Who Wins, Who Loses?

Spatially Differentiated Effects of BRI

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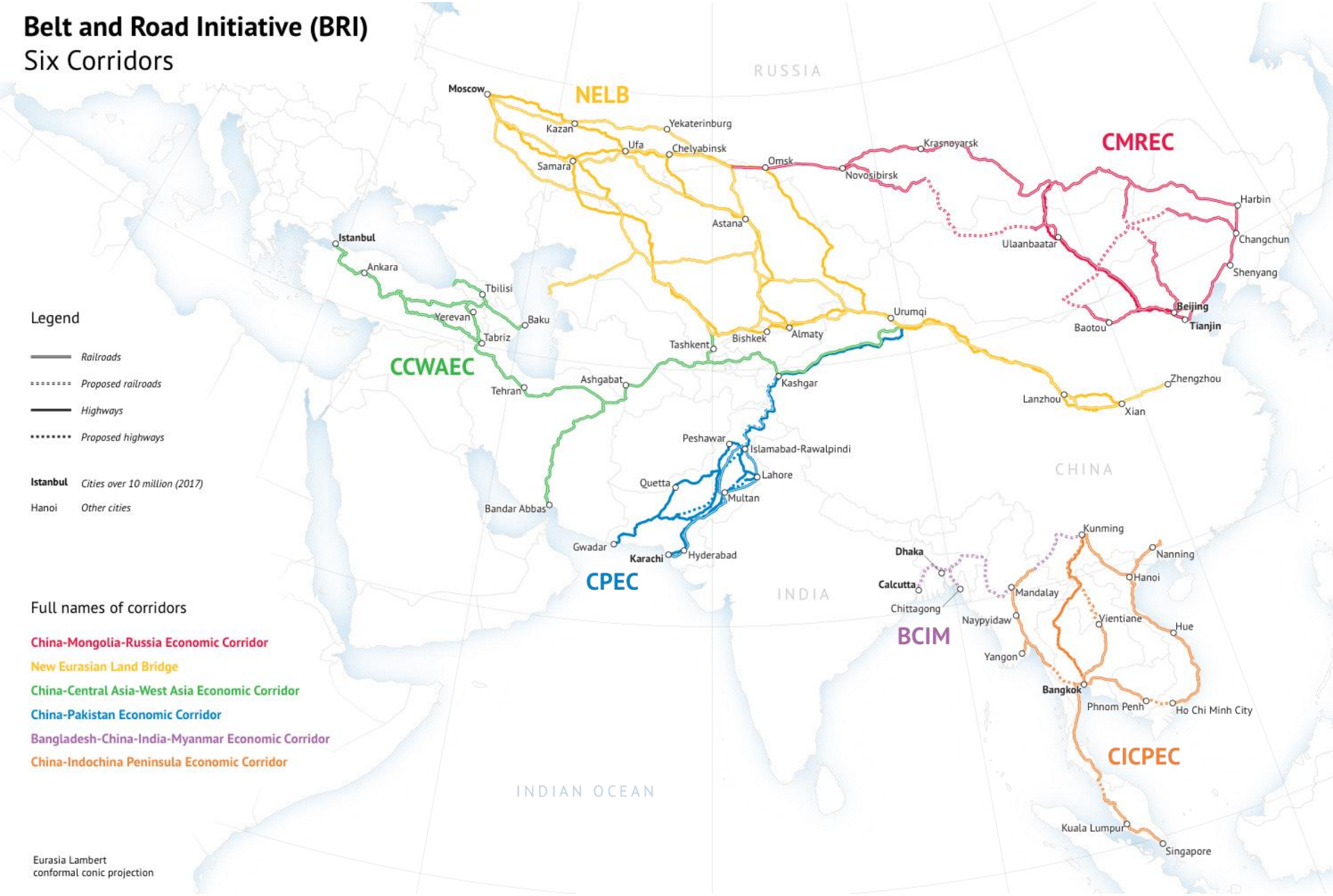
Territorial Development
Global Solutions Group

THE WORLD BANK

geospatial development happens somewhere

Valuable inputs from Keith Garrett, Mathilde Lebrand, Katie McWilliams , Megha Mukim, and Sasha Trubetskoy

