Who wins, who loses? Understanding the Spatially Differentiated Effects of Belt and Road within Central Asia

Somik Lall and Mathilde Lebrand

The World Bank

September 6, 2018

Motivation

- The Belt and Road Initiative (BRI) is a pipeline of new transport infrastructure and trade policy reforms, led by China, to enhance trade across countries.
- The BRI is likely to economically integrate countries but the effects within countries will be geographically differentiated.
- To advise policy makers, it is important to isolate the mechanisms through which external and internal integration will affect their economic development.

Main questions:

- What are the spatially differentiated effects of the BRI within Central Asian countries?
- What is the role of labor mobility?
- Are there complementary policies to mediate the economy's response to external integration?

Method and main results

We use a quantitative economic geography model based on Fajgelbaum & Redding (2014) that we enhanced with labor mobility frictions to produce counterfactuals to identify which locations will gain and which ones will relatively lose.

Four main results:

1. The relative winners in terms of population and real wages are districts that have a comparative advantage in exporting, would highly benefit from reductions in transport costs, and are attractive places for workers.

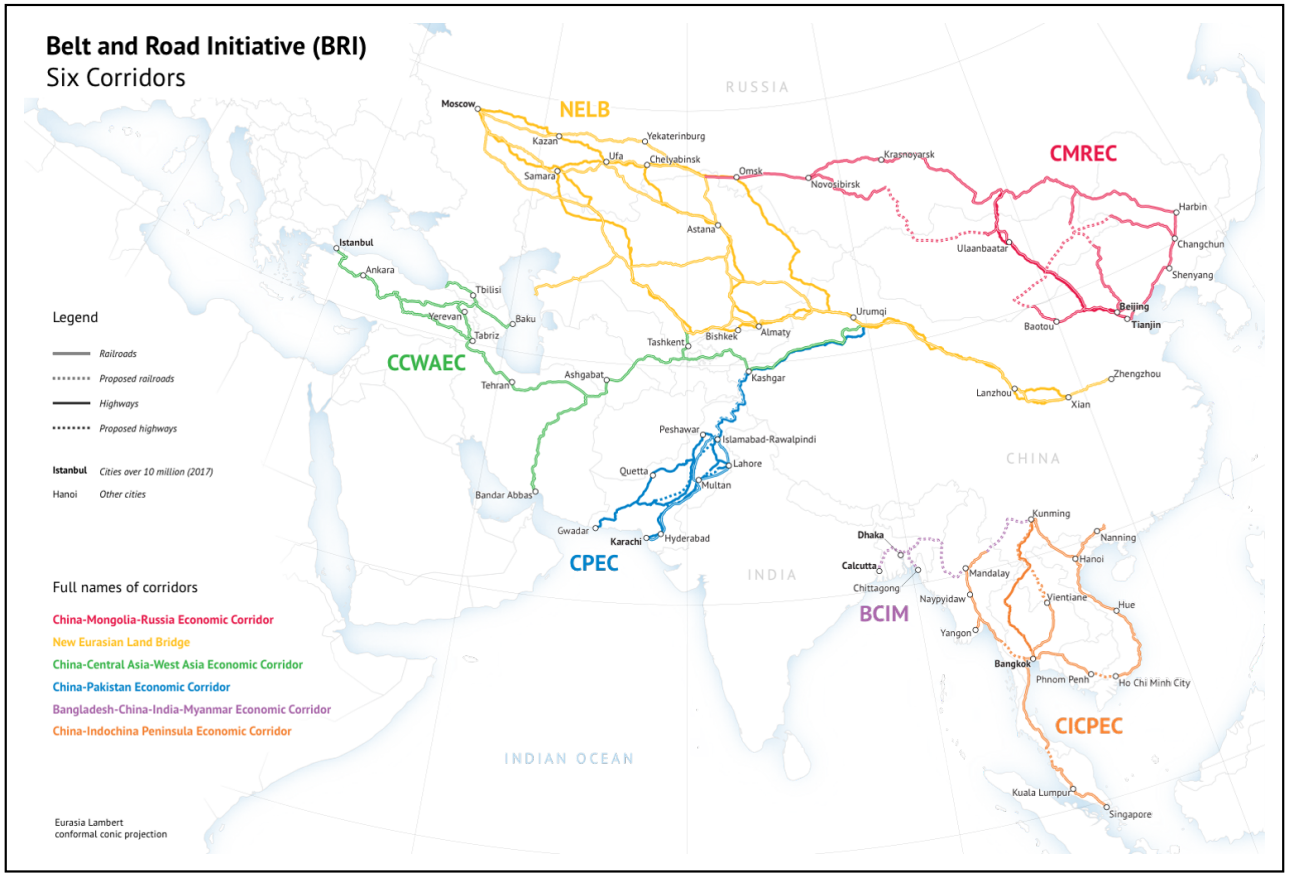
2. Gains are concentrated in locations close to border entry points and in urban hubs.

