Green FORCE

FOSTER RESEARCH EXCELLENCE FOR GREEN TRANSITION IN THE WESTERN BALKANS
PROJECT 101059411

International summer school
Cities in Just Green Transitions
Towards a 2030 climate-neutral strategy for Turin
18-22 September 2023

Land Based financing

Land Value capture instruments for green investments

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Contents

- **Land Markets – How they work**
- **Property rights**
- **Land Value Capture Instruments**
- **Exercise**
- **Game – simulation of land transactions**

Acknowledgments: This lecture is adapted from the teaching module on 'Urban Land Strategies and Instruments', organized at Polis University within the course Professional Master in Spatial Planning and GIS applications. Some references and contents are adapted by contributions of mr. Carlos Morales Schechinger, and mrs. Ore Fika, IHS Institute Rotterdam, within these courses.

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Land Markets

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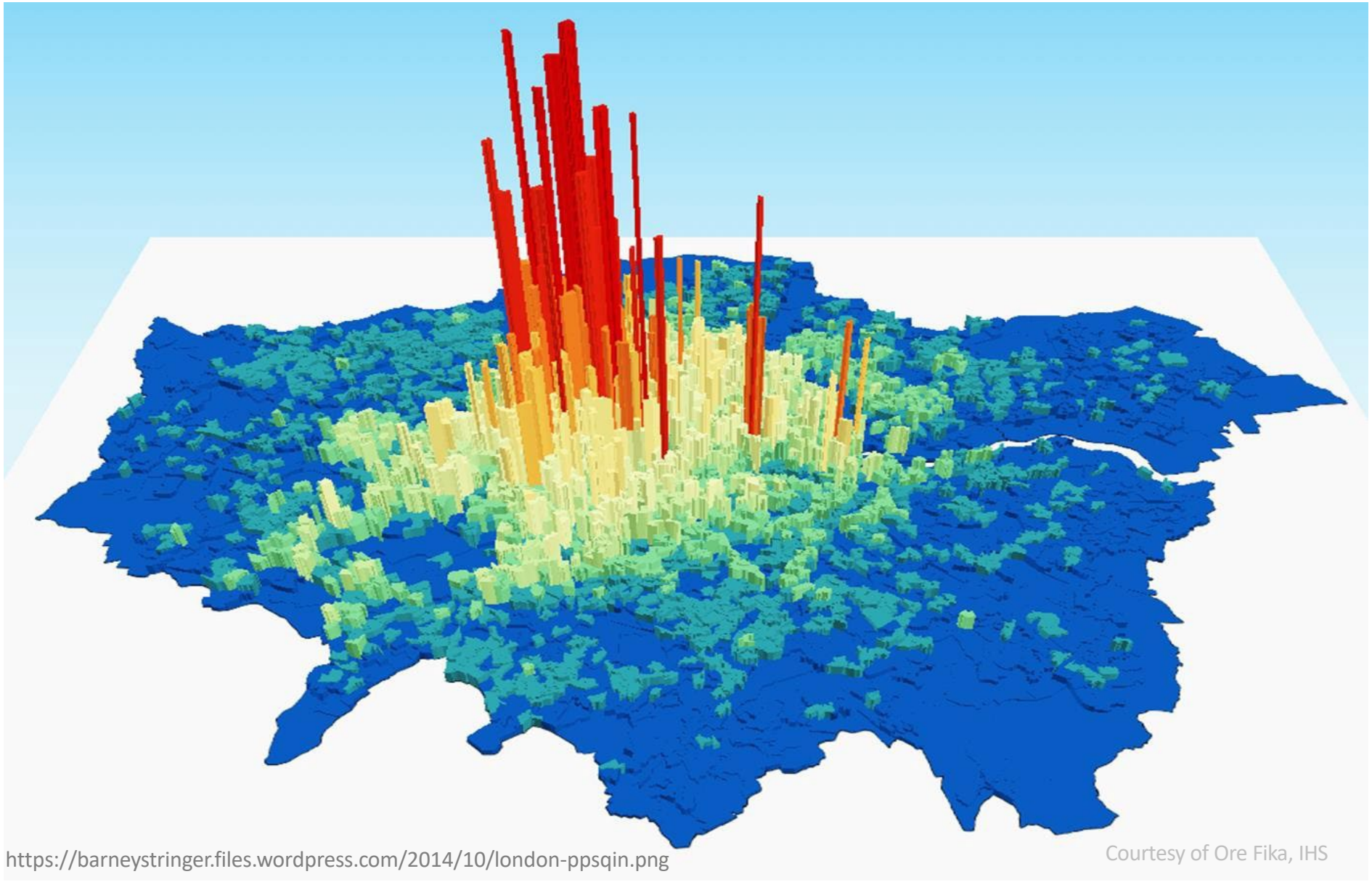

https://barneystringer.files.wordpress.com/2014/10/london-ppsqin.png

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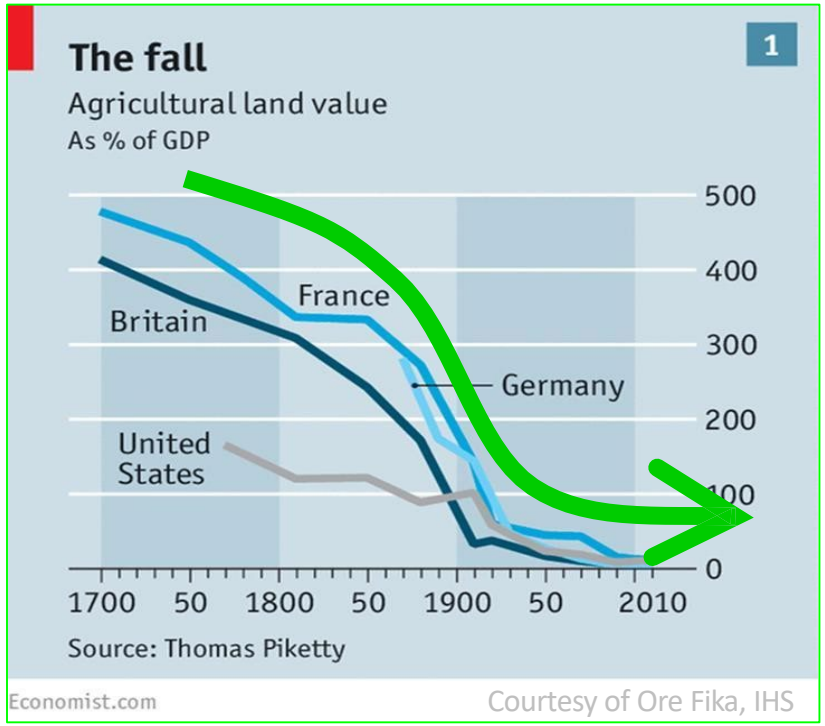
4 facts related to the wealth of land

1

the value of rural property has fallen

< 5% GDP



2

the value of urban property has and will continue to rise

200-400% GDP

Picketty2014 In The Economist 2015

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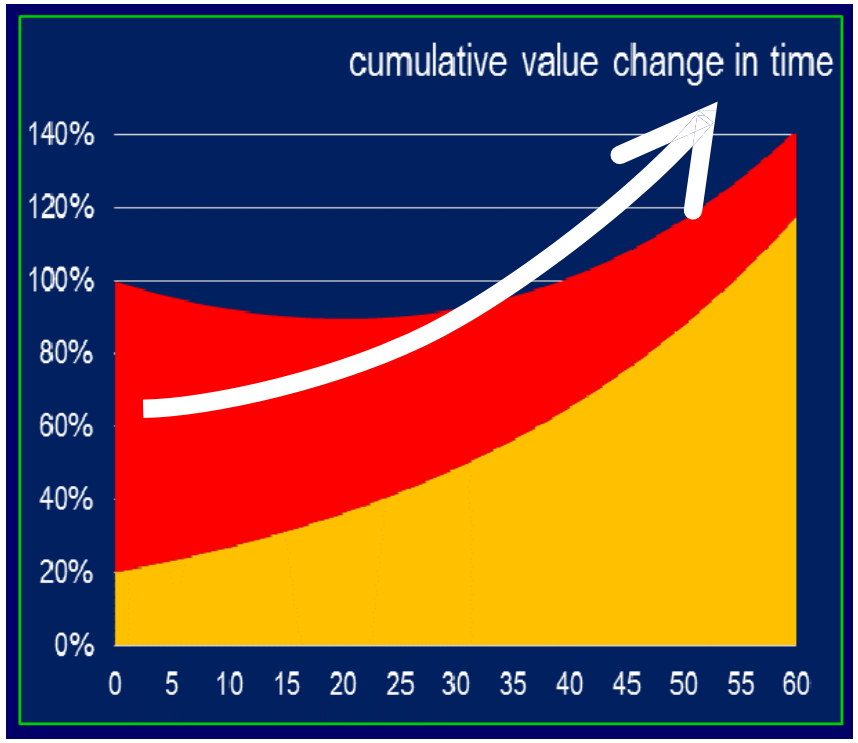
4 facts related to the wealth of land