Belt and Road Initiative (BRI)
Six Corridors

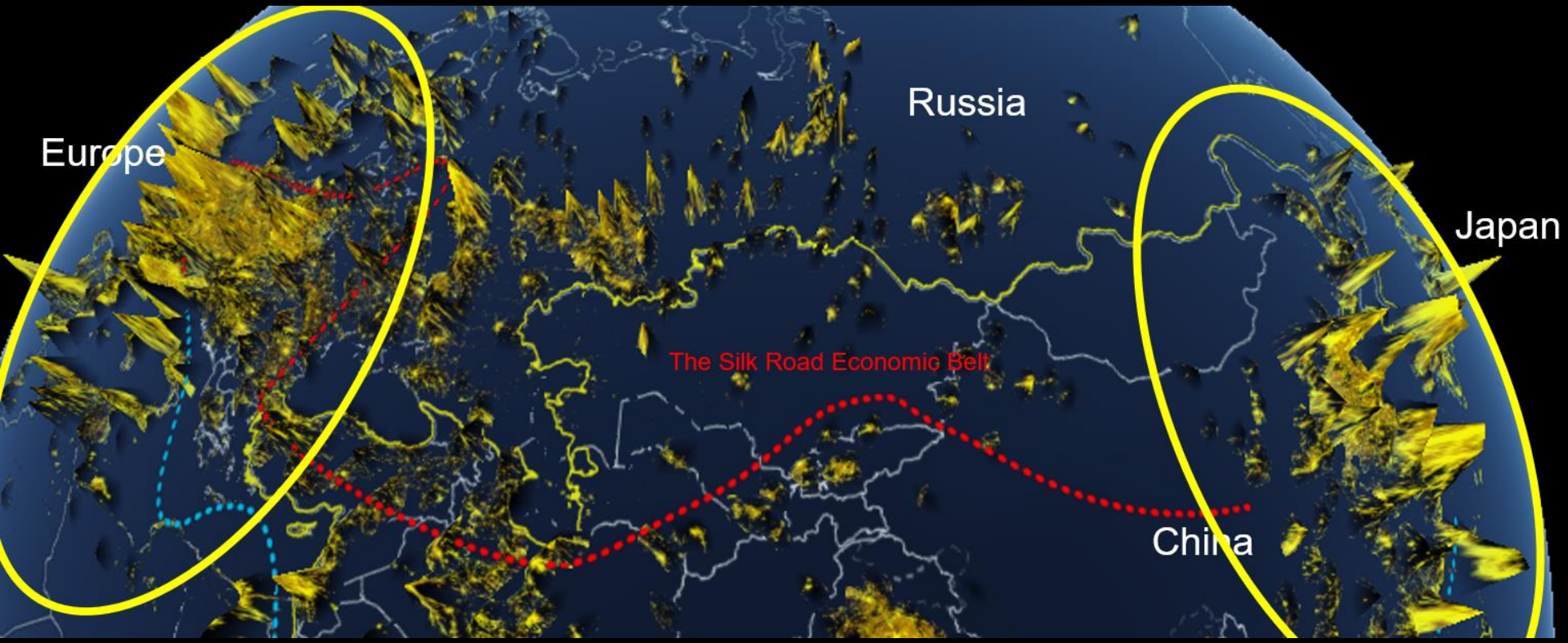


SOURCE: Adapted from China-Britain Business Council, “One Belt-One Road” using Open Street Map and UN Urbanization Prospects

Overview :

Nighttime Light Spikes 2013 (1-km Grid),
the Silk Road Economic Belt,
& the 21st-Century Maritime Silk Road

Connecting two major economic masses



Data Source: NOAA: National Oceanic and Atmospheric Administration (2017)
https://ngdc.noaa.gov/eog/dmsp/downloadV4composites.html; World Bank Official Borders

NOTE: DMSP-OLS nighttime light is saturated at value 64,
so the maximum height of all exaggerating spikes is same.

Planned BRI Investments include…

	Example
Roads	• Hazara (E-35) Expressway: In 2015, DfID and ADB partner with China Pakistan Economic Corridor (CPEC) to invest $327 million in a 59km section linking China to Pakistan
Rail	• Khorgos-Aktau Railway: Announced in 2015 to connect China to the Caspian Sea through Kazakhstan
Pipelines	• Central Asia-China Gas Pipeline, Line D: China signed agreements with Uzbekistan, Tajikistan and Kyrgyzstan to build line in 2013. Line D is expected to raise Turkmenistan's gas export capacity to China by 54%
Trade Facilitation	• Khorgos Gateway: A dry port on the China-Kazakh border began operations in August 2015. China's Jiangsu province has agreed to invest more than $600m over five years to build logistics and industrial zones around it

SOURCE: Financial Times, the Economist

The BRI connects 160+ cities with a wide range of incomes and growth trajectories

Corridor	Cities	Average Annual Population Growth		Accelerating Population Growth	Average Annual GDP Growth	Average GDP per capita
	Count	*2000-2015*	*2015-2030 (F)*	*Percent*	*2000-2012*	*USD (2012)*
Bangladesh-China-India-Myanmar	8	4.3%	2.9%	25%	7.2%	1,267
China-Indochina Peninsula	28	3.6%	2.3%	7%	12.1%	6,271
China-Pakistan	20	3.5%	2.9%	10%	5.8%	7,965
China-Central Asia-West Asia	31	2.3%	1.5%	32%	7.3%	13,273
China-Mongolia-Russia	27	2.3%	1.4%	19%	12.9%	1,623
New Eurasian Land Bridge	46	1.6%	1.0%	20%	11.8%	11,179
Grand Total	**160**	**2.6%**	**1.7%**	**19%**	**9.8%**	**7,517**

SOURCE: UN Urbanization Prospects, Oxford Economics. Cities indicated are those within 20km of a BRI road or rail corridor with population over 300,000. GDP data not available for some cities

How will benefits be spread?

- **Effects**: trade flows, location of economic activity and movements of people across regions

- Will benefits will be spread across participating economies or will we see concentration of benefits in a few places?

- Recall Mexico and NAFTA
  - *Changes in internal geography*

- New Economic Geography
  - Scale
  - Specialization
  - Agglomeration

Table 3: Mexico Regional Shares (%) of Manufacturing Employment, 1930-1993

Region	1930	1940	1950	1960	1970	1980	1985	1993
Border	--	--	--	--	18.6	21.0	23.5	29.8
North	--	--	--	--	5.5	5.1	5.4	6.0
Center	--	--	--	--	21.8	22.9	27.6	27.4
Mexico City	19.0	24.7	25.0	46.0	47.3	46.4	37.4	28.7
South	--	--	--	--	6.8	6.2	6.1	8.1

Source: Hanson (1997a, 1998b).

Notes. The border region contains states on the Mexico-U.S. border; the north region contains the next tier of northern states; the center region contains the states that surround Mexico City; the Mexico City region contains the two states that the city's metropolitan expanse occupies; and the south region contains states south of Mexico City.

