



# New Frontiers in Urban Economics Research: A personal view

Gilles Duranton

University of Pennsylvania



Università  
Bocconi

IGIER  
Innocenzo Gasparini Institute  
for Economic Research



**BUILD** DEPARTMENT OF  
THE BUILT ENVIRONMENT

**AALBORG**  
UNIVERSITY



**BROWN**  
Population Studies  
and Training Center

# Introduction

## The challenge of a “panorama” talk

- ❖ Extraordinary growth of the UEA
- ❖ Time to take stock
  - For the older ones among us: see whether we have kept pace with recent progress
  - For the younger ones: present something I would have liked to listen to when younger
- ❖ Of course, this is a personal vision and a very selective review

p.s. Apologies if I did not list your preferred topic and/or did not cite your work

p.p.s. I am very worried about the questions in the end

# Introduction

- ❖ Models

- ❖ Data

- ❖ Empirical methods

- ❖ A few central topics that I find interesting

## Overview

# Modeling

Damned if you do,  
damned if you don't

Modeling is making a comeback in urban economics

- ❖ Some papers don't need models because the model has already been written (e.g. agglomeration economies) or is perhaps self-evident (e.g. many instances of program evaluation?)
- ❖ But we are now moving to novel and sometimes more complex (detailed) questions. They require a clear conceptualization
- ❖ With more data, we can also go deeper into existing questions and explore specific mechanisms. These mechanisms need to be clearly articulated
- ❖ But urban economics is also where everything interacts with everything else and we can never be sure we know the correct model
- ❖ Models are needed but model uncertainty reigns

# Modeling

## Data vs. models: What should come first?

People have very different opinions about this. *To caricature:*

- ❖ People who want to “estimate stuff” and let “the data talk” have essentially decided they did not care much (or, perhaps, could not care less) about modeling
- ❖ People who “bring their model to the data” have already decided that their model must be right and downplay (ignore) model uncertainty
- ❖ I’m pushing typical approaches to the extreme to show neither data nor model should dominate
- ❖ Ideally, use an initial model to guide the empirics and revise it as progress is made in the data exploration, etc.
- ❖ Model and data need to “emulsify”: this requires a lot of hard work and careful execution. (Diego Puga and I took seven years for our last paper...)
- ❖ *Still, use the model to discipline the empirics and vice-versa*

# Modeling

**Work more at the intensive margin and less at the extensive margin**

## Illustration: Quantitative Spatial Models

- ❖ Here is a cool new tool allowing its user to model any city and recover a lot of stuff (wages, amenities, etc.) for every part of a city from very little (e.g. commuting data) (Heblich et al., 2019, Kreindler and Miyauchi, 2019)
- ❖ For much spatial work, a good case can be made to use the tool off the shelf and add more to it. No need to re-invent the wheel after all
- ❖ At the same time, the approach still suffers from (serious) flaws. For instance: key variance parameter plays different role and for which we would like very different values (Ahlfeldt et al., 2015, Severen, 2023). This problem is not unique to QSM (Duranton and Puga, 2004)
- ❖ Failure to improve the core of the key model(s) will make their flaws increasingly salient and eventually they will get abandoned and forgotten (e.g. Hotelling type models, NEG, etc.)

# Modeling

## Some new modelling tools

Besides Ahfeldt et al., some recent progress:

- ❖ Dynamic location choices (Artuc et al., 2010, Caliendo et al., 2019)
- ❖ Dynamic spatial models with growth (Desmet and Rossi-Hansberg)
- ❖ Modeling of transportation networks (Allen, Arkolakis and co-authors)
- ❖ Modeling of cities and interactions between cities in models of many cities (following Henderson 1974: Henderson, Duranton, Puga, Davis, Diamond, Kleinman, Crews and others)
- ❖ Modeling heterogeneity: differences across groups (sorting models following Bayer, Timmins, and co-authors, Epple, Sieg and co-authors, Behrens et al., 2014, Eckhout et al., 2014)
- ❖ Modeling heterogeneity: differences within groups (Random utility: "Frechet" or Gumbel/logit, BLP inc. Diamond, 2016)

# Data

Historically, urban economics was born as a rationalization of obvious facts about cities and was a mostly theoretical enterprise (Alonso 1964 followed by Muth and Mills) and remained so for a long time, until

- ❖ Ed Glaeser showed us that many core urban questions could be explored with simple data (Glaeser et al., 1992, Ades and Glaeser, 1995, Cutler and Glaeser 1997, etc.)
- ❖ Then, large scale administrative data became available and urban economics could follow in the footsteps of labor economics...
- ❖ ... and exploit their methods (Moretti 2004, Combes et al. 2008, Holmes 1998, Bayer et al. 2007, Baum-Snow 2007, Duranton and Turner, 2012 and many others)
- ❖ Administrative data are becoming more accessible allowing for interesting links (Raj Chetty and co-authors, data from Sweden)