3

the value of a city accumulates through land, not buildings > 50%

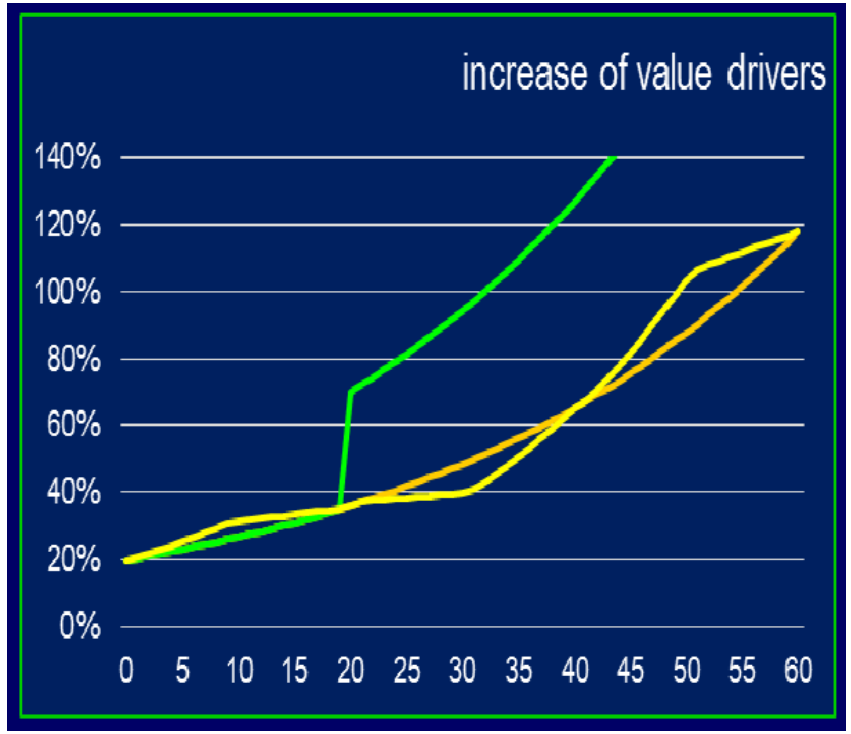


Smolka 2015

Courtesy of Ore Fika, IHS

4

the value of land jumps through dynamics in the city 80% - 510%



Jaramillo 2010 & Smolka 2013

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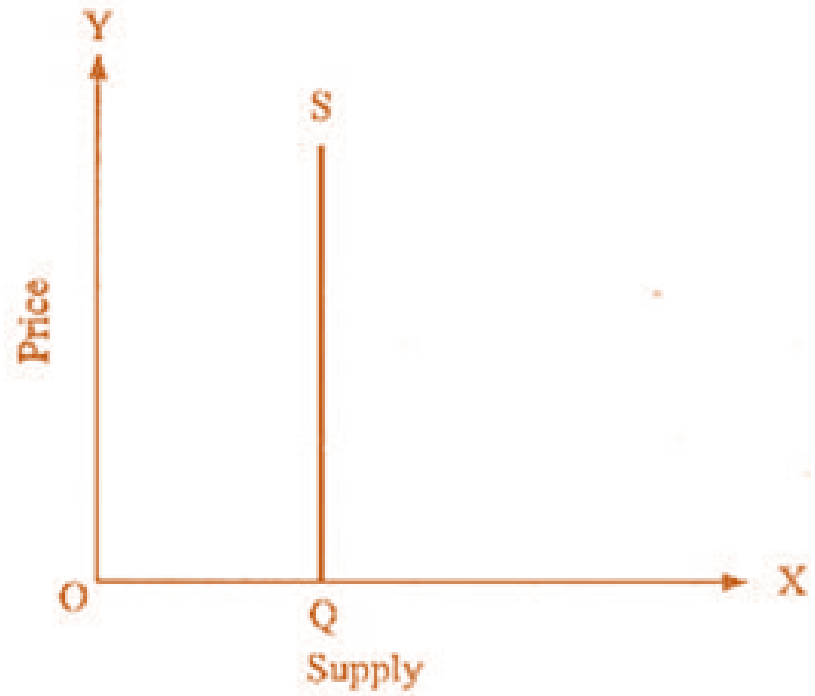
Urban Land Markets

Factors that determine land rents

(Ricardo and Von Thunen)

1. Supply

- The availability of land is fixed
- As a result, its supply is restricted.
- Land supply is inelastic.
- In general, land quantity cannot be increased. However, its limitations are adjustable.
- Restricted extension



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Urban Land Markets

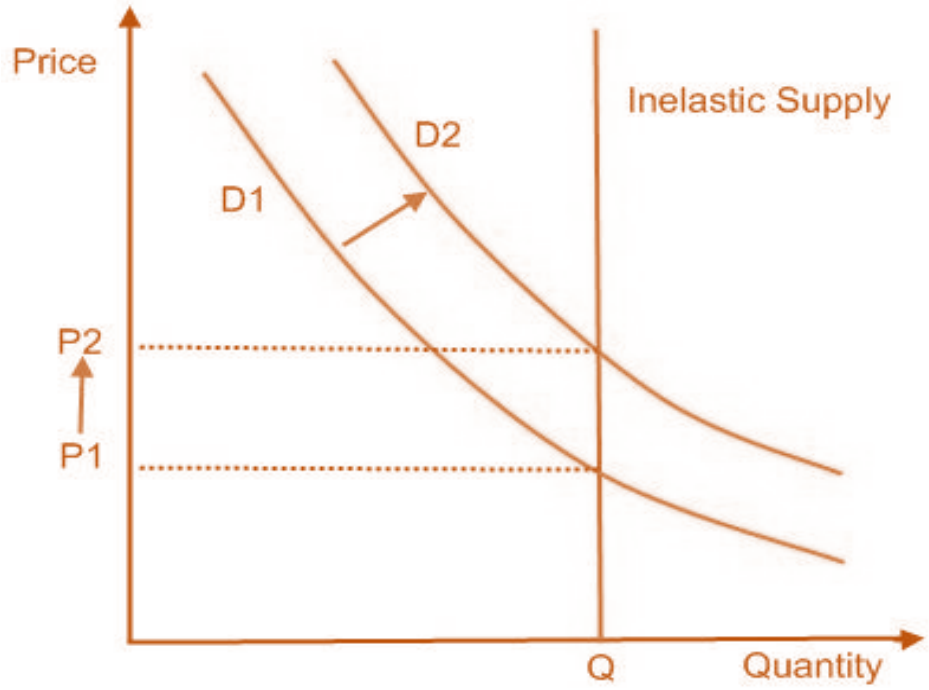
Factors that determine land rents

(Ricardo and Von Thunen)

2. Demand

Population Growth

- Land usage becomes more in demand as the population increases and supply becomes more limited.
- Diverse users compete for its utilisation.
- An increase in population results in elevated rental costs.



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Urban Land Markets

3. Utility

- The economic value of land is determined by its utilisation.
- A farmer's propensity to pay for maize and tomatoes differs due to their distinct transportation and locational requirements.
- Diverse users vie for its utilisation due to their distinct objectives. (Industry, shelter, food production, etc.)
- Land is valued at the cost of an alternative utilisation.
- Human beings are predisposed to maximise and optimise the utilisation of land.

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Urban Land Markets

4. Ability to pay

Evans, 2004

Land markets, prices, and values are determined by land purchasers' income

example: The reason a shopkeeper's products are expensive is not because he pays a high rent, but because he has customers who are willing to pay a premium for them.

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How to determine the price of land?