Hanson, Gordon. 1998. “North American Economic Integration and Industry Location.” Oxford Review of Economic Policy 14 (2). Oxford University Press: 30–44.

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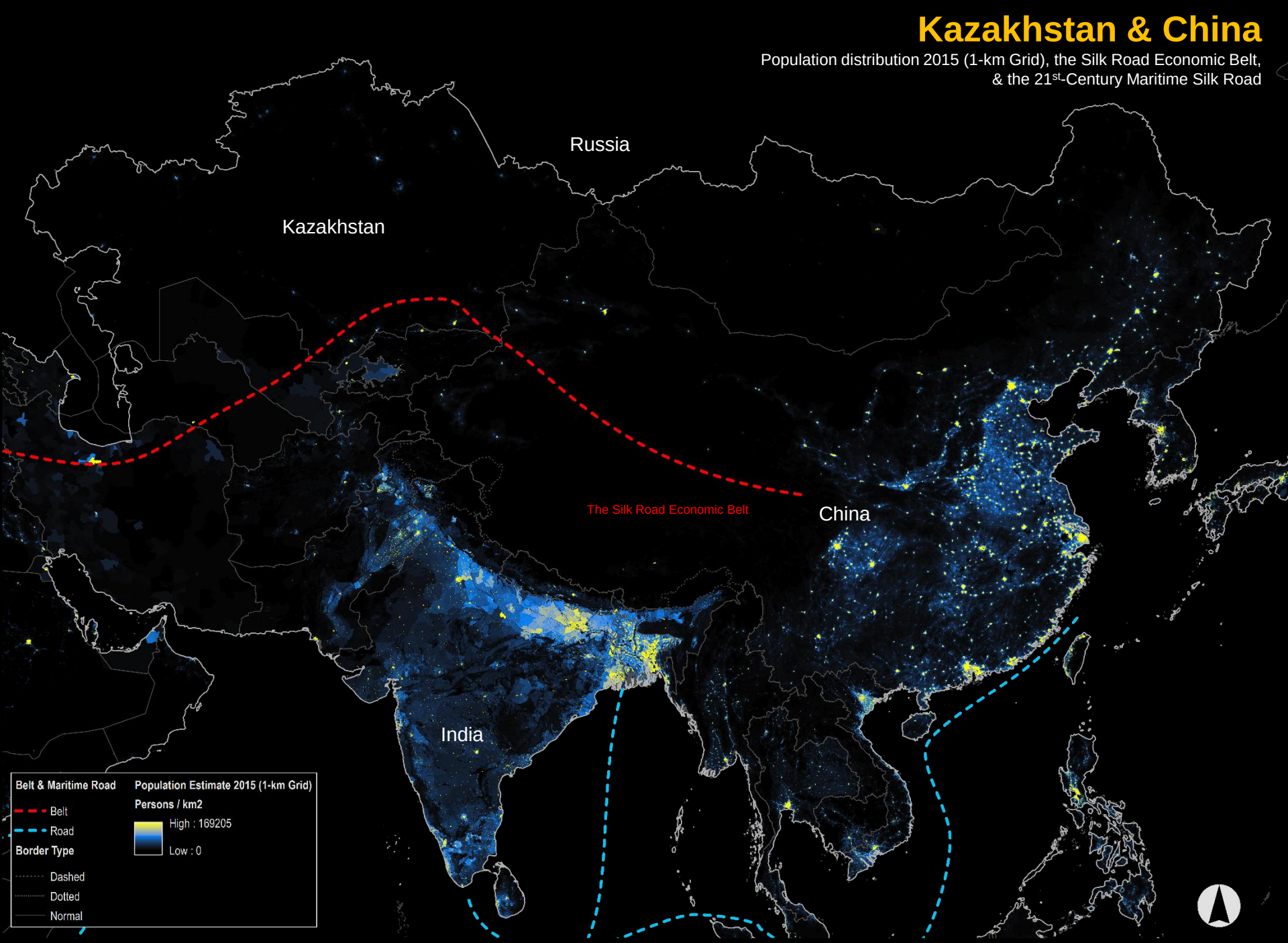
Who Wins, Who loses? Looking at Central Asia

- Which regions/cities will benefit from a decline in costs of trading with China?
- Will better transport infrastructure and services induce economic activities to relocate closer towards China's borders?
- Will some regions (national and sub-nationals) lose (absolutely or relatively) from the new BRI corridors?
- Are there complementary policies and investments that can get more places to benefit from BRI projects?

