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The Growth and Welfare Effects of the Belt and Road Initiative on East Asia Pacific Countries [1]

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Introduction

The Belt and Road Initiative (BRI) is a development strategy proposed by China that focuses on connectivity and cooperation on a trans-continental scale. Although its scope is still taking shape, the initiative roughly follows and expands the old Silk Road on the land side and complements it with a maritime part to build a series of economic corridors with the goal of boosting trade and stimulating economic growth across Asia, Europe and Eastern Africa. The range of activities that will be part of the BRI is very wide, including policy coordination, infrastructure, trade and investment, financial and people-to-people exchanges. In this Box, we focus on the consequences of transport infrastructure linked with the Belt and Road Initiative and quantify the associated decrease in shipment time and trade costs and ultimately estimate the impact on GDP and welfare for countries in the East Asia Pacific region.

Implementation

The implementation of all BRI transport projects will have a systemic impact on shipping time across the world, with the East

Asia Pacific region reaping the largest gains. Using a combination of precisely geo-localized information on BRI transport projects and a network algorithm, it is possible to compute the shipping time before and after the BRI between all country pairs in the world. Results show that shipping time is expected to decrease by an average of 1.2% across all country pairs in the world. Countries located in the East Asia and Pacific region are expected to experience the largest gains, with an average reduction of shipping time to other countries in the world of 2.31%, including a gain of 4.35% with respect to countries in South Asia region and 2.87% toward countries in Middle East and North Africa.[2]

The associated reduction in trade costs is a function of the "time sensitivity" of each sector, and results show that East Asia Pacific countries are again expected to experience large gains. Using estimated "value of time" from the literature, the reductions in trade costs exhibit significant geographical heterogeneity, driven by the different export and import basket across country-pairs. Those trade cost reductions will have an impact on production costs for all countries and will change the distribution of comparative advantage. The effects in terms of GDP and welfare can be
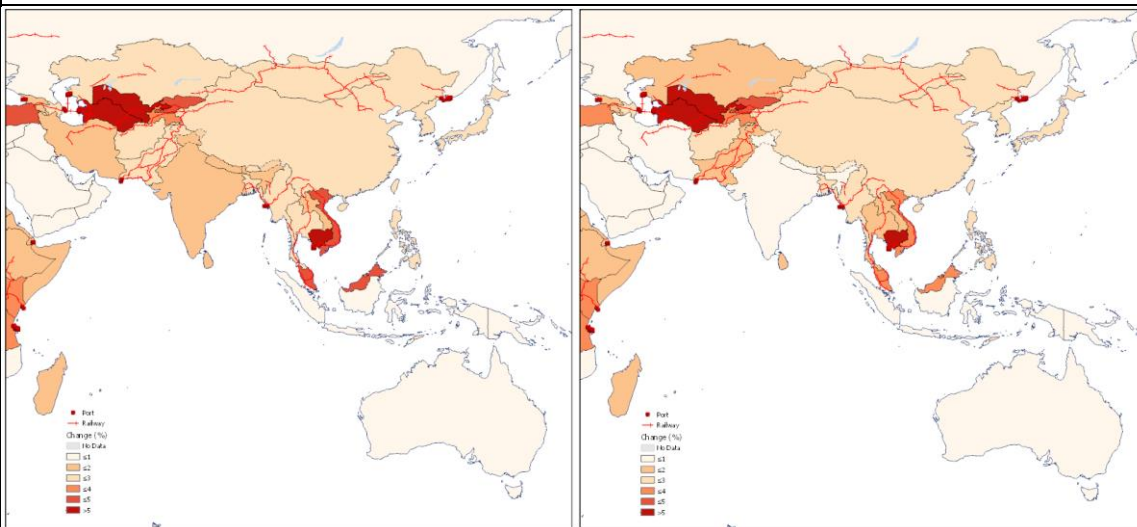
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[2] Those numbers were constructed by taking the average decrease in shipping time between all pairs of countries where the origin country belongs to East Asia Pacific and the destination country belongs to South Asia or Middle East and North Africa, respectively.

estimated using general equilibrium modeling to account for the interaction between many forces.

Figure 1. Average percentage change in shipping time (left) and trade costs (right) of East Asia and Pacific Countries due to the BRI.

Sources: Based on de Soyres, Mulabdic and Ruta (2018). For each country, the decrease in shipping time and trade cost is the average taken with respect to all other countries in the world.