## Urban economics: the first empirical turn



# Data

**Empirical urban economics: we keep winning the data lottery**

In the last 20 years, the field has kept receiving new waves of data:

- ❖ Remote-sensing data allowing us to observe physical development (Burchfield et al. 2006, Harari, 2020, Baragwanath et al. 2021) and generate proxies for economic activity where data is missing (Henderson et al. 2012, Jean et al. 2016, Storeygard 2016, Kachiyan et al. 2022)
- ❖ Cellphones data and pings from other GPS devices to track fine features of the travel behavior of people (Couture et al. 2023, Jiang et al. 2022) or vehicles (Allen et al. 2023), uncover migration decisions and social networks (Buchel et al. 2020), innovation (Atkin et al., 2020), etc.

# Data

**Empirical urban economics: we really keep winning the data lottery**

In the last 20 years the field has kept receiving new waves of data (continued)

- ❖ Scrapped/web-collected data has often a location tag and can be used to study a variety of issues including transportation (Akbar and Duranton, 2019, Akbar et al. 2023ab, etc.), housing (Calder-Wang 2022, Almagro-Dominguez-Iino, 2022), urban segregation (Davis et al. 2019), urban change (Naik et al. 2017) and more to come!
- ❖ Firm/corporate/marketing data including scanner data for grocery prices (Handbury and Weinstein, 2014, Handbury, 2021) banking data (Relihan 2022 and work by Gannong and Noel) and a lot more to come!

# Data

**Empirical urban economics: we really keep winning the data lottery (continued!)**

- ❖ Old maps are rich sources of information which can now be processed with computer vision (Gorin et al., 2023ab, Combes et al. in progress) and much historical data can be geographically tagged (Heblich et al. in progress)
- ❖ The statistical apparatus of some countries is increasingly organized around a main map (France, Spain)
- ❖ And I am sure I am forgetting some other important novel data sources. Everything any economist may be interested in is located somewhere and we are increasingly able to access this information

# Data

## The challenges of having too much

- ❖ "Big data" is hard and costly to manipulate (and this leads to bigger research teams...)
- ❖ Many projects require merging several (large) datasets around a common geography
- ❖ Cool data is not always synonymous with useful data which are going to help us improve our understanding of important issues we care about
- ❖ Exploiting data to generate facts is useful and important but as economists we want to leverage data to learn about key economic mechanisms (and as young economists you need to show your skills)

=> Novel data is not a substitute for an important and well-posed research question, insightful modeling, and a good research design

# Methods

## Three types of empirical methods

Empirical research in urban economic is about:

- i. Acquiring/obtaining data from a four-dimensional world (inc. time) and managing them
- ii. Projecting/processing them onto a dataset with rows and columns of numbers
- iii. Estimating quantities of interest out of this table/dataset

We have seen progress in the last few years on all three steps, but the second remains grossly neglected and the first is still nascent.

# Methods

## Data creation: predicting and classifying

Creating data is now a (big) “thing”. A variety of classification methods can be used to transform complex objects in the world into exploitable data with a location tag

- ❖ Textual analysis and language processing (Gentzkow et al. 2019) for anything from categorizing occupations (Michaels et al. 2019) to parsing out realtors' blurbs (Levitt and Syverson, 2008)
- ❖ Computer vision to recognize anything from symbols on a map (Combes et al. 2023) to objects on a picture (Naik et al. 2022)
- ❖ Computer audition / machine listening someone?

Machine-learning approaches have made their splashy entrance into our toolkit both to create data (here) and extract patterns out of them. We need to learn to use appropriate approaches and use them appropriately

# Methods

## Delineating and choosing spatial units

Once we have data and observations with lats and longs, we need to choose which spatial units to use

- ❖ Working in continuous space is fun (Duranton and Overman, 2005) but often difficult or even (nearly) impossible if the object of interest is a spatial construct like a city or a neighborhood
- ❖ "Official" and "semi-official" spatial units are often poorly defined for a variety of reasons (Duranton, 2021)
- ❖ There are many ways to define spatial units (JUE 2021) and research on this is just getting started (Briant et al., 2010)

Much extent research uses the spatial units it uses "just because". This leads to a variety of problems (measurement error, MAUP, etc). The cost of delineating appropriate units for a given research project is no longer prohibitive and will increasingly become a requirement