- Residual value of land = **Demand** = Ability to pay (willingness and ability) – (minus) cost of production – (minus) cost of transportation
- Willingness = desire / preference
- Opportunity = income

- **Value is determined by competition between 'different paying abilities'**
- Increased density on the same plot: Twice the ability to pay - twice the cost of transport - twice the cost of production, so the residual value of the land 2x

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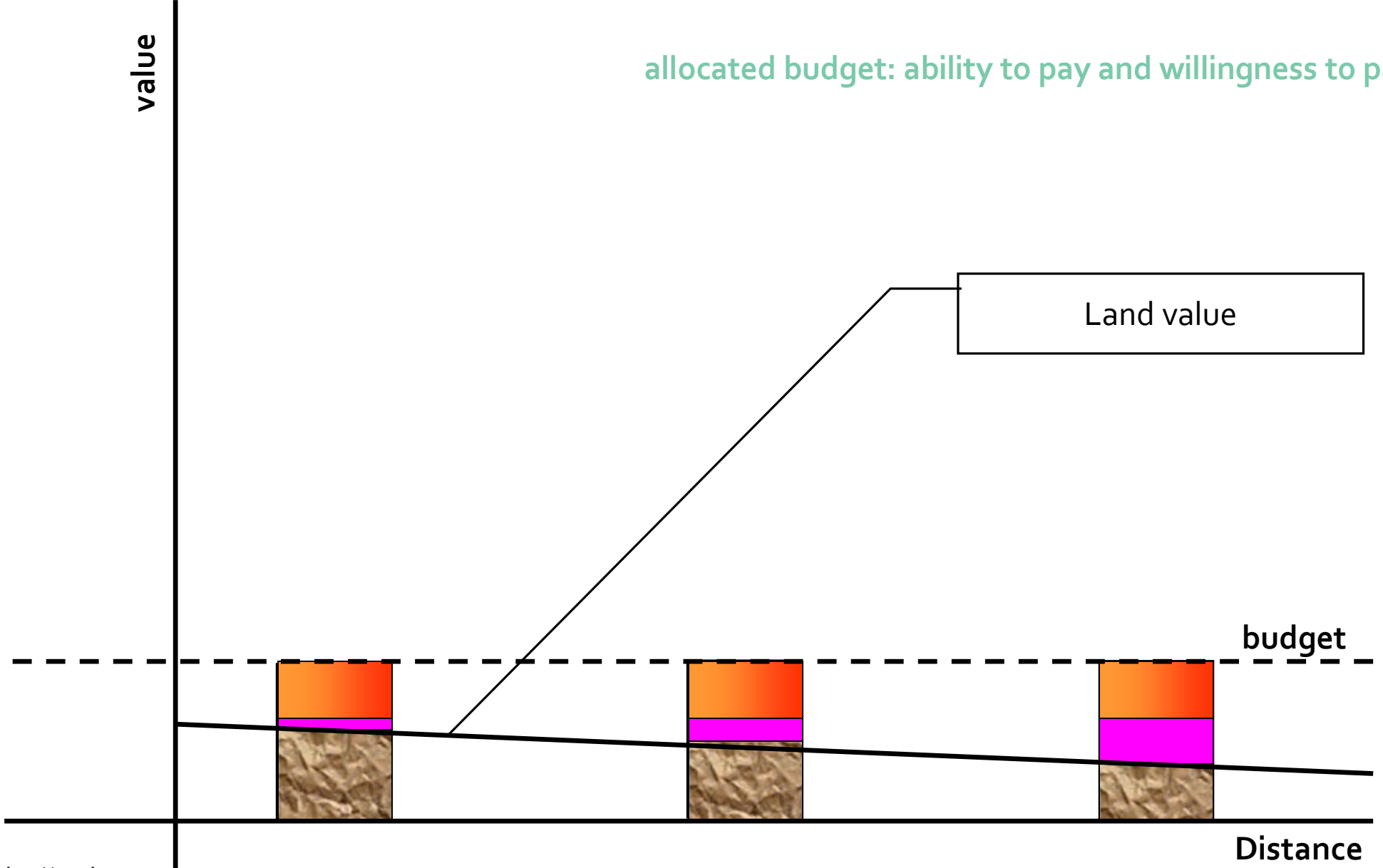
allocated budget: ability to pay and willingness to pay



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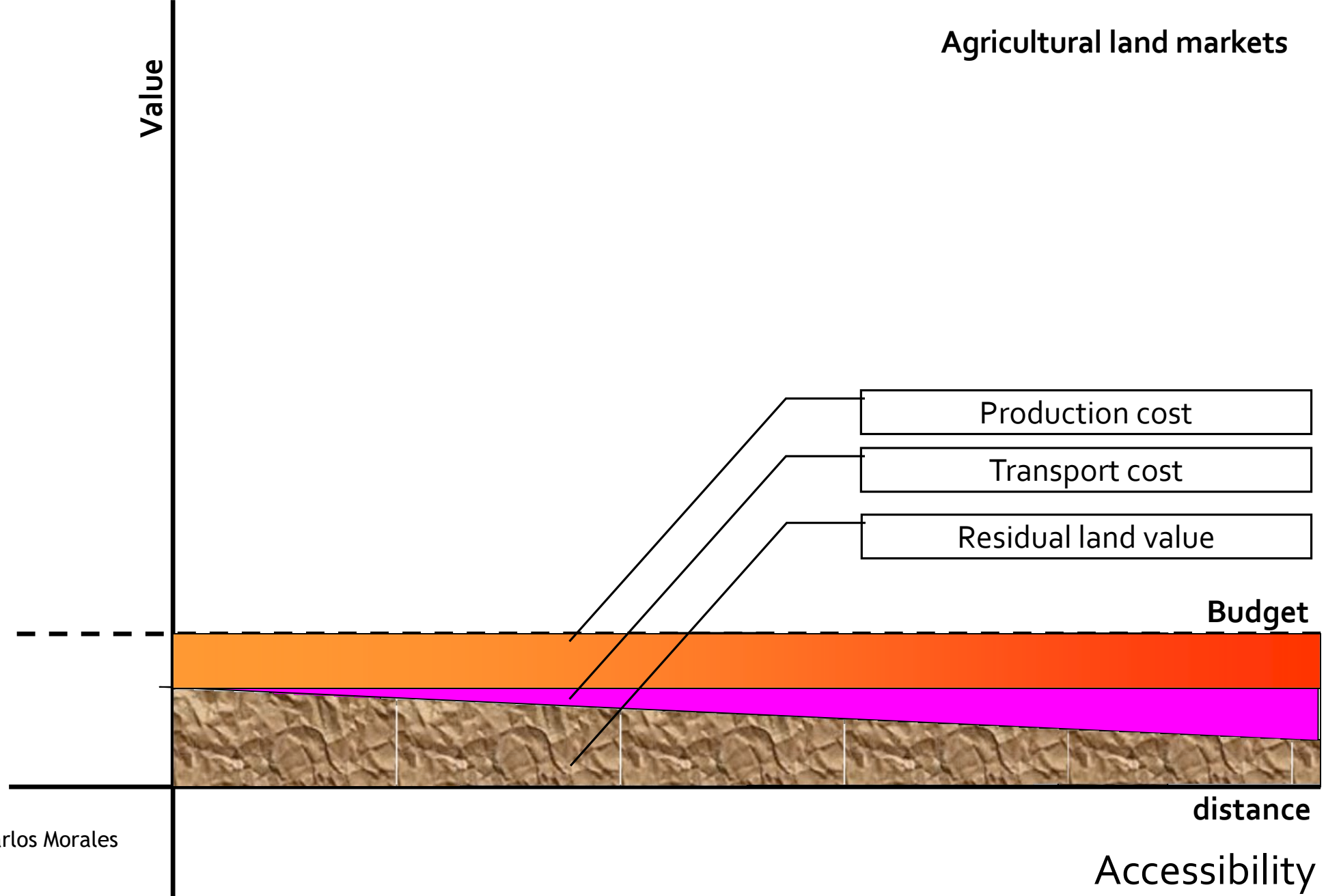
Agricultural land markets



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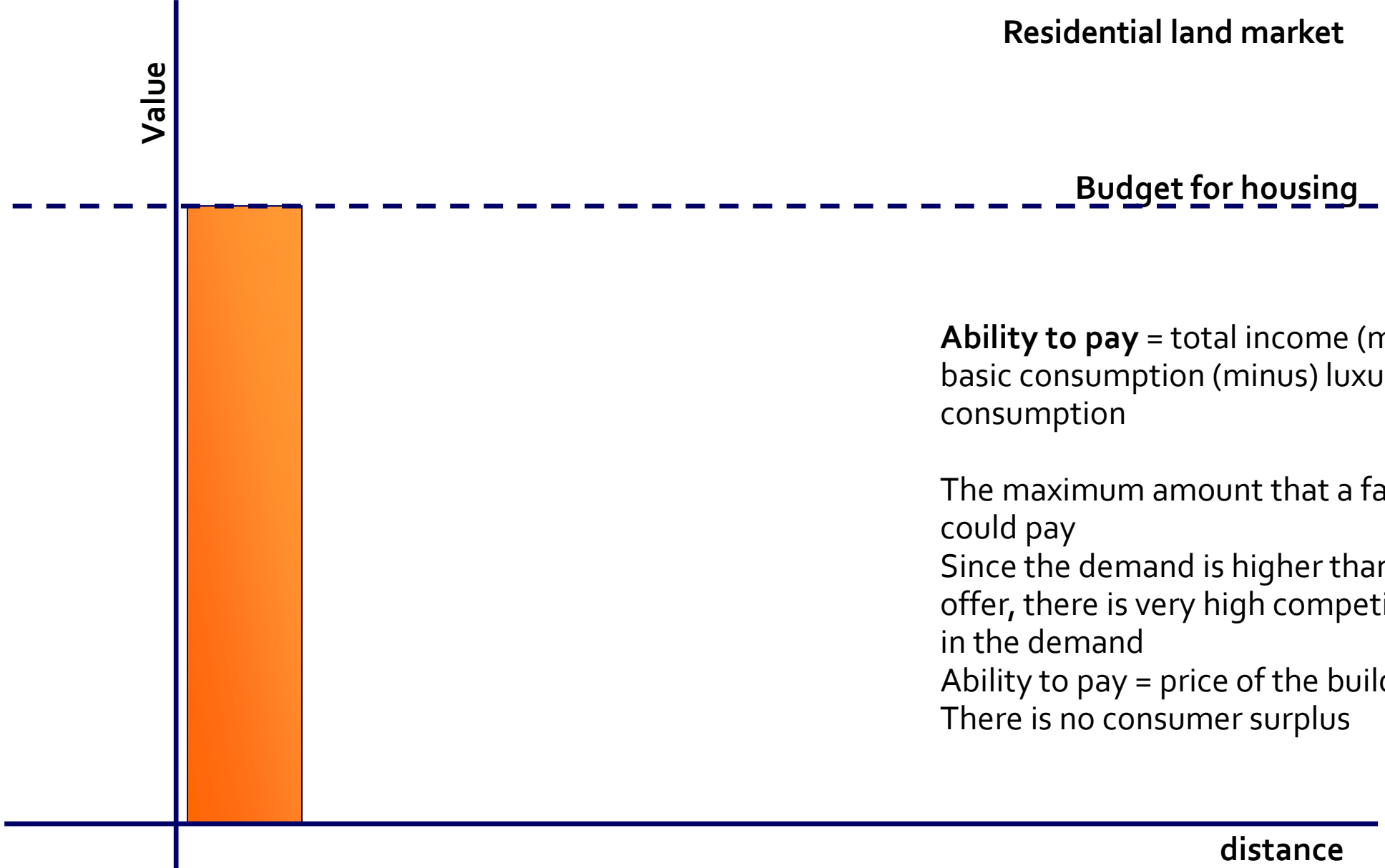
Residential land market