Kazakhstan & China

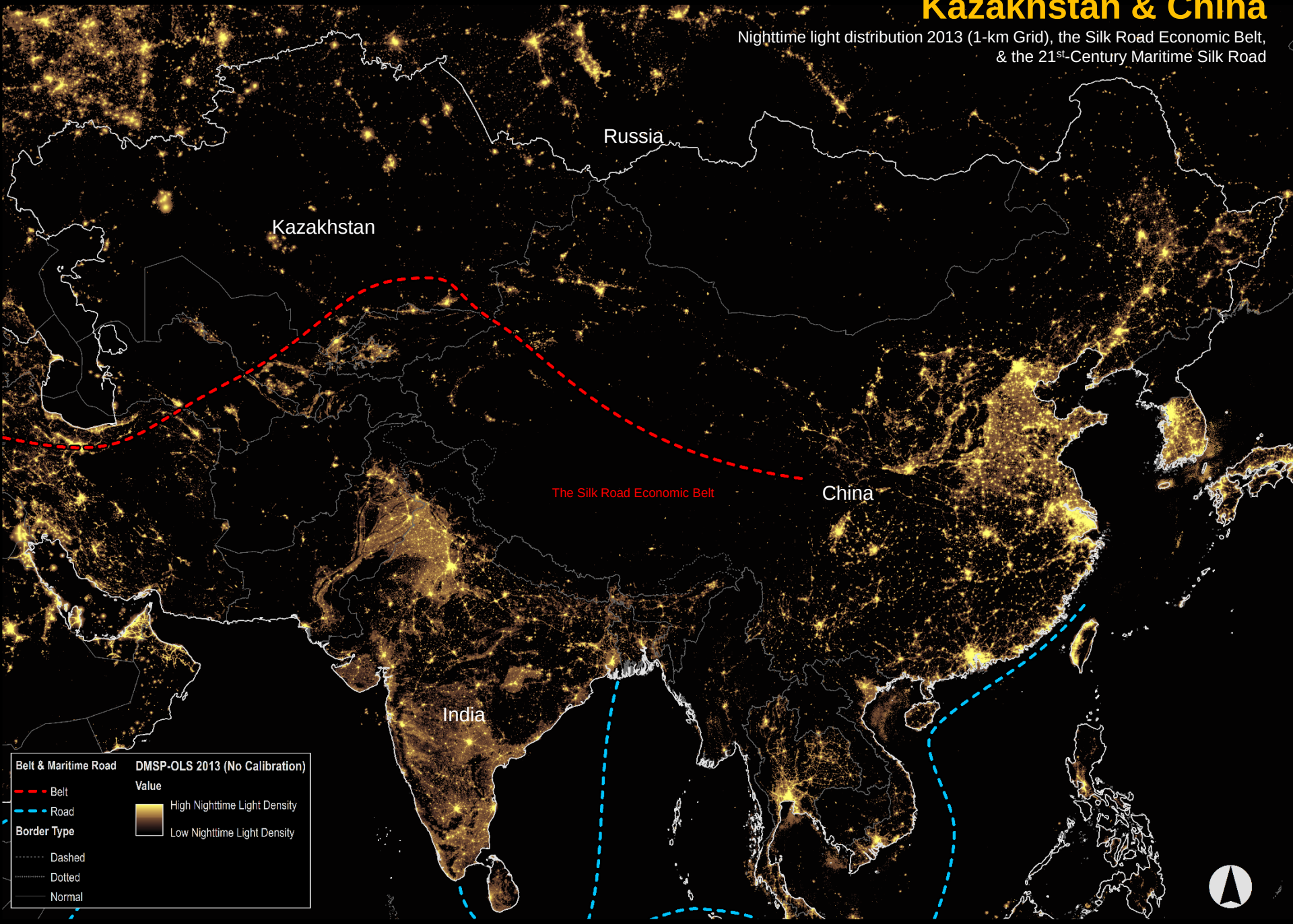
Population distribution 2015 (1-km Grid), the Silk Road Economic Belt, & the 21st-Century Maritime Silk Road



Data Source: WorldPop (2017) * Data is available only within the extent specified; World Bank Official Borders

Kazakhstan & China

Nighttime light distribution 2013 (1-km Grid), the Silk Road Economic Belt, & the 21st-Century Maritime Silk Road



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Kazakhstan & China

Nighttime light distribution 2013 (1-km Grid), the Silk Road Economic Belt, & the 21st-Century Maritime Silk Road

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What do we know about the location of economic activities ?

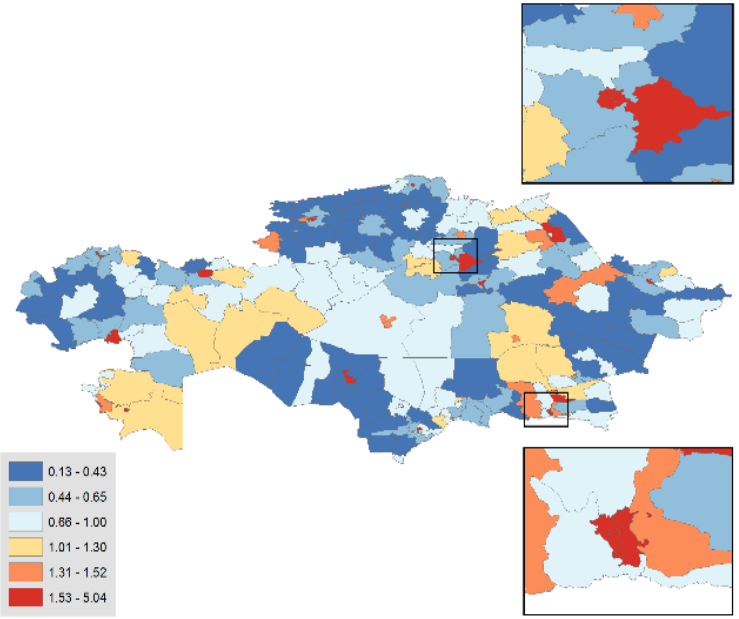
- 3 stylized facts for Kazakhstan: proximity to trade hubs is associated with
  - high land rents relative to wages;
  - high population density;
  - and structural transformation away from agriculture.