3. Complementary investments in domestic transport networks and trade facilitation can help in spatially spreading the benefits.

4. Barriers to domestic labor mobility exacerbate spatial inequality in wages whilst dampening overall welfare.

What is the BRI?

The BRI: 6 main corridors with the potential of influencing 65 countries, 4.4 billion people, and leveraging 40 percent of global GDP.



SOURCE: Adapted from China-Britain Business Council, by A. Trubetskoy

The quantitative general equilibrium model

Key elements of the model based on Fajgelbaum & Redding (2014):

1. Production side:
   - Tradables (manufacturing, agriculture) and non-tradables (services and local manufacturing)
   - Two factors of production: land (immobile) and workers (mobile)
2. Asymmetric locations (districts) in terms of productivity, amenity scores, transport costs to reach main international gateways
3. Addition of domestic labor mobility frictions:
   - Preference shocks from a Frechet distribution with its main parameter as the elasticity of labor mobility to real wages.
   - Iceberg costs from moving (Morten et co. 2018)

Key mechanisms:

- the role of internal geography in shaping the effects of external integration
- "the spatial Balassa-Samuelson effect"

Data and calibration

Data to measure productivity wedges, amenity scores and transport costs across districts for Central Asian countries (Kazakhstan, Kyrgyz Republic, Uzbekistan, Tajikistan).

- Population and employment data for districts (official statistics, surveys, GIS maps)
- Land area for economic activities (ESA data)
- Transport times to compute transport iceberg costs (GIS analysis)