Results

Results from a quantitative trade model indicate that the Belt and Road Initiative will increase GDP between 2.6% and 3.9% on average for countries in "developing EAP", which is higher than the expected gains for the world as a whole. [3] Those effects are very heterogenous across countries, with Cambodia, Vietnam and Malaysia experiencing larger gains in GDP. The magnitude of these effects is due to the combination of two forces: first, the nature of transport networks implies that increasing the efficiency of a given rail line or a port results in a trade cost reduction for *all countries* using the infrastructure. Second, large production linkages and regional value chains

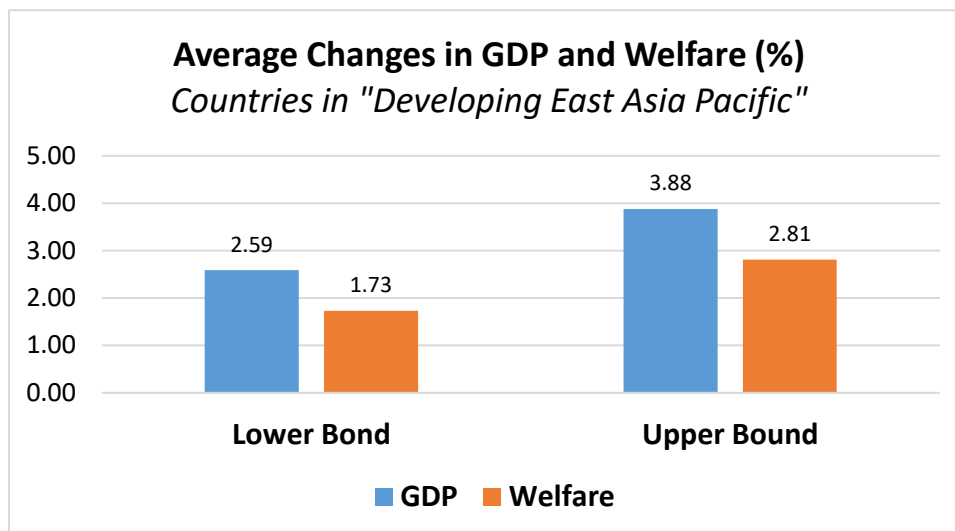in the EAP region contribute to an important amplification of the effects.

Welfare effects, while large on average, are mitigated by the cost of building those infrastructure projects. Many countries in the world will benefit from new or upgraded infrastructure and faster shipping, but only a few countries are expected to pay for those improvements. Resources devoted to paying for the project cannot be used for consumption, which reduces welfare gains and can even lead to welfare losses depending on the financing scheme. This creates a discrepancy between the geographical distribution of costs and benefits and can impact the way the initiative is perceived in different countries. For example, the model predicts that if Mongolia were to pay

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[3] Those numbers are based on de Soyres, Mulabdic and Ruta (2018) which builds a general equilibrium quantitative model along the lines of Caliendo and Parro (2014). They rely on assumptions described precisely in the paper and do not necessarily

represent the view of the World Bank. Countries in "Developing East Asia Pacific" included in the analysis are Mongolia, Indonesia, China, Lao PDR, Philippines, Thailand, Malaysia, Vietnam and Cambodia.

the entire cost of its infrastructure improvements linked to the BRI, it would experience larger costs than the gains associated with the improved access to both export and import markets.

Figure 2. Average percentage changes in GDP and welfare for countries in "Developing East Asia Pacific".

Average Changes in GDP and Welfare (%)
Countries in "Developing East Asia Pacific"

Sources: Based on simulations presented in de Soyres, Mulabdic and Ruta (2018). Countries in "Developing East Asia Pacific" included in the analysis are Mongolia, Indonesia, China, Lao PDR, Philippines, Thailand, Malaysia, Vietnam and Cambodia.

Conclusion

The potential benefits and costs highlighted above have been built using a specific set of assumptions that should be acknowledged. First, the analysis focuses on infrastructure transport projects that can be mapped precisely and hence represent only a subset of all projects currently being developed under the BRI umbrella. Second, while the structure of the model accounts for complex production linkages across countries and for possible import and export substations leading to a reallocation of comparative advantage, it abstracts from other elements such as technology diffusion, foreign direct investment or capital accumulation that could affect GDP and welfare gains. Finally, both the exact cost and the distribution of payment for the projects under consideration is not generally known.

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