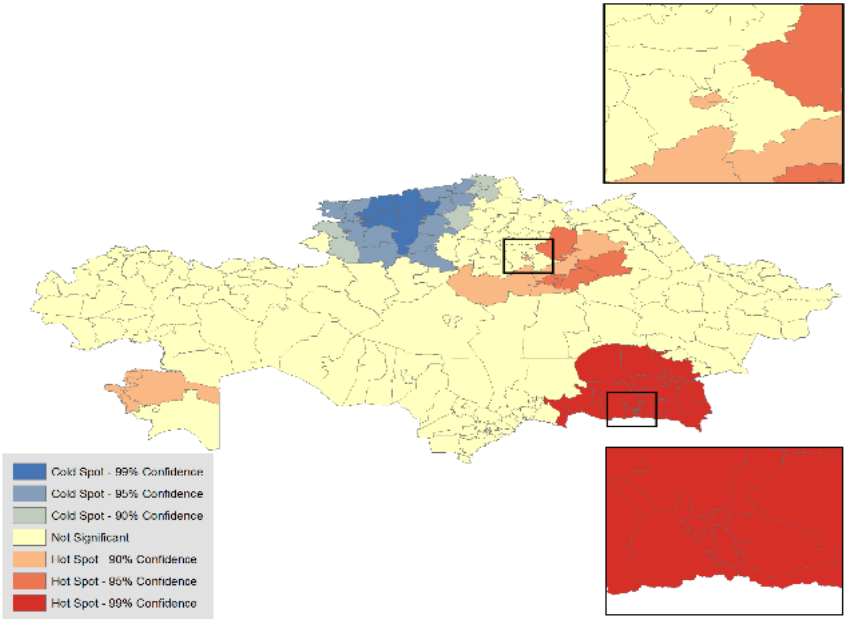
- This can be explained by the “spatial Balassa-Samuelson” effect.

Structural transformation and spatial effects

Stylized fact 1: High rents in districts close to trade hubs

Index of Imputed Rent (left), Hot-Cold Spot Map of Imputed Rent (right)

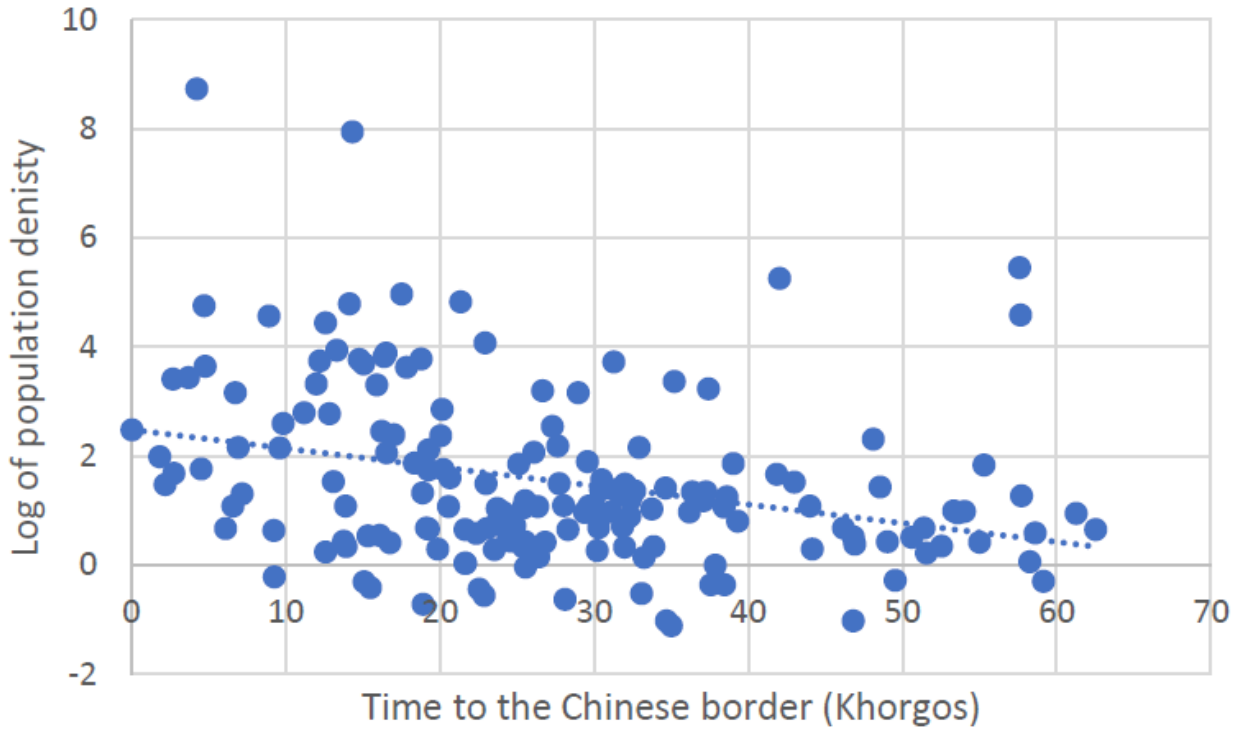




Source: Seitz (2017) "Urbanization in Kazakhstan" Data from The Household Budget Survey of Kazakhstan, Author's Calculations.