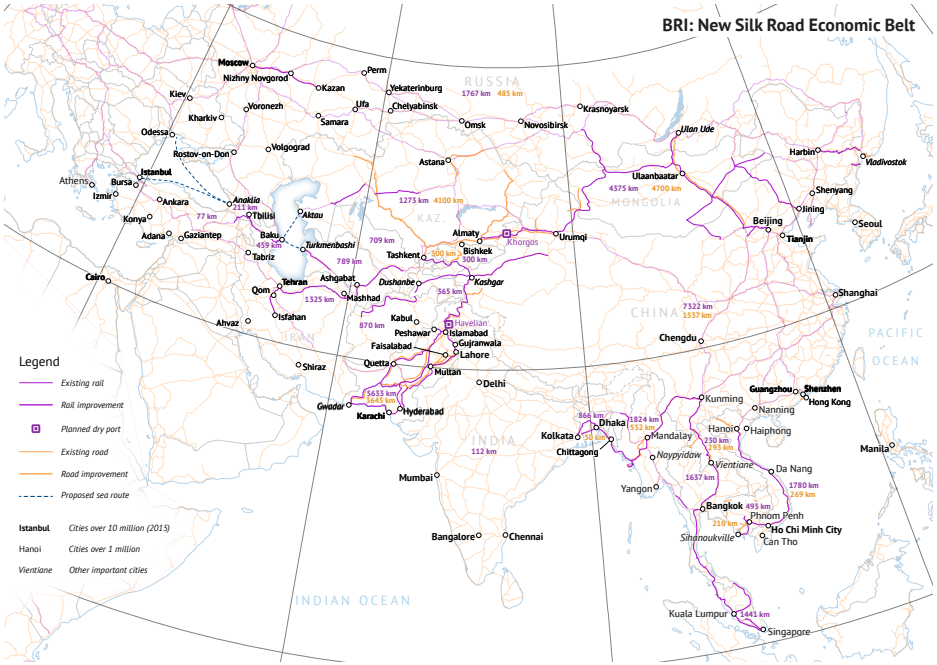
Model calibration

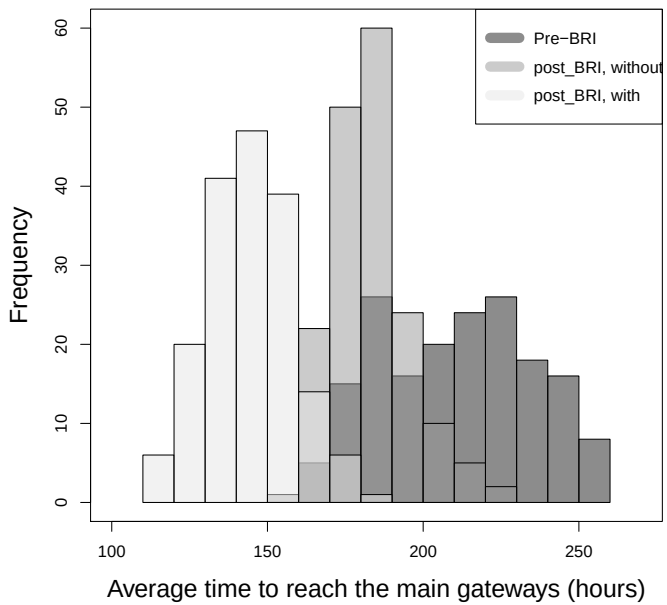
- Factor intensity and consumption parameters (Fajgelbaum & Redding 2014)
- Frechet parameter (Redding 2016, Morten et co 2018)
- Matrix of iceberg migration costs

The scenarios for counterfactuals

Scenarios that affect transport costs to reach main gateways (Moscow, Istanbul, Urumqi):

1. new or rehabilitated transport infrastructures from the BRI
2. new domestic transport hubs
3. lower trade barriers

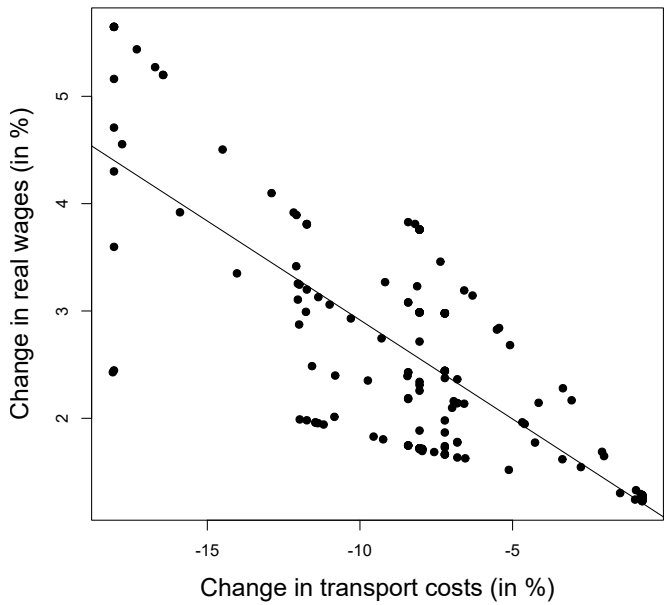


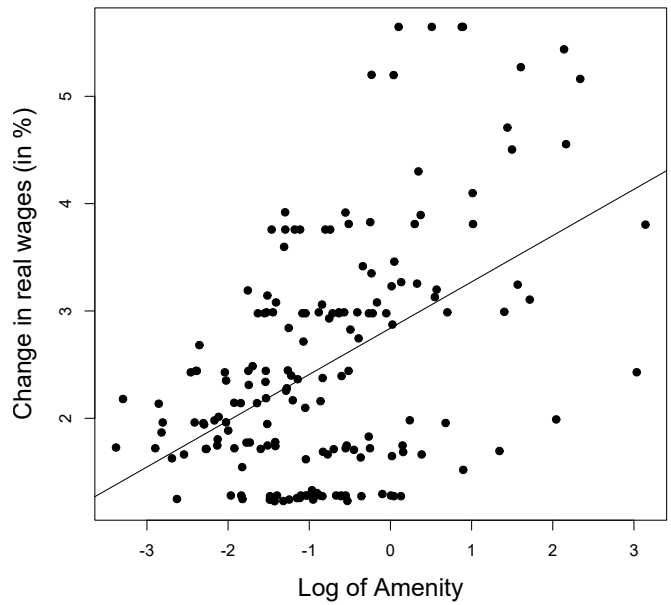


Results for Kazakhstan: who wins, who loses?

Result 1 : The relative winners in terms of population and real wages are districts that have a comparative advantage in exporting, would highly benefit from reductions in transport costs, and are attractive places for workers.

