

# DÁVID KRISZTIÁN NAGY

CREI

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## Contact Information

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## Employment

Junior Researcher, CREI, 2016 to present  
Adjunct Professor, Universitat Pompeu Fabra and Affiliated Professor, Barcelona GSE, 2016 to present  
Co-Editor, Regional Science and Urban Economics, 2020 to present  
Visiting Professor, Columbia University, Spring 2019  
Visiting Scholar, Minneapolis Fed Opportunity and Inclusive Growth Institute, September and October 2017

## Education

Princeton University, 2010 to 2016  
Ph.D. in Economics  
Thesis Title: “Essays in Economic Geography”

Central European University, Budapest, Hungary, 2008 to 2010  
M.A. in Economics (with distinction)

University of Pannonia (Pannon Egyetem), Veszprém, Hungary, 2003 to 2008  
MSc. in Economics (with distinction)

## Fields of Research

Primary Fields                      International Trade, Economic Geography  
Secondary Field                      Economic Growth

## Publications

“The geography of development” (with Klaus Desmet and Esteban Rossi-Hansberg). *Journal of Political Economy* 126(3), 903–983, 2018.  
“Asia’s geographic development” (with Klaus Desmet and Esteban Rossi-Hansberg). *Asian Development Review* 34(2), 1–24, 2017.  
“The effect of uncertainty on exports – A gravity approach” (with Ildikó Virág-Neumann, in Hungarian). *Külgazdaság* 57(3-4), 89–106, 2013.  
“Information sharing, risk premium, and interest rates – An international comparison” (with Iván Major, in Hungarian). *Hitelintézet Szemle* 7(3), 238–264, 2007.

## Working Papers

*“Hinterlands, city formation and growth: Evidence from the U.S. westward expansion”*

Revised and resubmitted, *Review of Economic Studies*.

I study how geography shaped city formation and aggregate development in the United States prior to the Civil War. To guide my analysis, I first present a conjecture that cities’ farm hinterlands fostered both city development and aggregate growth: the hinterland hypothesis. The hinterland hypothesis has rich implications on how various elements of U.S. geography – railroads, changes in U.S. political borders, increasing U.S. population, and international trade – affected city formation and U.S. growth. To quantitatively evaluate the hinterland hypothesis and its implications, I assemble a novel historical dataset on population, trading routes and agricultural productivity at a high spatial resolution, and combine it with a dynamic quantitative model of economic geography. I find evidence for the hinterland hypothesis by showing that the model can quantitatively replicate the key patterns of U.S. urbanization and city formation. Finally, I conduct a series of counterfactuals in the model to quantify the effect of geography on cities and growth, guided by the implications of the hinterland hypothesis. Results indicate that railroads were responsible for 8.2% of urban population in 1860 and for 27% of real GDP growth between 1830 and 1860. The effect of international trade was similar in magnitude, while population growth slowed down urbanization and GDP growth. The effect of political border changes was small during the period.

*“Evaluating the economic cost of coastal flooding”* (with Klaus Desmet, Robert E. Kopp, Scott A. Kulp, Michael Oppenheimer, Esteban Rossi-Hansberg and Benjamin H. Strauss)

Accepted, *American Economic Journal: Macroeconomics*.

Sea-level rise and ensuing permanent coastal inundation will cause spatial shifts in population and economic activity over the next 200 years. Using a highly spatially disaggregated, dynamic model of the world economy that accounts for the dynamics of migration, trade, and innovation, this paper estimates the consequences of probabilistic projections of local sea-level changes under different emissions scenarios. Under an intermediate greenhouse gas concentration trajectory, permanent flooding is projected to reduce global real GDP by an average of 0.19% in present value terms, with welfare declining by 0.24% as people move to places with less attractive amenities. By the year 2200 a projected 1.46% of world population will be displaced. Losses in many coastal localities are more than an order of magnitude larger, with some low-lying urban areas particularly hard hit. When ignoring the dynamic economic adaptation of investment and migration to flooding, the loss in real GDP in 2200 increases from 0.11% to 4.5%. This shows the importance of including dynamic adaptation in future loss models.

*“All aboard: The aggregate effects of port development”*

This paper studies the distributional and aggregate economic effects of new port technologies developed in the second half of the 20<sup>th</sup> century. We show that new technologies have led to a significant reallocation of shipping activity from large to small cities. This was driven by a land price mechanism; as new port technologies are more land-intensive, ports moved from large, high land price cities to smaller, lower land price ones. We add endogenous port development to a standard quantitative model of cross-city trade to account for both the benefits and the costs of port development. According to the model, the adoption of new port technologies leads to benefits through increasing market access but is costly, requiring the extensive use of land, suggesting a reallocation of shipping activities towards cities with low land prices and thus net gains from new

port technologies that are heterogeneous across cities. Counterfactual results suggest that new port technologies led to sizeable aggregate gains for the world economy, with substantial heterogeneity in the effects across countries. More generally, accounting for the costs of port infrastructure development endogenously has the potential to alter the size and distribution of the gains from trade.

*“Trade and urbanization: Evidence from Hungary”*

Revise and resubmit, *American Economic Journal: Microeconomics*.