Ability to pay = total income (minus) basic consumption (minus) luxury consumption

The maximum amount that a family could pay
Since the demand is higher than the offer, there is very high competition in the demand
Ability to pay = price of the building
There is no consumer surplus

Adapted from Carlos Morales Schechinger

Price is determined by ability to pay

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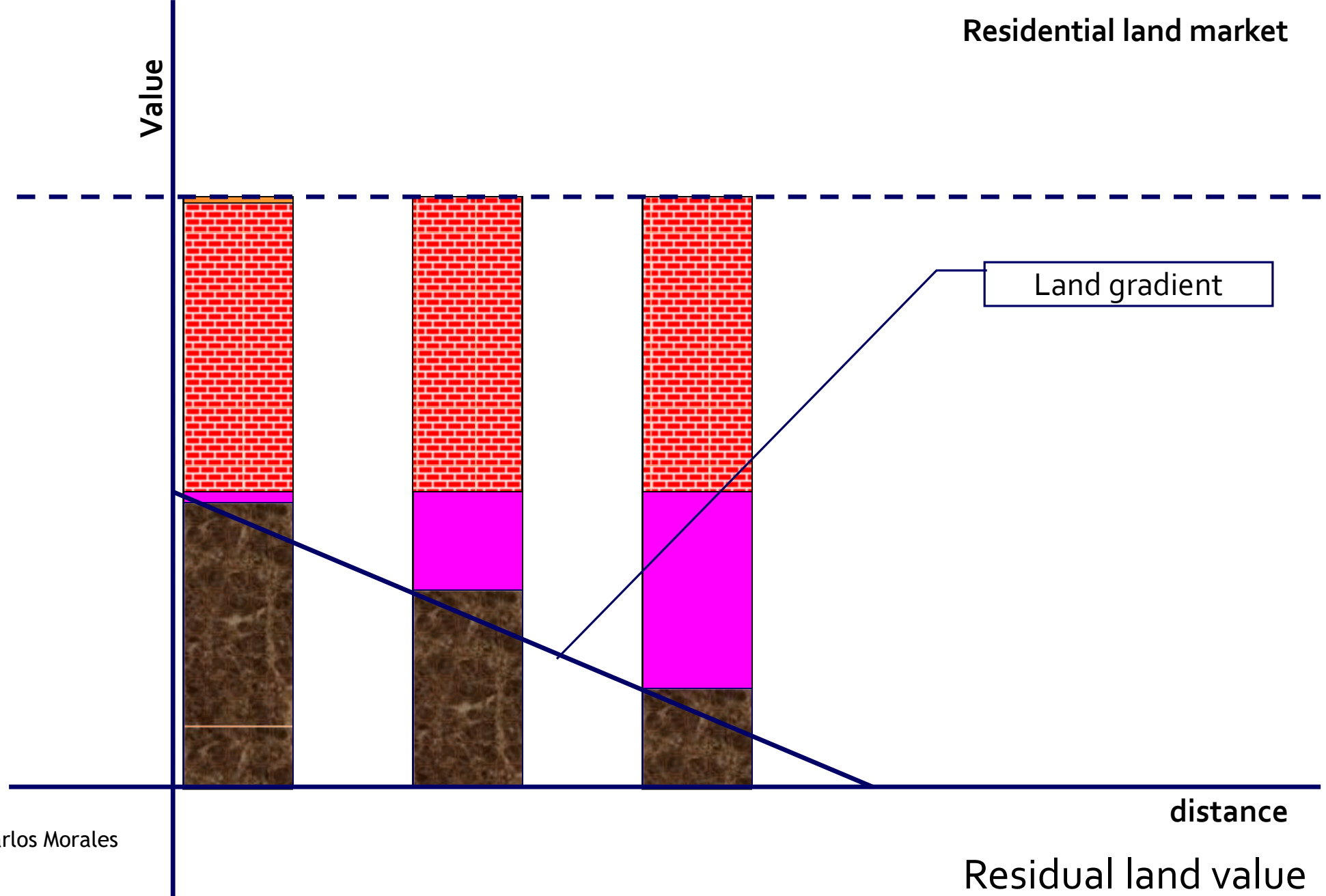
Residential land market



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Residual land value

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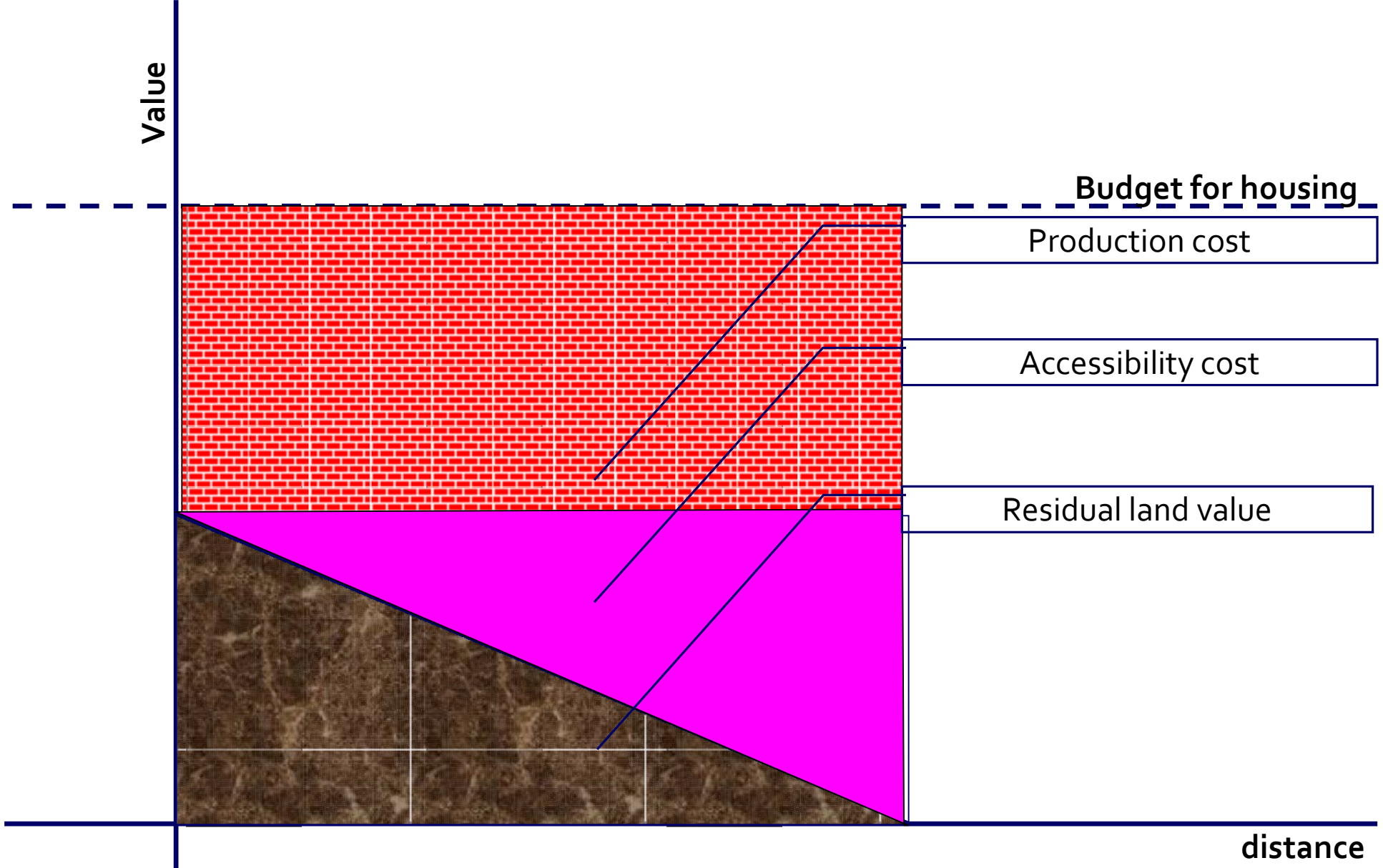