# Methods

We have seen incremental progress on many fronts in empirical methods

- ❖ Spatial RDD (Cattaneo and co-authors, Imbens and co-authors), spatial “kinks” (Turner et al., 2014)
- ❖ “Constructed IVs” (Adao et al., 2019, Goldsmith-Pinkham et al. 2020, Borusyak et al., 2022a)
- ❖ Event studies (Borusyak et al., 2022b)
- ❖ Diff-in-diff (Rambachan and Roth, 2019, Callaway and Sant’Anna, 2021, De Chaisemartin and d’Haultfoeuille, 2022)
- ❖ Heterogenous treatment effects (De Chaisemartin and d’Haultfoeuille, 2020)
- ❖ IO tools for discrete choice estimation (Anagol et al., 2022, Hsiao, 2023)

# Estimating

A lot of that research is (rightfully) trying to instill rigor in what were arguably adhoc heuristics. Perhaps more importantly, this work offers novel avenues to handle heterogeneity



# Topics

## **"New Frontiers": a word of caution**

Let me now explore recent research on a few topics.  
Note:

- ❖ This is a personal choice. Some topics are related to work I have done. Others are related to things I would have liked to do or that I might consider doing on the future
- ❖ Some topics have seen a lot of recent work. Others not so much.

# Topics

## Endogenous amenities

- ❖ The literature has mostly thought about productivity benefits of agglomeration, but cities also offer consumption benefits (Glaeser et al., 2001). To avoid endogeneity worries, much of the literature has, for a long time, focused on exogenous amenities in the Rosen-Roback literature (e.g. Rappaport 2007)
- ❖ Starting with Handbury and Weinstein (2014) and Couture (2019), rising interest on endogenous amenities. The initial focus was on prices, variety, and accessibility.
- ❖ Subsequent/concomitant work has sought to put this into broader GE frameworks (Ahlfeldt et al., 2015, Diamond, 2016), explore the underlying heterogeneity (Handbury, 2021), understand the retail supply response (Alcott et al., 2019) or explore further questions (Gorback, 2021, Relihan, 2022, Oh and Seo, 2022, Miyauchi et al., 2021)

# Topics

Key questions to be answered:

- ❖ Lower (higher) prices vs. diversity benefits
- ❖ Spatial reach of urban consumption benefits (especially post-Covid)
- ❖ The relative role of fixed vs. endogenous amenities
- ❖ Income effects and sorting
- ❖ The dynamics of endogenous amenities and other changes

Key challenges

- ❖ Be able to track fine patterns of consumer behavior in space (cell-phone, banking data?)
- ❖ Consumption most often does not take place in isolation (social networks)

## Endogenous amenities

IMHO, this set of issues is bound to become even more central to urban economics and attract interest from many other fields (PF, IO, etc.)

# Topics

## Channels of agglomeration economies

- ❖ Estimating agglomeration economies was central to empirical urban economies for many years. While we have reached a relative consensus on their magnitudes, isolating the channels through which they percolate has vexed many of us for many years
- ❖ Recent developments include better evidence about learning (De La Roca and Puga, 2017), knowledge spillovers (Atkin et al., 2022, Baum-Snow et al., 2021), and labor market matching (Moretti and Yi, 2022) or IO linkages (Miyachi, 2022), the role firms (Giroud et al., 2022), within-industry effects (Moretti, 2021)
- ❖ Areas to explore include, job-to-job mobility, more about firms and establishments, understanding how different sources lead to different aggregate effects and welfare outcomes

*After some years of neglect, agglomeration is becoming a big issue again and will likely stay so for many years*

# Topics

## The costs of cities

- ❖ The fundamental tradeoff of urban economics is between agglomeration benefits and urban costs. The second term of this tradeoff has been badly neglected for many years but there are signs this is changing
- ❖ This issue underlies problems associated with housing affordability, restrictive land use regulations, urban transportation, congestion, costs of construction, etc.
- ❖ Methodologies have been proposed to estimate overall urban costs or parts of them (Combes et al., 2019, Duranton and Puga, 2022, Handbury, 2021, Diamond and Moretti, 2022).

# Topics

## The costs of cities

Also, a lot of interesting work looking at specific dimensions of urban costs

- ❖ Land use regulations (Anagol et al. 2022, Song 2022, Cui 2023, Gyourko et al., 2019, Baum-Snow and Han, 2023, Hsieh and Moretti, 2019, Duranton and Puga, 2022)
- ❖ Housing costs (Combes et al., 2021, Peng 2023, Ahfeldt et al., 2023, Ahfeldt and McMillen 2018)
- ❖ Congestion (e.g., Akbar and Duranton, 2019/in progress and many others, Abkar et al. 2023)
- ❖ Pollution (Adelco et al., 2021)
- ❖ "Local costs": Qian and Tan (2022)

Still a lot to do before we know as much about costs as we know about agglomeration

