



Urban Infrastructure Investment and Rent-Capture Potentials

A case study on Paris urban area

V. Viguié¹ S. Hallegatte²

¹CIRED

Ecole des Ponts ParisTech, Paris, France

²The World Bank

FAERE Conference, December 9, 2020

C.I.R.E.D. CNRS (UMR N° 8568) - ENPC
EHESS - AGROPARISTECH
CIRAD
Jardin Tropical
45 bis Avenue de la Belle Gabrielle
F-94736 Nogent-sur-Marne, France

Outline

1. Motivation

2. Our Results/Contribution

Main Results

Basic Ideas for Proofs/Implementations

3. Conclusion

Make Titles Informative.

- Use Itemize a lot.

Make Titles Informative.

- Use Itemize a lot.
- Use very short sentences or short phrases.

Make Titles Informative.

- Use Itemize a lot.
- Use very short sentences or short phrases.
- These overlays are created using the Pause style.

Make Titles Informative.

- Use Itemize a lot.
- Use very short sentences or short phrases.
- These overlays are created using the Pause style.
- It's really easy to write an equation :

$$\left\{ \begin{array}{l} \frac{\sum_{i=0}^N e^{-i \cdot \log(i)}}{K} \\ \frac{\partial U}{\partial x} \end{array} \right.$$

A "plain frame"

- In a "plain frame", no header and footer
- This enable to save space, e.g. to put a big graph on the slide

Make Titles Informative.

- Untitled block.
- Shown on all slides.

Make Titles Informative.

- Untitled block.
- Shown on all slides.

Some Example Block Title

- $e^{i\pi} = -1.$
- $e^{i\pi/2} = i.$

Land value capture

- The option "shrink" enables to put a lot of text on one slide
- Efficient public transport systems lie at the core of sustainable development
 - ▶ However, financing them at a global scale is challenging
 - ▶ Fares do generally not cover full costs

Land value capture

- The option "shrink" enables to put a lot of text on one slide

- Efficient public transport systems lie at the core of sustainable development

- ▶ However, financing them at a global scale is challenging
- ▶ Fares do generally not cover full costs

- Land value capture History:

- ▶ Henry George (1884)
- ▶ Successful public transport systems lead to increasing land values, resulting from the increase in accessibility
- ▶ Capturing part of land value increase : a promising alternative method of revenue generation ?

Land value capture

■ The option "shrink" enables to put a lot of text on one slide

■ Efficient public transport systems lie at the core of sustainable development

- ▶ However, financing them at a global scale is challenging
- ▶ Fares do generally not cover full costs

■ Land value capture History:

- ▶ Henry George (1884)
- ▶ Successful public transport systems lead to increasing land values, resulting from the increase in accessibility
- ▶ Capturing part of land value increase : a promising alternative method of revenue generation ?

■ In practice

- ▶ Might be achieved through different policies (land value taxes, land betterment taxes...)
- ▶ Bogotá, London, Singapore, Hong Kong, and various cities in Brazil, Argentina and India
- ▶ See for instance: Peterson (2009). *Unlocking land values to finance urban infrastructure* (World Bank Publication)

Make Titles Informative.

Example

On first slide.

Make Titles Informative.

Example

On first slide.

Example

On second slide.

Outline

1. Motivation

2. Our Results/Contribution

Main Results

Basic Ideas for Proofs/Implementations

3. Conclusion

Make Titles Informative.

Theorem

On first slide.

Make Titles Informative.

Theorem

On first slide.

Corollary

On second slide.

Make Titles Informative.

Theorem

In left column.

Make Titles Informative.

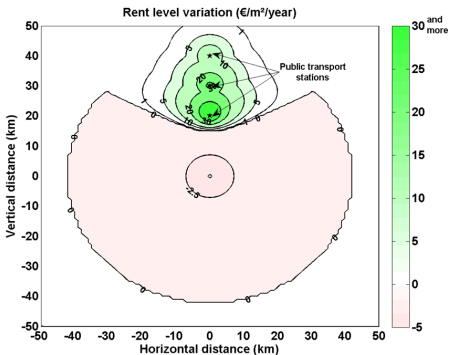
Theorem

In left column.

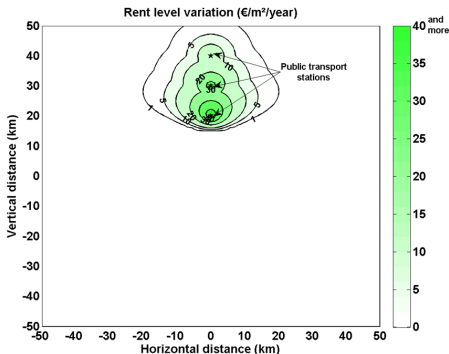
Corollary

In right column.