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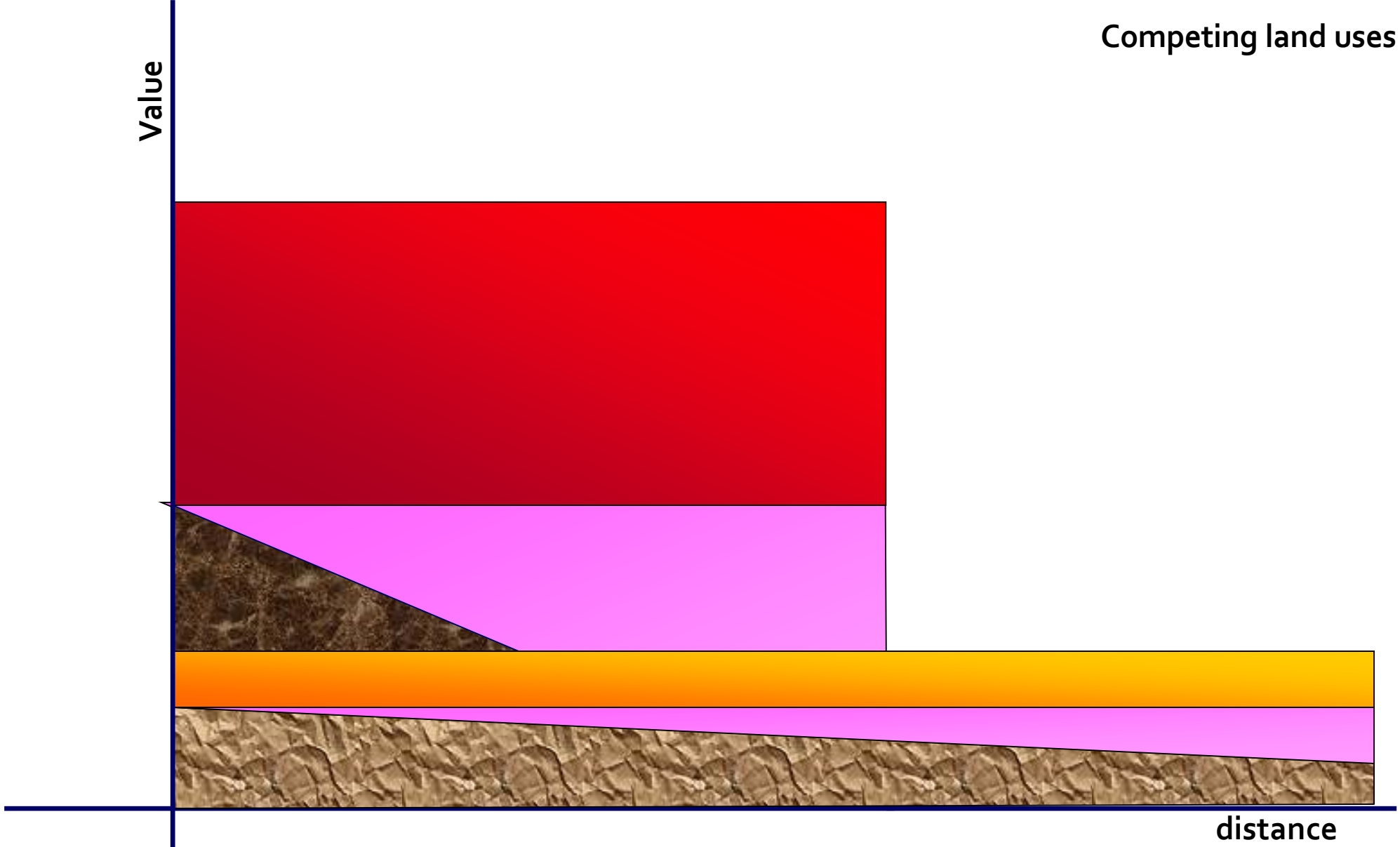
Competing land uses



Highest and best use

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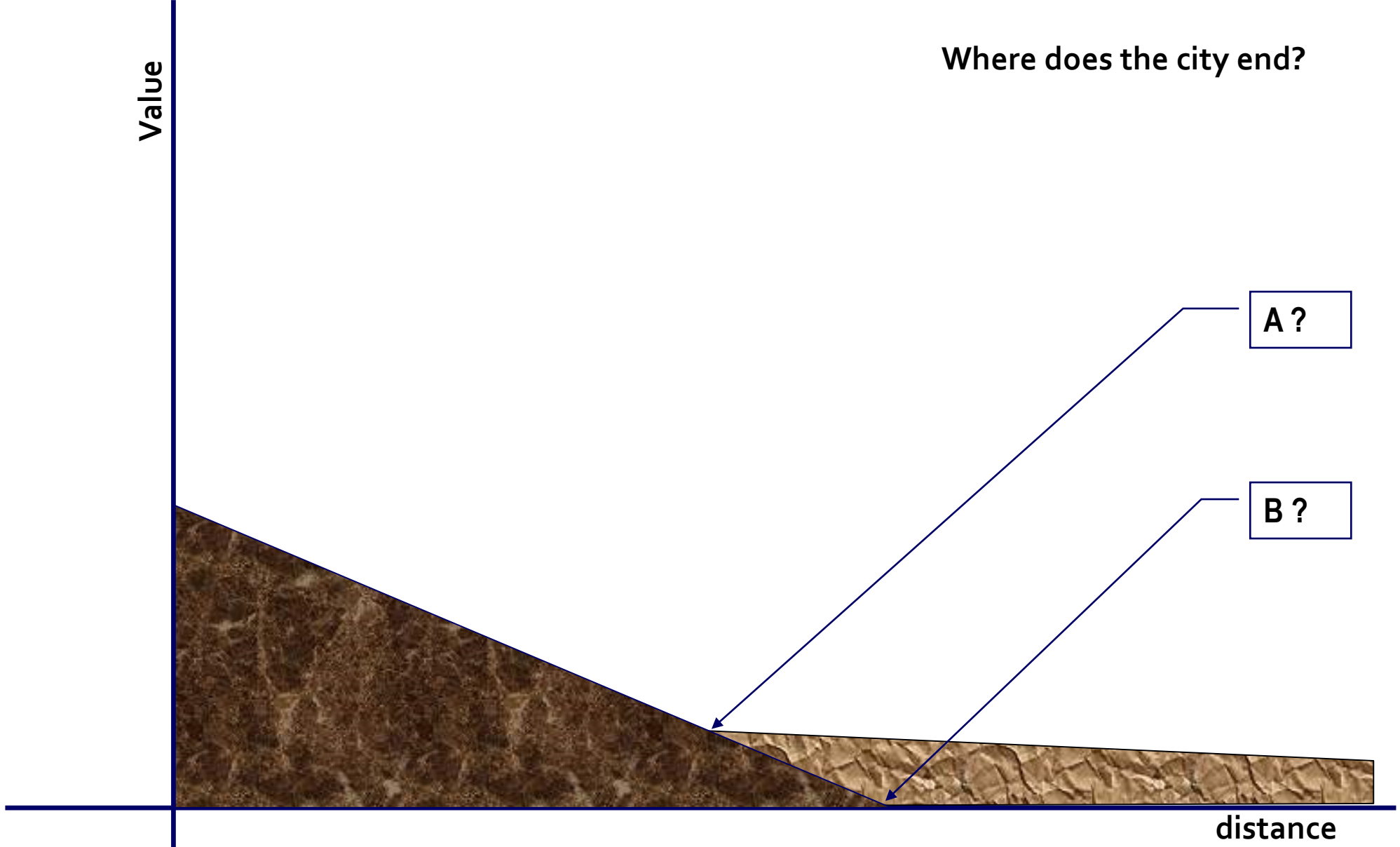
Where does the city end?