# Topics

## Urbanization and development

- ❖ The urbanization of the developing world raises a broad set of issues associated with
  - Weak property and protection rights
  - The four informalities (labor, housing, transportation, and credit) and how they interact
  - “Partially-durable” construction
  - Rural-urban wedges
- ❖ Recent developments have been many, let me flag the following:
  - Abebe et al. (2021)'s RCT on urban labor market access
  - Henderson et al. (2021), Michaels et al. (2021) and Harari and Wong (2023) on “partially-durable” built-up
  - Conwell (2023) on informal transit
  - Lagakos et al. (2020), Bryan and Morten (2019) or Hsiao (2023) on internal migrations

# Topics

## Urbanization and development

- ❖ Opportunities are nearly infinite for program evaluation type approaches given the number of quirks that must have occurred in several thousand cities
- ❖ RCTs are also much cheaper to do (Bryan et al., 2014, Kreindler, 2023)
- ❖ The main issue here is to pick up an interesting issue of broader relevance
- ❖ We also need more aggregate approaches to think about urban development / urbanization (e.g., Lagakos, Gollin, Takeda et al., 2022, etc.)



# Topics

## Urbanization and development

- ❖ Some areas are still terra incognita, e.g. housing finance, the "Raj Chetty" agenda of mapping opportunity, etc.
- ❖ Data are a key challenge. Although they are becoming more available, it is difficult / impossible to measure things back in time. Panels of household/worker data are seriously scarce

Two challenges:

1. Urban economics is increasingly interested in developing cities and development economists are working in cities more often - will the "twins" ever meet?
2. On many issues, the most useful knowledge is still informal and distilled by experts on the topic rather than coming out of a well-established literature

# Topics

## Urban political economy

- ❖ Urban political economy was viewed as the topic of the future for many years (Helsley, 2004) but it has remained so and is yet to take off
- ❖ These gaps persist despite the importance of politics in urban management and development. Recent contributions have focused on:
  - Local voting behavior (Ferreira and Gyourko, 2009), local political contributions (Yu, 2022), and local political pressures (D'Amico, 2022)
  - Evaluating mayoral quality (Sieg and Yoon, 2022)
  - The "architecture" of decisions (Whalley, 2013, Boffa et al., 2016, Tricaud 2022, sitting on a large literature after Tiebout, 1956, and work by Alesina and co-authors)

# Topics

## Urban political economy (and public finance)

### ❖ Recent contributions (continued):

- Reduced-form effects of local taxation (e.g. Brulhart et al., 2012) and place-based policies (reviewed by Slattery and Zidar, 2019)
- More structural approaches assessing spatial effects of taxation: Suarez-Serrato and Zidar (2016, 2019 with co-authors) Suarez-Serrato et al. (2020)
- Assessing local multipliers (Moretti, 2010, Suarez-Serrato and Wingender, 2016 linking with more macro work by Chodrow-Reich, Nakamura, and Steinsson)

A challenge for this work is to integrate more with the rest of the field

# Topics

## Resilience, persistence and path dependence

- ❖ We want cities to be more resilient/sustainable/durable and, at the same time, more adaptable to change (cakeism?)
- ❖ The urban resilience literature is slowly defining a set of core issues around values at risk and changes (or lack thereof) to avoid risks (Balboni, 2022, Lin et al. 2022, Michaels et al., 2020 Mulder, 2022, Ostriker and Russo, 2023) beyond the standard evaluation of the effects of shocks (e.g., Boustan et al., 2020)
- ❖ Closely related but different: the much older literature on urban persistence (Davis and Weinstein, 2002) with a broad variety of outcomes with many examples of persistence and lack thereof (e.g. Bleakley and Lin, 2012)
- ❖ This literature is in clear need of an organizing framework (important recent progress by Allen and Donaldson, 2022, and Yoo, 2022)

These are fundamental issues, but we still need clarity about the basic facts and how to think about them

# Conclusion

**The best of times  
but the most  
demanding of  
times to be an  
urban economist**

- ❖ Better models and better methods
- ❖ A LOT more data
- ❖ Abundant data does not mean easy data. It also means that the premium goes to its main complementary inputs: important questions with convincing research designs and careful execution
- ❖ I flagged a small number of research topics but, by no means, I meant to be exclusive. Other topics that I like include: microfoundations of the housing market, declining internal migrations in rich countries, spatial statistics, urban economic history, the geography of innovations, linking with networks economics, etc.

**These are great times, truly but standards are going up, and pretty fast!**



Thanks!



**Università  
Bocconi**

**IGIER**  
Innocenzo Gasparini Institute  
for Economic Research



**BUILD** DEPARTMENT OF  
THE BUILT ENVIRONMENT

**AALBORG  
UNIVERSITY**



**BROWN**  
Population Studies  
and Training Center