New line



economic theory (1)



Open city case

If transport infrastructure increases city attractiveness

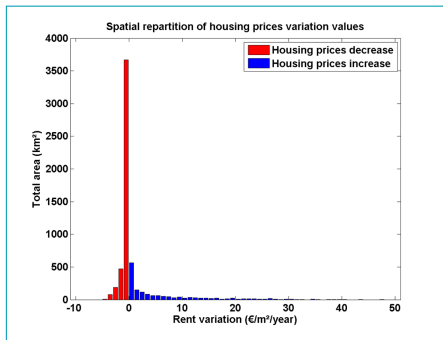
i.e. total population increases due to transport infrastructure

e.g. suppose that utility in the city remains constant ("open city")

economic theory (2)

This is a block without a title

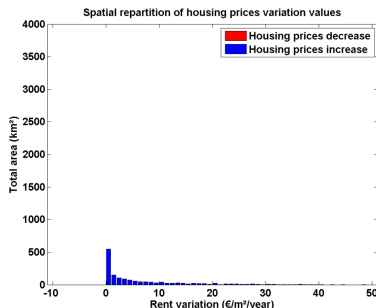
the package "tikzpicture" enables to put a shadow around pictures



shadow and border around the picture

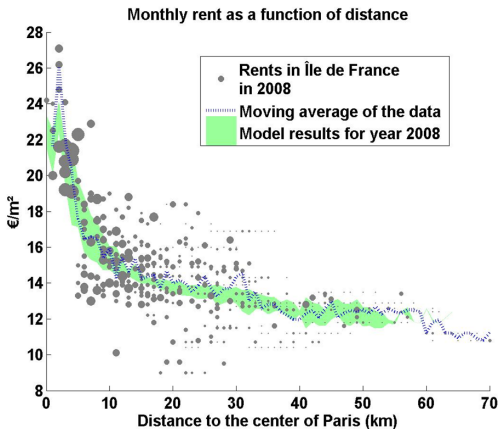
economic theory (2)

This is a block without a title
 the package "tikzpicture" enables to put a shadow around pictures



without the "draw"option: no border around picture, but still the shadow

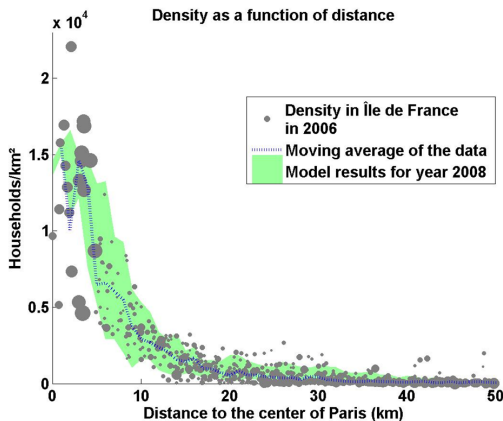
Validation: city structure



Rents in Paris, 2008

$$R^2 = 51.8\%$$

Validation: city structure



Population density in Paris, 2006

$$R^2 = 77.2\%$$

Outline

1. Motivation

2. Our Results/Contribution

Main Results

Basic Ideas for Proofs/Implementations

3. Conclusion

Reduced form model

Coefficients	Change in one local train line speed	Change in all local train lines speed
α, β, a and b	cf. Tab. D.3	
fraction of population with significant improved accessibility	2%	9%
R_0	27 €/m ² /month	
τ	-3.75%	
δR_0 as computed by Eq. 5, when $\delta P = 0$.	-0.8 €/m ² /year	-3.6 €/m ² /year
Simulated values in Sec. 3.2 and 3.3	-0.8 €/m ² /year	-3.8 €/m ² /year
$\frac{\delta P}{P}$ in the open city case, based on Eq. 5	3.5%	15.7%
Simulated values in Sec. 3.2 and 3.3	3.2%	14.6%
$\frac{dR}{R}$ as computed by Eq. 4	12.26%	11.40%
Maximum rent increase in NEDUM-2D simulations	10.76%	9.66%

Less than 15% difference between reduced-form model and simulation

Reduced form model

Coefficients	Change in one local train line speed	Change in all local train lines speed
α, β, a and b	cf. Tab. D.3	
fraction of population with significant improved accessibility	2%	9%
R_0	27 €/m ² /month	
τ	-3.75%	
δR_0 as computed by Eq. 5, when $\delta P = 0$.	-0.8 €/m ² /year	-3.6 €/m ² /year
Simulated values in Sec. 3.2 and 3.3	-0.8 €/m ² /year	-3.8 €/m ² /year
$\frac{\delta P}{P}$ in the open city case, based on Eq. 5	3.5%	15.7%
Simulated values in Sec. 3.2 and 3.3	3.2%	14.6%
$\frac{dR}{R}$ as computed by Eq. 4	12.26%	11.40%
Maximum rent increase in NEDUM-2D simulations	10.76%	9.66%

Less than 15% difference between reduced-form model and simulation

Subsections

- When using subsections, the dots in the outline at the top of the page are put in different lines
 - ▶ each line corresponds to a subsection
- If you don't want to use subsections, you still have to indicate `\subsection{}` after the beginning of each section so that everything works fine

Summary

- The **first main message** of your talk in one or two lines.
- The **second main message** of your talk in one or two lines.
- Perhaps a **third message**, but not more than that.
- Outlook
 - ▶ What we have not done yet.
 - ▶ Even more stuff.

For Further Reading I



A. Author.

Handbook of Everything.

Some Press, 1990.



S. Someone.

On this and that.

Journal on This and That. 2(1):50–100, 2000.