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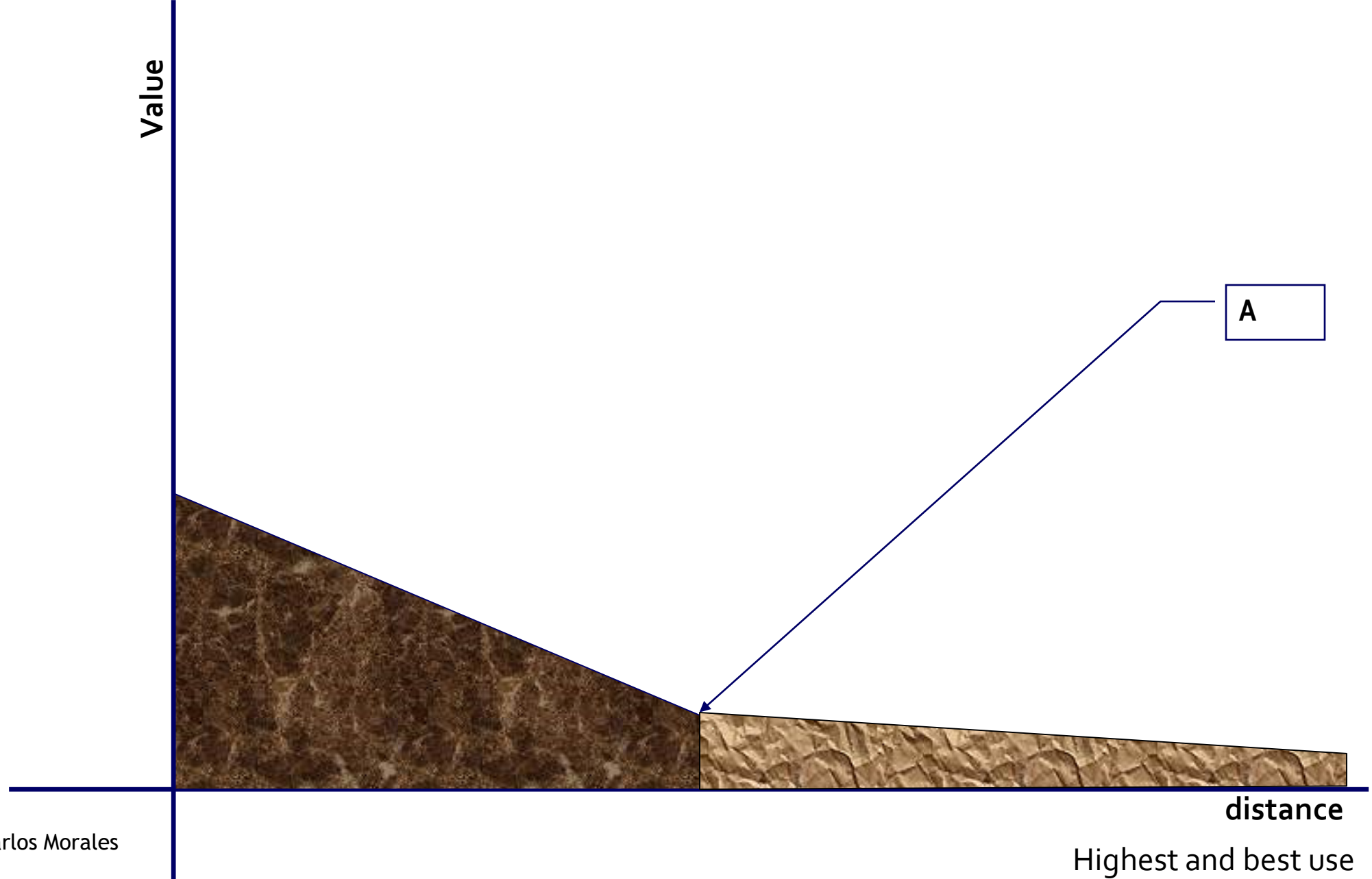

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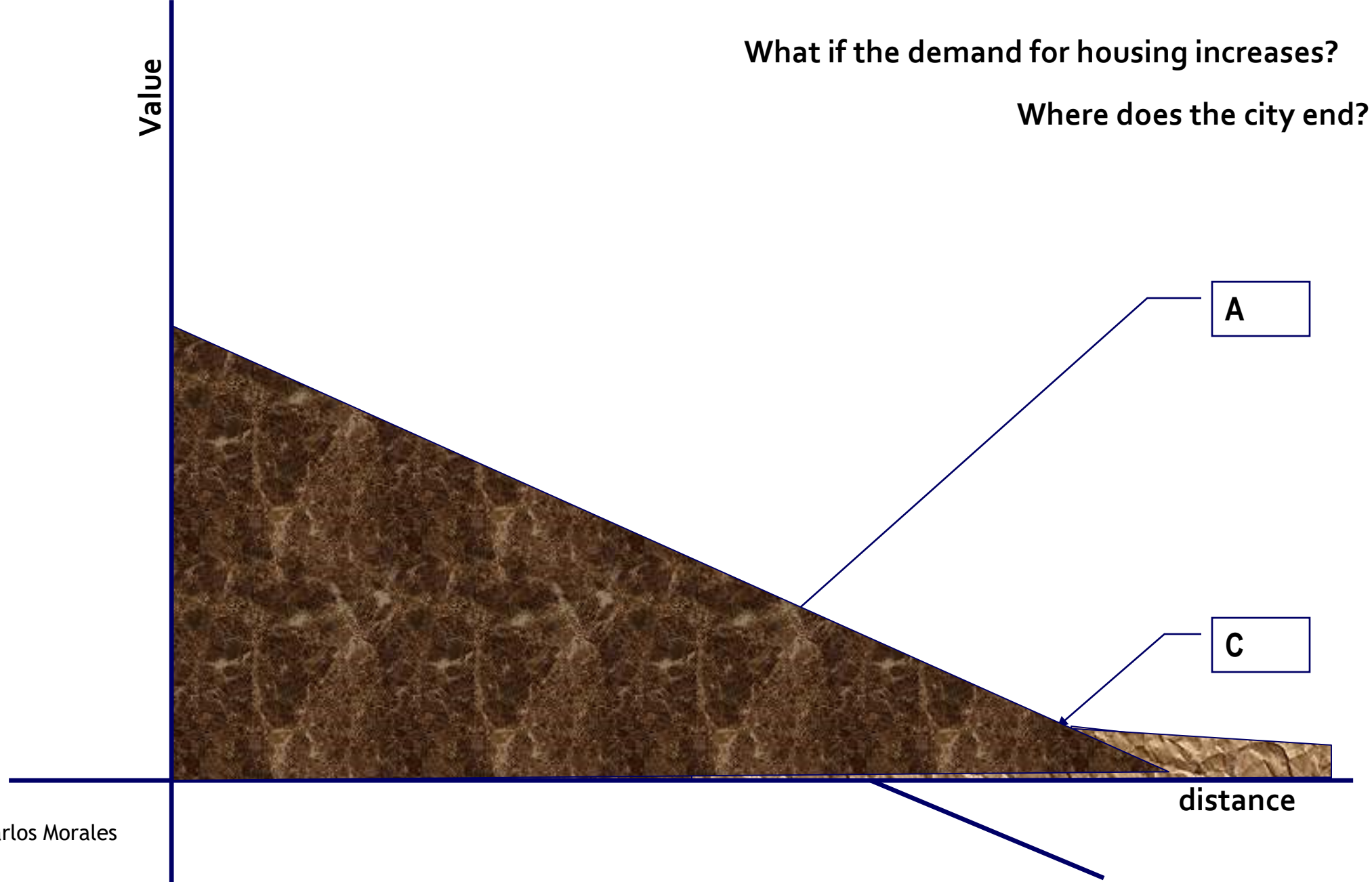
What if the demand for housing increases?

Where does the city end?