Figure: Higher real-wage growth for districts with larger decreases in transport costs (left) and higher amenity (right)



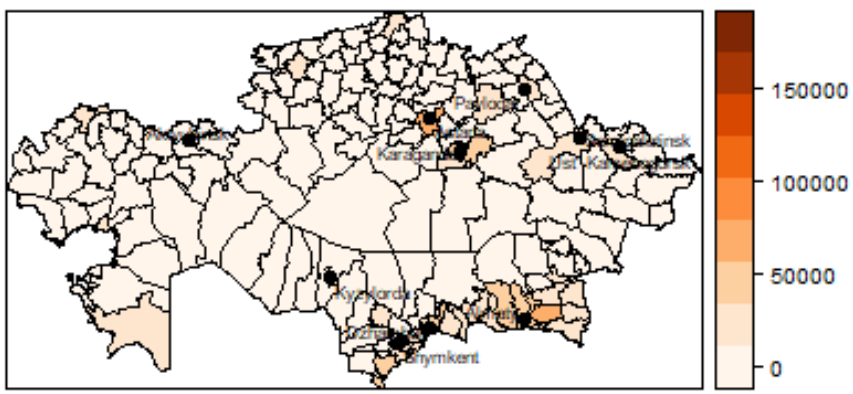


Results for Kazakhstan: spatially differentiated effects

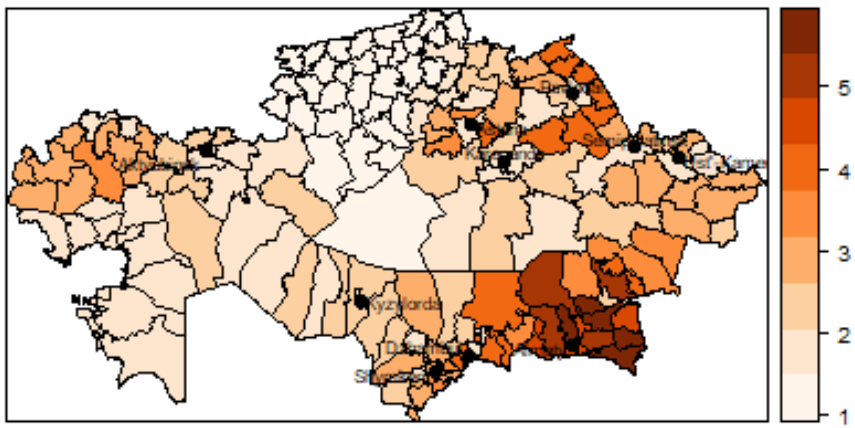
Result 2 : Concentration of gains in locations close to border entry points and in urban hubs.

Figure: Map of the differentiated spatial effects

(a) Differential of population



(b) Growth of real wages (in %)

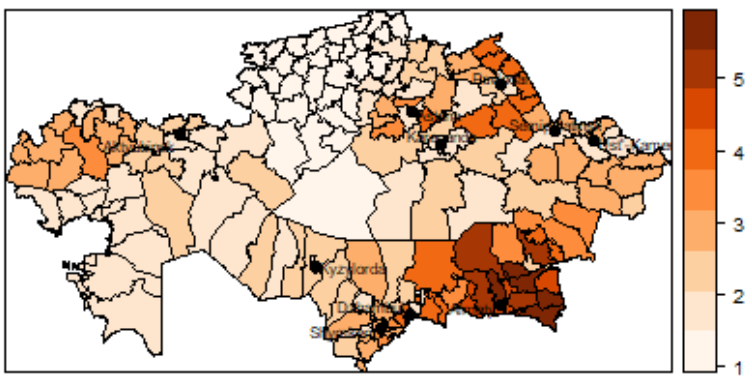


Complementary policies: trade facilitation and domestic infrastructure

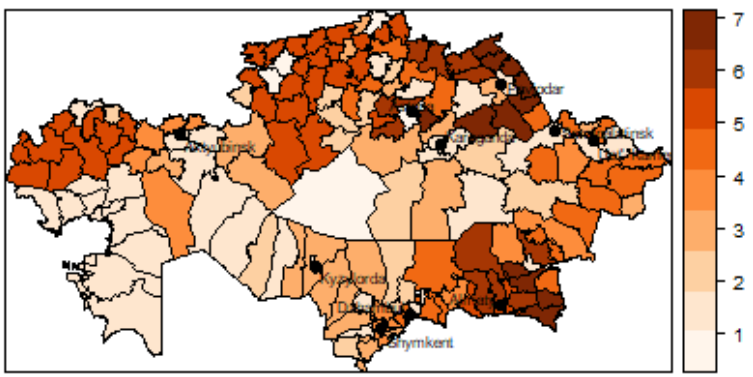
Result 3 : Complementary investments in domestic transport networks and trade facilitation can help in spatially spreading the benefits

