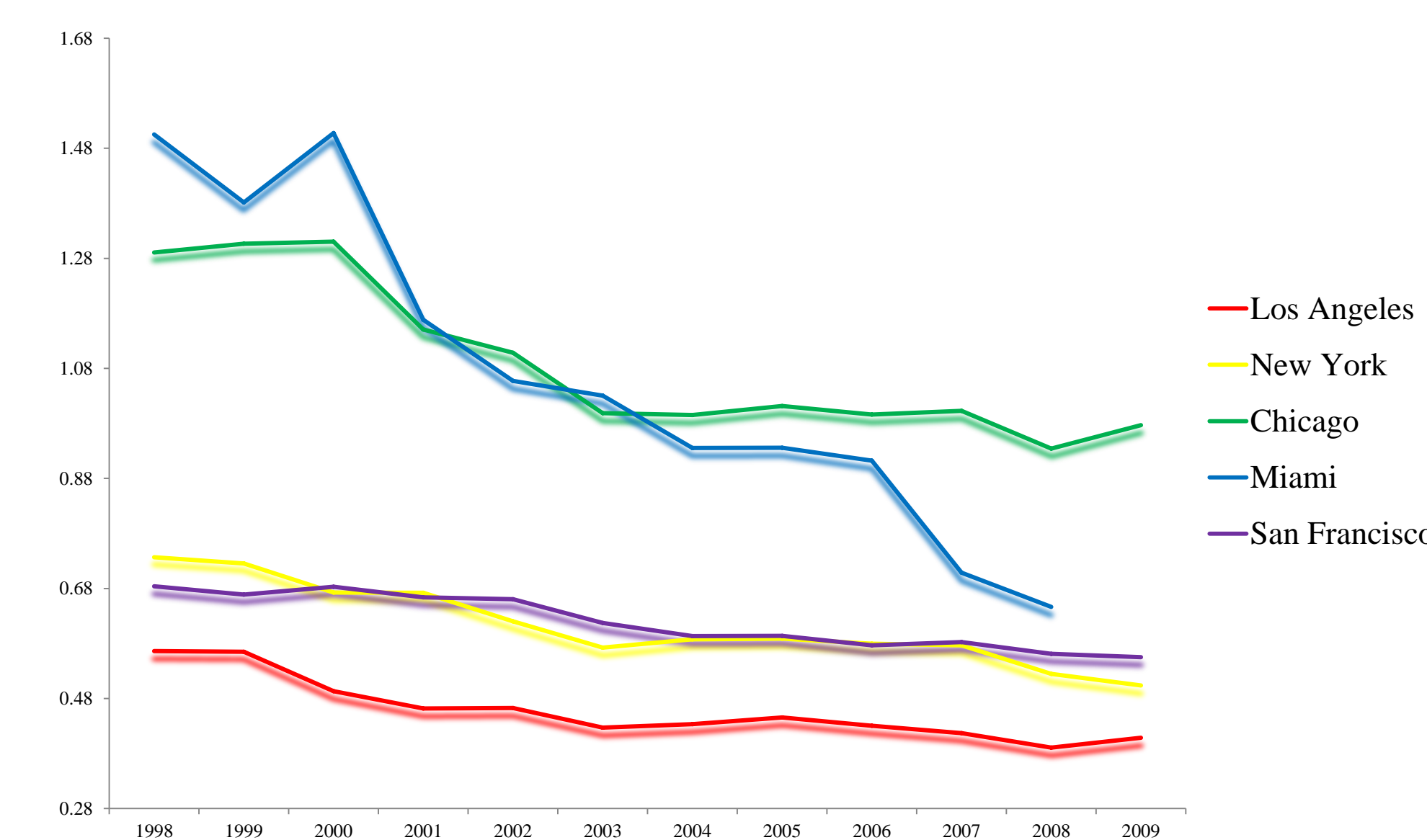
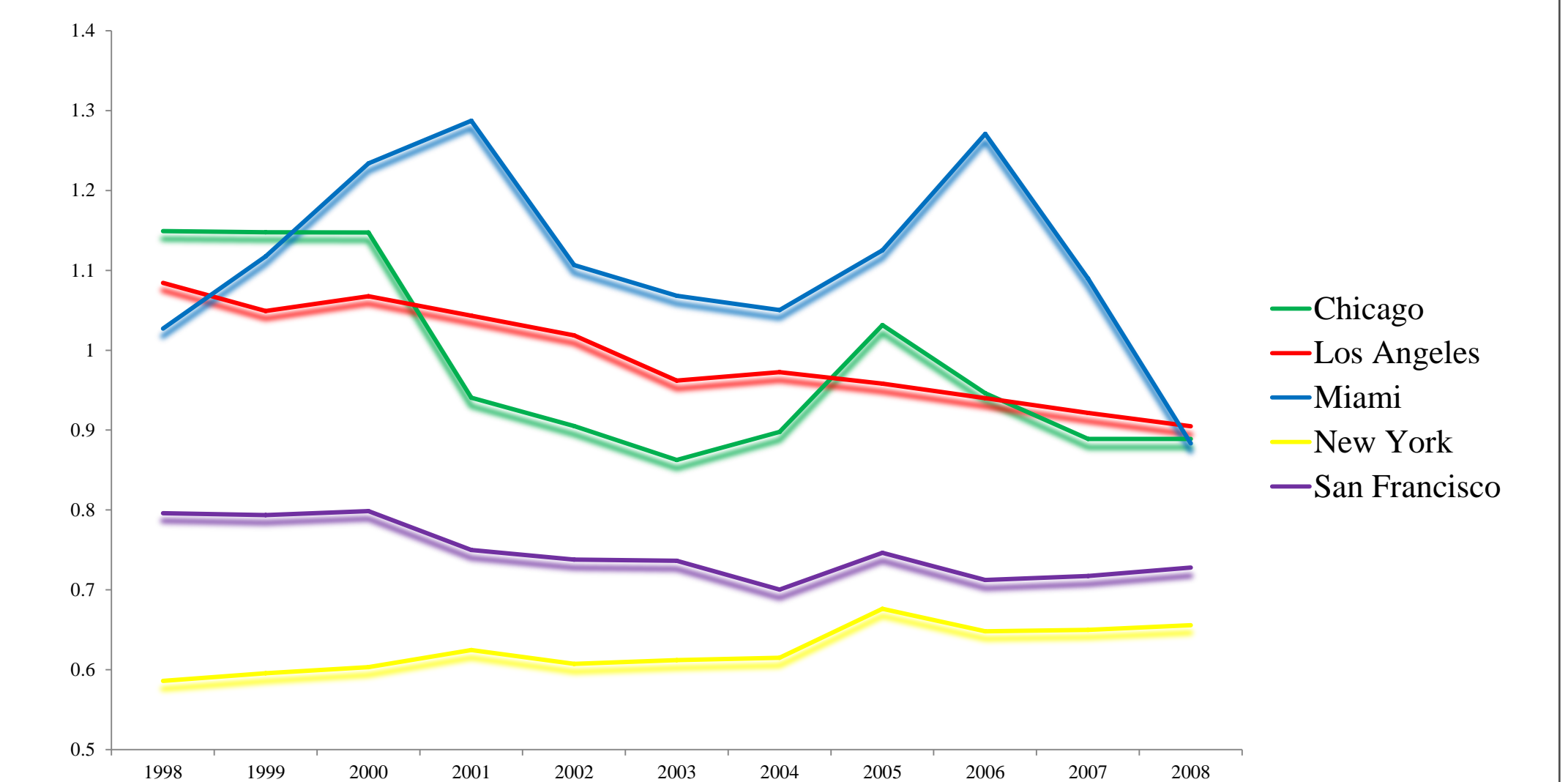


Figure 2: Regional trade costs over time in food manufacturing industries

Panel (a): trade costs of U.S. major districts with China



Panel (b): trade costs of U.S. major districts with U.K.



Summary

- Trade costs for 1426 U.S. region-country pairs 1998-2009 show substantial country, regional and time variation.
- The weighted bilateral trade costs between U.S. and Canada (0.17) is the lowest among major partners.
- Moreover, significant reductions of bilateral trade costs are observed between U.S.- China (0.66 in 1998, 0.53 in 2009) and U.S.- Mexico (0.28 in 1998, 0.22 in 2009).
- With regard to regional variation, the Seattle customs district (WA) has lower trade costs with Canada (0.15) than with Mexico (0.86) on average over 1998-2009.

In a seminal article, Melitz (2003) showed the effects of falling trade costs on an industry's extensive and intensive margins, i.e. death of low-productivity firms and the reallocation of resources, respectively (Bernard et al., 2006). So, matching trade costs, measured at an appropriate spatial level, with business entry, exit and survival, and the consequent job creation is likely to provide insights into strategies for national and regional economic development.

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