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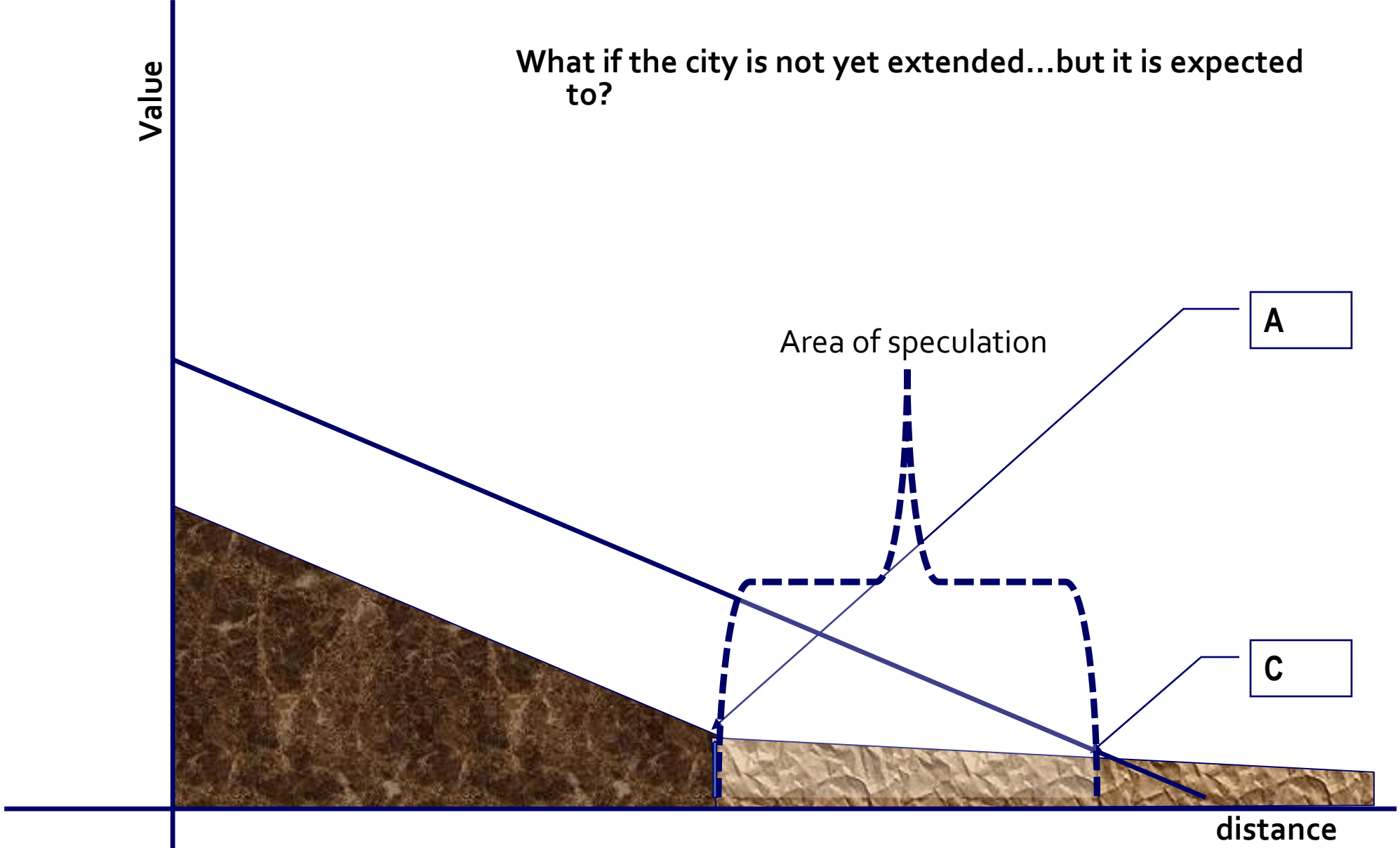
What if the city is not yet extended…but it is expected to?



Expected Highest and best use

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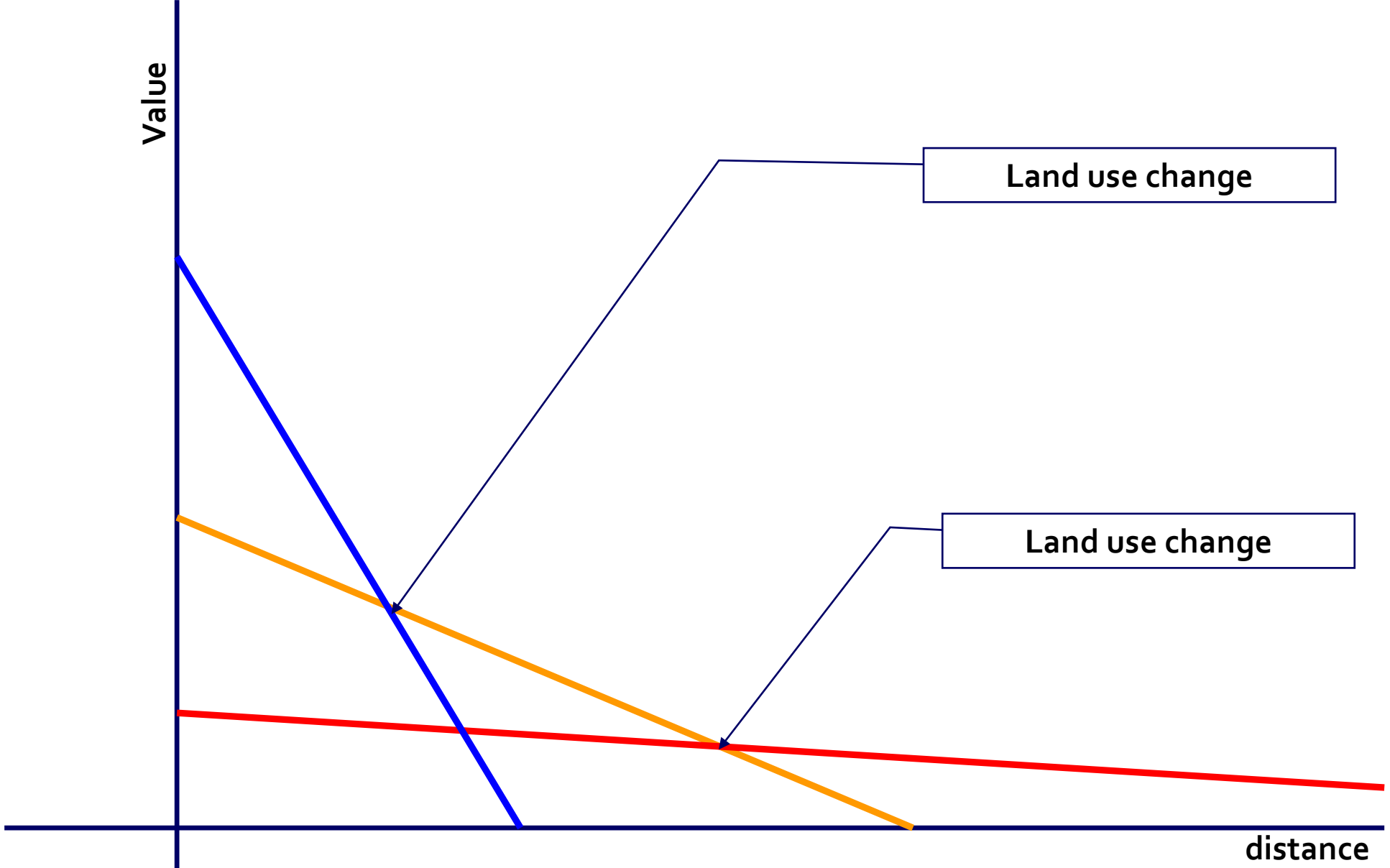

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Why do changes in land use occur?

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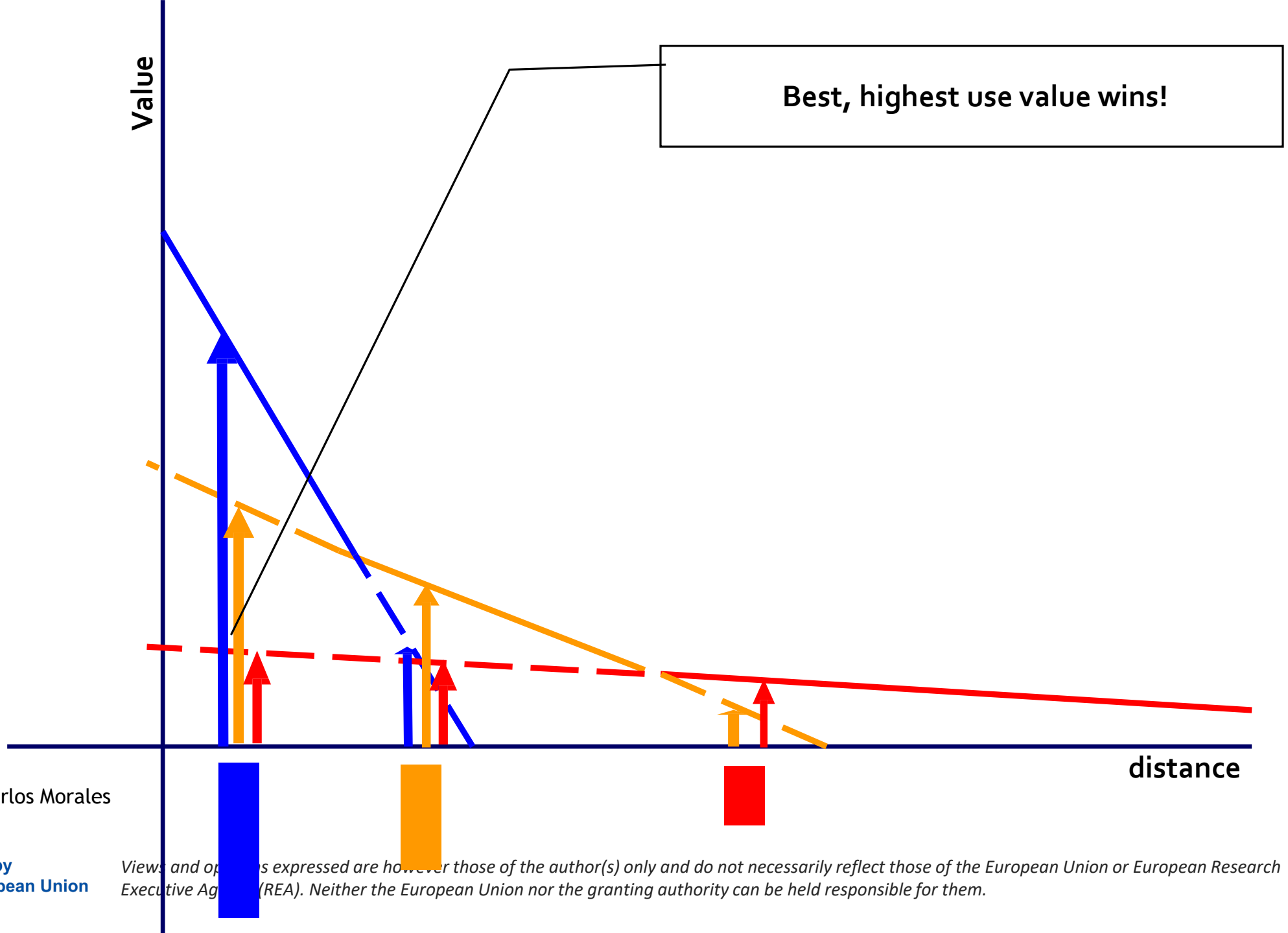

