IDE - GSM: Geographical Simulation model meets China-Kyrgyzstan-Uzbekistan Railway.


IDE-JETRO

25 September 2016
IDE-GSM

- IDE-GSM is a simulation model based on Spatial Economics, and New Economic Geography.

- To simulate the dynamics of population and industries for long-term

- To analyze the effects of infrastructure projects and customs facilitation on the economic activities at prefecture level: not nation but region.
GSM is NOT for Ordinary Cost/Benefit Analysis

Cost Benefit Analysis for Transport Infrastructure

**Costs:**
Appropriation of Land, Construction and Maintenance, etc.

**Benefits**
**Private**: Toll/Fare

**Social (Direct)**: Reduction in Time and Money Cost of Transport
Reduction in Traffic Accident

**Social (Indirect)**: Enhancing Economic Activities
Spatial configuration of economic activity

- The balance between centrifugal force and dispersion force determines the spread of economic activity.

- Centrifugal force: good infrastructure, varieties of inputs, thick labor forces, knowledge externality.

- Dispersion force: specific local inputs, immobile workers, congestion.
Source of agglomeration: Positive feedback

Population ↑

Market size ↑

Variety ↑

Firms ↑

Economies of scale

Differentiation of goods

• Labor matching
• Intermediate goods

Migration

Decreasing transport costs strengthens this feedback.
The world of GSM

- 2063 region in 89 countries;
- 12116 routes in road, maritime, flights and trains;
- longitude and latitude
Transport costs in GSM
How to Estimate the Impacts?

Alternative Scenarios
with additional development projects in 2020

Baseline
with no development projects in 2020

2005
2010
2020
2030

Compare the differences
(10 years after)

Economic Impact
(compared with the baseline in 2030)
Railway Networks in Central Asia

Data for designing the transport route, distance and times are based on Euro-Asian Transport linkages:

Paving the way for a more efficient Euro-Asian transport,
UN Economic Commission for Europe
Questions

- *This will divide the country, not unite it* in “The China-Kyrgyzstan-Uzbekistan railway project”, Foreign Office research analyst papers, https://www.gov.uk/government/publications/the-china-kyrgyzstan-uzbekistan-railway-project June 2014

- *This railway project will weaken Russia’s regional and perhaps global influence*. Eurasia Daily Monitor volume: 12 Issue 199 November 3, 2015 http://www.jamestown.org/programs/edm/single/?tx_ttnews%5Btt_news%5D=44562#.V-ZdddFf0eg
Scenario

- No.1  Connecting Kashgar, Trougart, Uzgen and Karasuu by train **without** Customs Facilitation Measures at national border between China and Kyrgyzstan

- No.2  Connecting Kashgar, Trougart, Uzgen and Karasuu by train **with** Customs Facilitation Measures at national border between China and Kyrgyzstan

Data for designing this scenario is based on EU-TACIS Feasibility Study of New Rail Links between the Ferghana Valley, Bishkek and Kashgar, Final report 2003

/21695765-some-treats-ahead-railway-enthusiasts-iranus-new-continent-spanning
Scenario No. 1: Rise and fall of per capita GDP
Scenario No. 1: Rise and fall of per capita GDP
Scenario No. 2: Rise and fall of per capita GDP
Scenario No. 2: Rise and fall of per capita GDP
Scenario No. 2: Rise and fall of per capita GDP
Findings

- Railway connection has a positive impact in southern Kyrgyzstan whereas a negative impact in northern Kyrgyzstan.

- Almost all regions of Russia may enjoy the positive impact of the railway if passing the border between China and Kyrgyzstan becomes simple, although the amount of the impacts are not large.