Figure: Welfare effects without and with border-crossing time reduction (change in real wages- in %)

(a) No border improvement



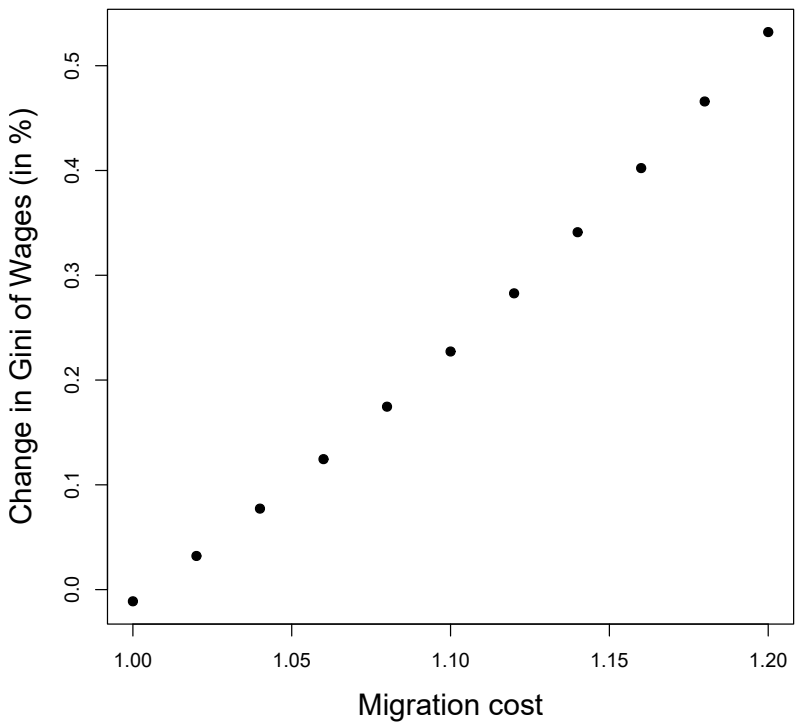
(b) With border improvements



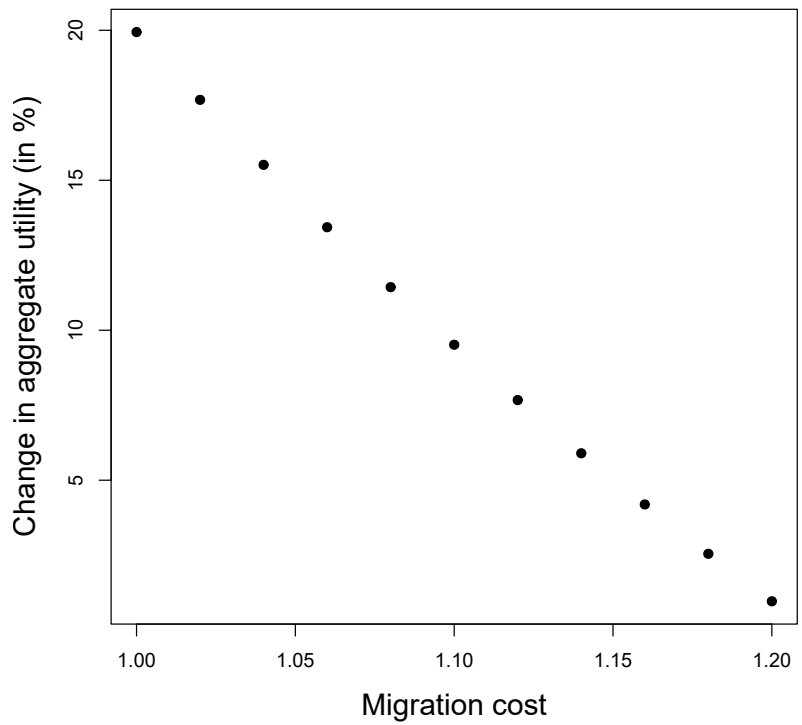
The role of labor mobility

Result 4 : Barriers to domestic labor mobility exacerbate spatial wage inequalities whilst dampening overall welfare.

(a) Spatial inequality in wages



(b) Aggregate Utility



Conclusion

- This paper uses a quantitative GE model to provide counterfactuals to understand the spatially differentiated effects of BRI interventions in Central Asia.
- Districts that might lose are farther out districts that do not have a comparative advantage in exporting and are less attractive for workers to move in.
- Complementary policies, such as trade facilitation and domestic transport investments, as well as lowering domestic labor mobility barriers can mediate the economy's response to external integration.