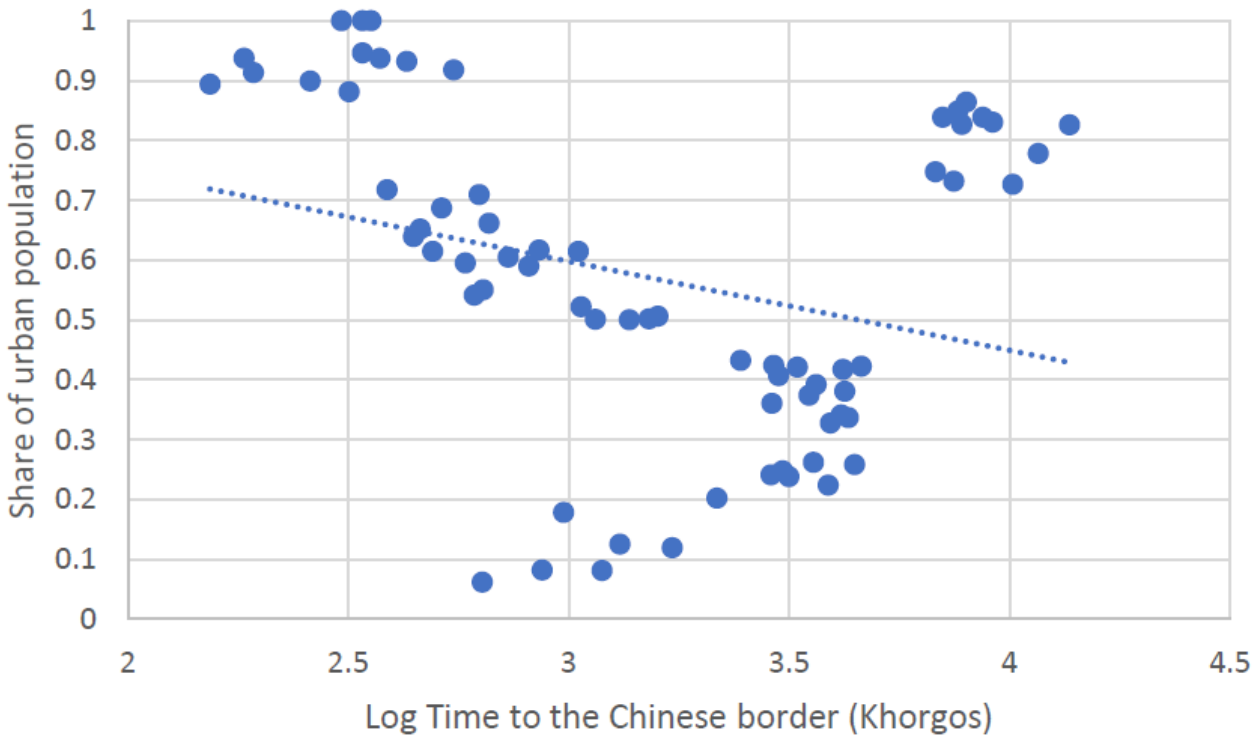
Structural transformation and spatial effects

Stylized fact 2: Proximity to trade hubs is associated with high population density



Structural transformation and spatial effects

Stylized fact 3: Proximity to trade hubs is associated with structural transformation away from agriculture



What explains the location of activities?

***Economic intuition*:**

The spatial Balassa-Samuelson mechanism applied to districts

- Differences in relative prices drive the pattern of development.
  - Locations with low trade costs to international markets feature a high relative price in the non-agriculture sector and high land rents relative to wages (Fajgelbaum et al. 2016).

- *The spatial effects*: proximity to trade hubs is associated with high population density, high land rents relative to wages and structural transformation away from agriculture.

BRI investments in Kazakhstan

- BRI investments aim at improving the quality of roads, railways, and at reducing the border costs.

- Kazakhstan and the BRI
  - Several land corridors go through Kazakhstan.
  - High border costs between Kazakhstan and its neighbors.
  - Expected increase and diversification of exports through access to the Chinese market for example.

Purpose of the exercise: to what extent external integration through the BRI will differently affect the regions?

Who Wins, Who loses?
Some preliminary counterfactual analysis

Simulations - time spent at the border is cut to levels closer to those observed in custom unions.

- Improving the domestic transport infrastructure would have a minimal effect without taking into account the border costs (administrative costs, delays and uncertainty).
- Scenario 1 of the BRI: border time between Kazakhstan and China (Khorgos Gateway).