I study how trade affects urbanization and welfare. To guide my investigation, I first develop a quantitative model of economic geography in which benefits from trading drive agglomeration around locations where trading activity takes place. As a result, increasing trade leads to urbanization and welfare gains. The model provides a simple formula according to which the degree of urbanization around trading locations is a sufficient statistic for the real income gains from trade. Next, I estimate the model using exogenous variation in trade due to the redrawing of Hungary’s borders after the First World War. Besides explaining the decrease in urbanization near the country’s new borders, the model also provides a tool to measure real income losses at any location, which are unobserved in the data. I find that the effects of the new borders on urbanization and real income are substantially heterogeneous across locations, due to the rich geography of frictions to trade and labor mobility.

*“Bridges”* (with Roc Armenter and Miklós Koren)

We build a continuous-space theory of trade in which people in a region agglomerate to exploit trading opportunities with another region. The regions are separated by a river, which can be crossed anywhere, but more cheaply at bridges. In the model, most trade takes place via bridges, leading to a key prediction that population density declines with distance to the bridge. We derive additional predictions about the spatial distribution of population and test them on current high-resolution population density data around twelve major American rivers. The data are mostly consistent with our model. In a historical event study of 19th-century bridges on these rivers, we find that the neighborhood of bridges developed faster after the bridge was built. Also, the two sides of the bridge converged in development, highlighting the connecting role of the bridge. More generally, our results suggest that economies of density arising from transport infrastructure can help explain why and where people agglomerate.

## **Work in Progress**

*“Human capital accumulation in space”* (with Klaus Desmet and Esteban Rossi-Hansberg)

*“The long-run consequences of specialization”* (with Stephan Heblich, Alex Trew and Yanos Zylberberg)

## **Conference and Seminar Presentations**

- 2019 Columbia, Penn State, University of Manchester, University of Murcia, CESifo Global Area Conference, Paris Trade Seminar, NES Moscow, NBER Urban Economics, Yale, Firm Location and Economic Geography Workshop (Paris), CURE (London), EIIT (Boulder, CO), Singapore Management University Conference in Urban and Regional Economics
- 2018 Universitat de Barcelona, Tel Aviv University, Hong Kong University, Singapore Management University, Universitat Autònoma de Barcelona, SED, Cities and the Environment Workshop (Potsdam), ETH Zürich, 13<sup>th</sup> Meeting of the Urban Economics Association, University of Padua, LSE

- 2017 Transpyrenean Macro Workshop, NBER International Trade and Investment, 1<sup>st</sup> Conference of the Catalan Economic Society, Barcelona Summer Forum, SED, SAET, NBER Urban Economics, KTI Nyári Műhely, Columbia, Minneapolis Fed, Universitat Autònoma de Barcelona
- 2016 Philadelphia Fed, Barcelona Summer Forum, SED, North American Meetings of the Regional Science Association, University of St. Andrews, UC Berkeley, RIDGE Uruguay
- 2015 Colloque sur la croissance économique et le développement (Montréal), Minneapolis Fed Junior Scholar Conference, European Winter Meeting of the Econometric Society, MKE Conference

### Teaching Experience

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|--------------------------------------|---|
| Spring 2019                          | Topics in Trade and Growth, Columbia University               |
| Spring 2017, 2018; Winter 2019, 2020 | Topics in Economic Geography, Universitat Pompeu Fabra        |
| Fall 2018, 2019                      | Advanced Macro I (Trade and Growth), Universitat Pompeu Fabra |
| Spring 2013, 2014, 2016              | ECO 202, Statistics and Data Analysis, Princeton University   |
| Fall 2015                            | ECO 100, Introduction to Microeconomics, Princeton University |
| Fall 2013                            | ECO 310, Microeconomic Theory, Princeton University           |
| Fall 2006 to Fall 2008               | Statistics I and II, University of Pannonia                   |

### Professional Activities

Research Affiliate, CEPR International Trade and Regional Economics and Macroeconomics and Growth Research Network Affiliate, CESifo

Referee for: AEJ Applied Economics, AEJ Macroeconomics, Canadian Journal of Economics, Dynamic Games and Applications, Economic Development and Cultural Change, Economic Theory, International Economic Review, Journal of Development Economics, Journal of Economic Dynamics and Control, Journal of Economic Geography, Journal of Economic Theory, Journal of the European Economic Association, Journal of Geographical Systems, Journal of International Economics, Journal of Urban Economics, National Tax Journal, Quarterly Journal of Economics, Review of Economic Dynamics, Review of Economic Studies, Review of International Economics.

### Honors, Scholarships and Fellowships

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|--------------|---|
| 2019         | Robert E. Lucas Jr. Prize, Journal of Political Economy   |
| 2019         | Distinguished CESifo Affiliate Prize, CESifo Global Area Conference   |
| 2015 to 2016 | Fellowship, International Economics Section, Princeton University   |
| 2014 to 2015 | Fellowship of Woodrow Wilson Scholars, Princeton University   |
| 2010 to 2014 | Princeton University Graduate Fellowship  |
| 2013         | Harry G. A. Seggerman '49 Prize in International Economics, Princeton University  |
| 2013         | Marimar & Cristina Torres Award for best third-year paper, Princeton University   |
| 2010         | Outstanding Academic Achievement Award, Central European University   |
| 2008         | Academic Pro-Rector's Excellence Award, Central European University   |
| 2007         | 1 <sup>st</sup> prize with Rita Németh at the National Conference of Scientific Students' Associations (OTDK), Miskolc, Hungary |