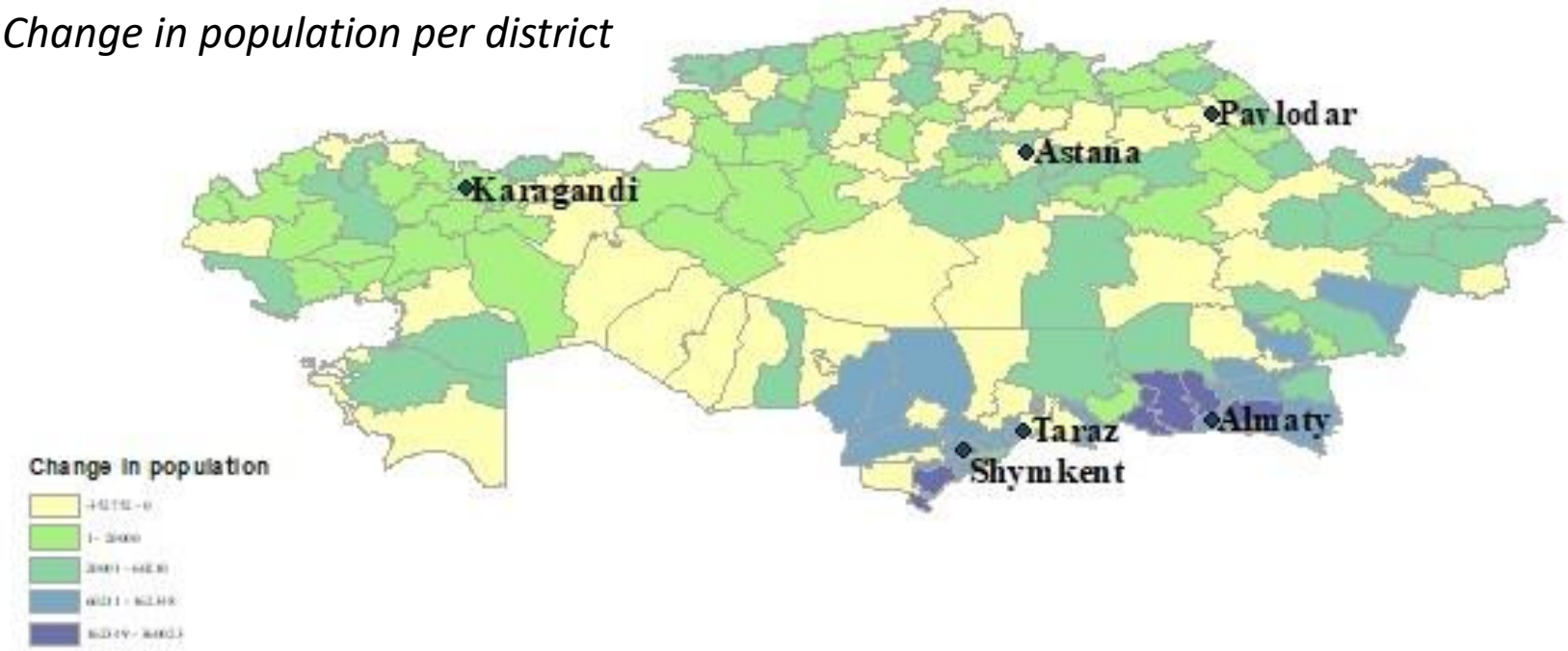
Method: use of a general equilibrium model to predict effects (Fajgelbaum & Redding 2016)

- Develop counterfactuals and study the impact of alternative scenarios.
- The potential spatially differentiated effects of BRI initiatives on structural transformation, i.e.
  - economic activities optimally moving from one sector to another (and across locations), and
  - movements of workers across regions in Central Asia in response to major changes in domestic an external transport costs.

Spatially differential benefits of opening the border with China

The impact of the distance to the Chinese border will become stronger after the BRI…

Change in population per district

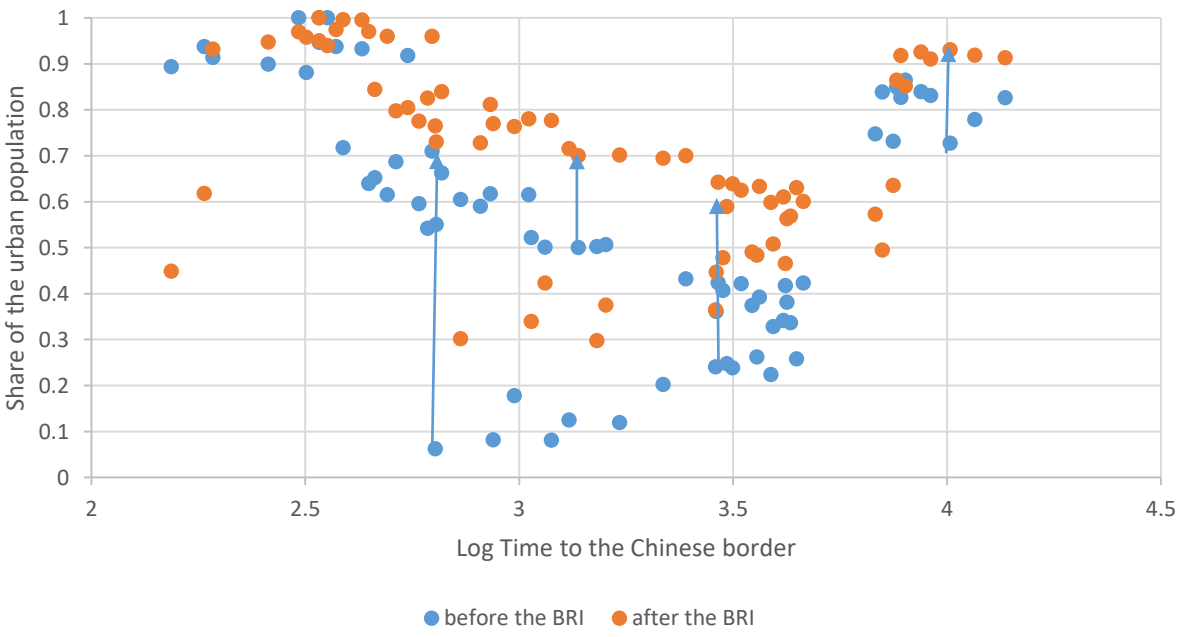


…and drives people in regions close to the border.

Spatially differential benefits of opening the border with China

- Structural changes away from agriculture to non-agricultural activities, measured through the increase in urban population.

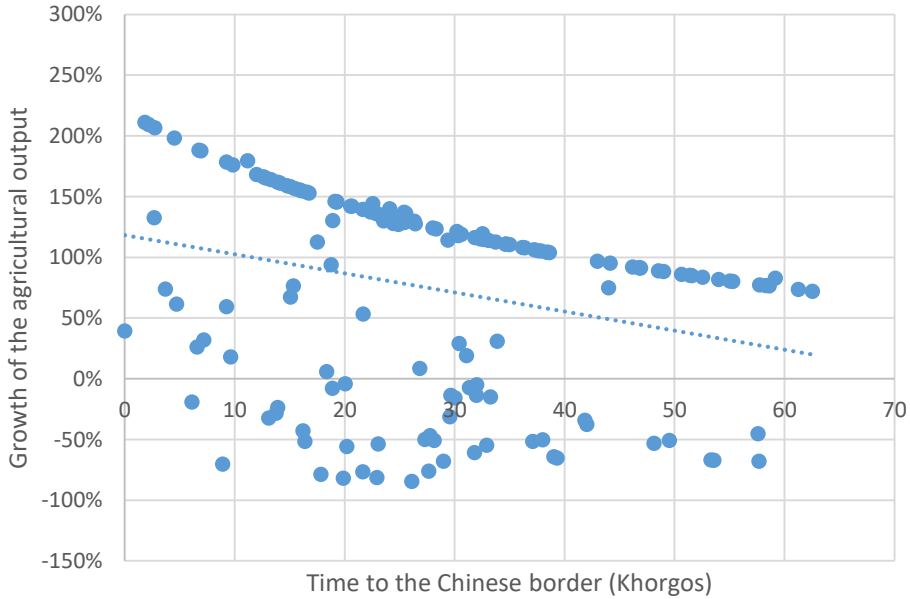
After a reduction of the border cost, urban population increases in most regions



Spatially differential benefits of opening the border with China

- The impact of the distance to the Chinese border as a comparative advantage to export agricultural products will become stronger after the BRI.

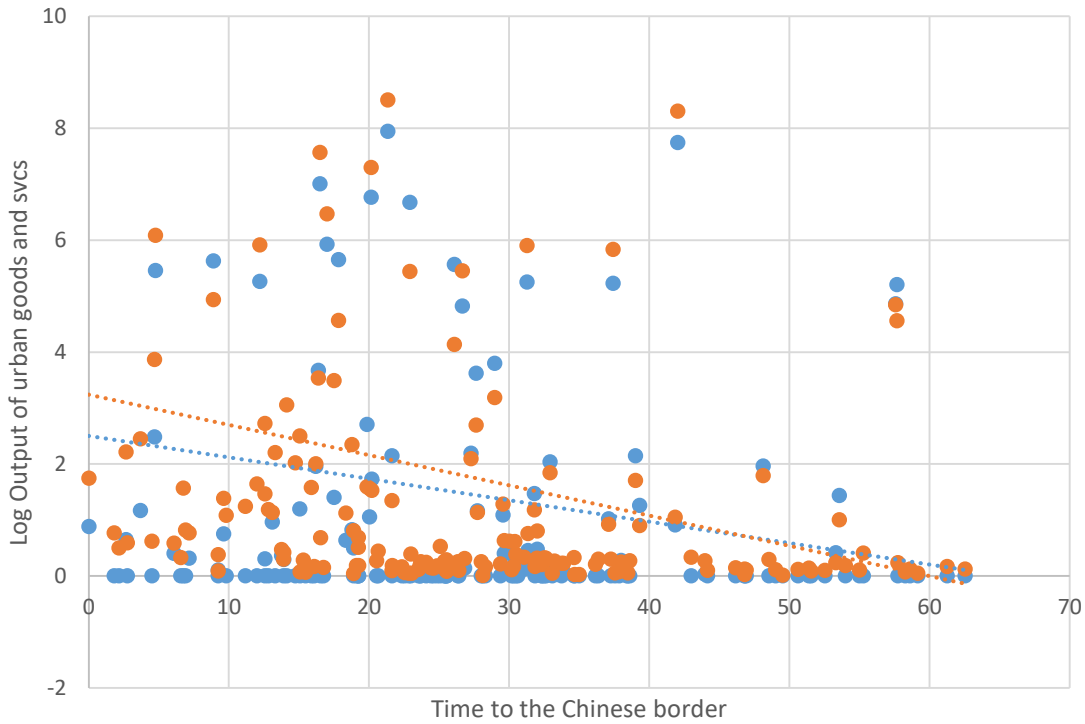
The districts that are the closest to the Chinese border will benefit the most in terms of growing agricultural production.



Spatially differential benefits of opening the border with China

- Increase in the spatial gradient of the production of urban goods and services
- Likely economic concentration

After a reduction of the border cost, the concentration of the production of urban goods and services increases.



Issues for public policy

- BRI investments likely to support structural transformation along with economic concentration
  - Large cities near border areas likely to flourish
  - Cities without comparative advantage can lose out
- How can cities prepare to take advantage of potential economic changes?
  - Complementary investments and policies
- How can welfare be improved in areas that may get left behind?
  - Tax and transfer policies; supporting public services

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What are key complementary policies and investments?

- **Policy environment – land, services and local infrastructure** policy on urban land-use and ability to build, e.g. development of markets for land and supporting urban planning; place-specific *tax and regulation, etc.*

- ***The business ecosystem:*** Related firms – does the place have a stock of firms and other productive activities, in particular its suppliers and customers; market size; the size of markets to which the place is well connected; business regulations, skills,

- ***Institutions and governance:*** *capability and remit of various levels of government*

- ***Supporting policies are complements NOT substitutes*** – For example, adding more utilities or transport may have no effect if other conditions are not in place (such as land availability), or may trigger a large response if conditions are met.

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- How can welfare be improved in areas that may get left behind?
  - Tax and transfer policies; supporting public services
  - Domestic infrastructure network
  - Other local infrastructure ?

Data Source: Esri Map & Data (2011, Updated 2017); World Bank Official Borders

Land Transport & the Silk Road Economic Belt:

Global Road Network (2017) & the Silk Road Economic Belt