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Land and Property Rights

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Property Rights

The definition, allocation, and protection of property rights comprise one of the most complex and difficult sets of issues that any society has to resolve, but one that must be resolved

Garrett Hardin, Tragedy of the commons

Source: https://samriddhi.org/news-and-updates/safeguard-private-property-rights/

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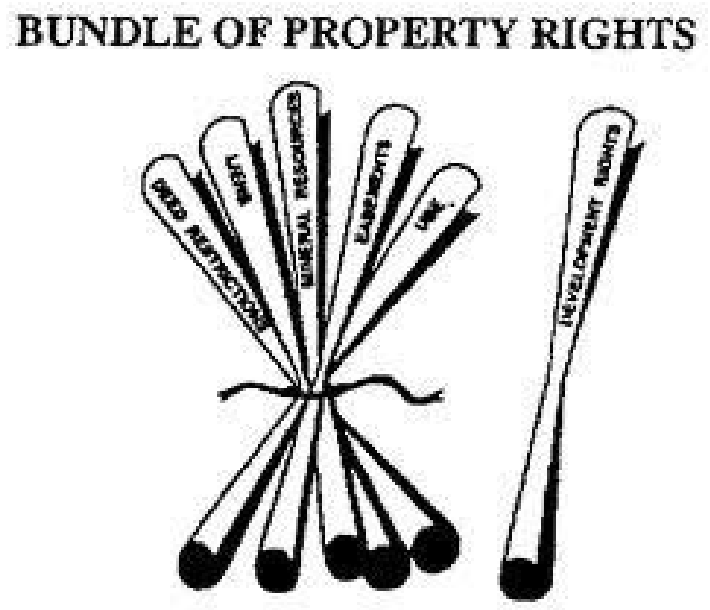
Property Rights

- Property rights is a bundle of rights
- The bundle is a set of legal rights afforded to a land/property holder
- It explain the complexities of land ownership
- It show partition of various entitlements of different stakeholders
- It can be separated, reassembled and deconstructed
- Each right in a bundle represents privileges / liberties or restrictions / takings



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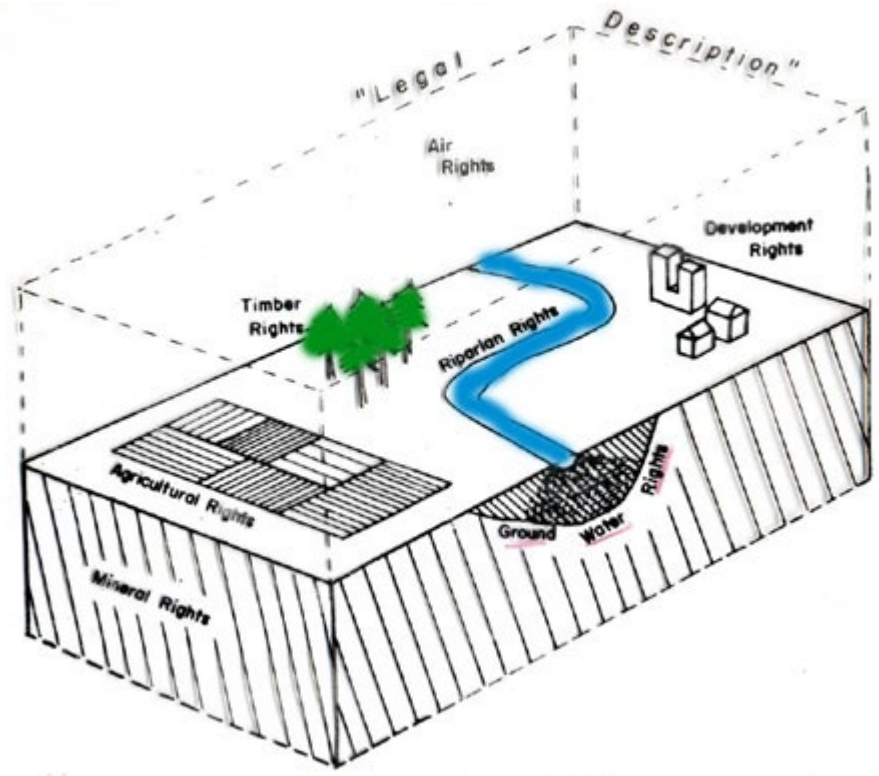
Bundle of Rights

Physical

- Soil right
- Water right
- Air right
- Mineral right
- Tree right
- Animal right

Social

- Right to sell
- Right to lease
- Right to bequeath (gift)
- Right to inheritance
- Right to use (abuse)
- Right to exclude (alienate)



Harvey Jacobs, 2007

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Land Value Capture Instruments

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Why is there so much poverty amongst so much wealth?

https://twitter.com/i/events/1047367855371685888

Image Curtesy of Ore FIKA, IHS institute

1. Development Exactions

Developers make a singular payment to secure the infrastructure costs that are linked to the process of growth and development.

Exactions function as planning instruments and are an integral component of the development approval procedure. A contribution that is required for the ratification of proposed development plans.

Benefits

- Governments require advance payment from developers for infrastructure and amenities.
- They maintain low property taxes.
- It aids in the management of urban expansion and finances it.
- Facilitates negotiations between planners and developers to acquire public assets.

Exactions can be:

- Building roads, parks, school, fire station, stormwater, etc
- It could be in the form of cash payment to a municipal fund

- *Peterson: G. 2009. Unlocking Land Values to Finance Urban Infrastructure. World bank, Washington DC 20433 Global land Tool Network , GLTN*
- Adapted by Ore FIKA, IHS institute

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2.Impact fees

Local governments levy impact fees on new development projects to cover the entire or a portion of the expenses associated with delivering public services to the new development.

Benefits:

- Contributes to the government's financing of essential infrastructure and amenities
- Developers are permitted to internalise infrastructure costs.
- Prevent current inhabitants from having to pay for new construction.
- Prevents the increase of property taxes by ensuring that all impact fees are used exclusively for infrastructure.
- The provision of scheduled and timely public facilities by the government is possible.

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3.Betterment charge

Betterment charges or levies are obligatory one-time payments levied on property owners in response to public action that facilitates an improvement in a given area and subsequently increases the value of the land.

It is one of the oldest form of land value capture.

Benefits:

- They amount to a direct capture of land value.
- Charges are incurred solely by those who abuse their property.
- It is a straightforward instrument that is simple to describe.
- However, its implementation is challenging due to the need for plot-by-plot precision.

Use:

- Used a lot in the British commonwealth and can go as high as 40% of the land increase from public investment
- Also used in Spain and Latin America

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4.Property taxes

The annual property tax levies a levy on tangible assets.

It is predominantly determined by the property's market value.

Property taxes are levied in the majority of nations. It is estimated to be over three thousand years old.

Advantages

- It is inexpensive, simple, and administrative to implement, manage, and/or sustain.
- It is exceedingly challenging to circumvent or elude, and 95% success rates in collection are achievable.
- If properly constructed, the tax could be marginally progressive.
- It serves as a favourable revenue stream for local administrations.

Disadvantages:

- They are not liked and therefore not popular

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5. Vacant Land Tax

Courtesy of Ore Fika, IHS

- Half of a municipality's taxable land, on average, is unoccupied and non-generating territory.
- This includes vacant apartments and houses.
- Vacant properties are frequently neglected for speculative intentions.
- Unlocking land through a vacant land tax would encourage more opportune development and aid in preventing dereliction.
- For vacant sites, an annual levy of 3-10% of their market value may be imposed.
- Additionally, taxes may be progressive.

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6. Transfer of Development Rights

- TDR between was first introduced in New York city in 1916
- Developed to control the volume of buildings. It was done with giving density bonuses FAR's.
- Intended to assist in the protection of historic buildings in the urban core
- Quickly expanded to use for land and environmental management in peri

Courtesy of Ore Fika, IHS

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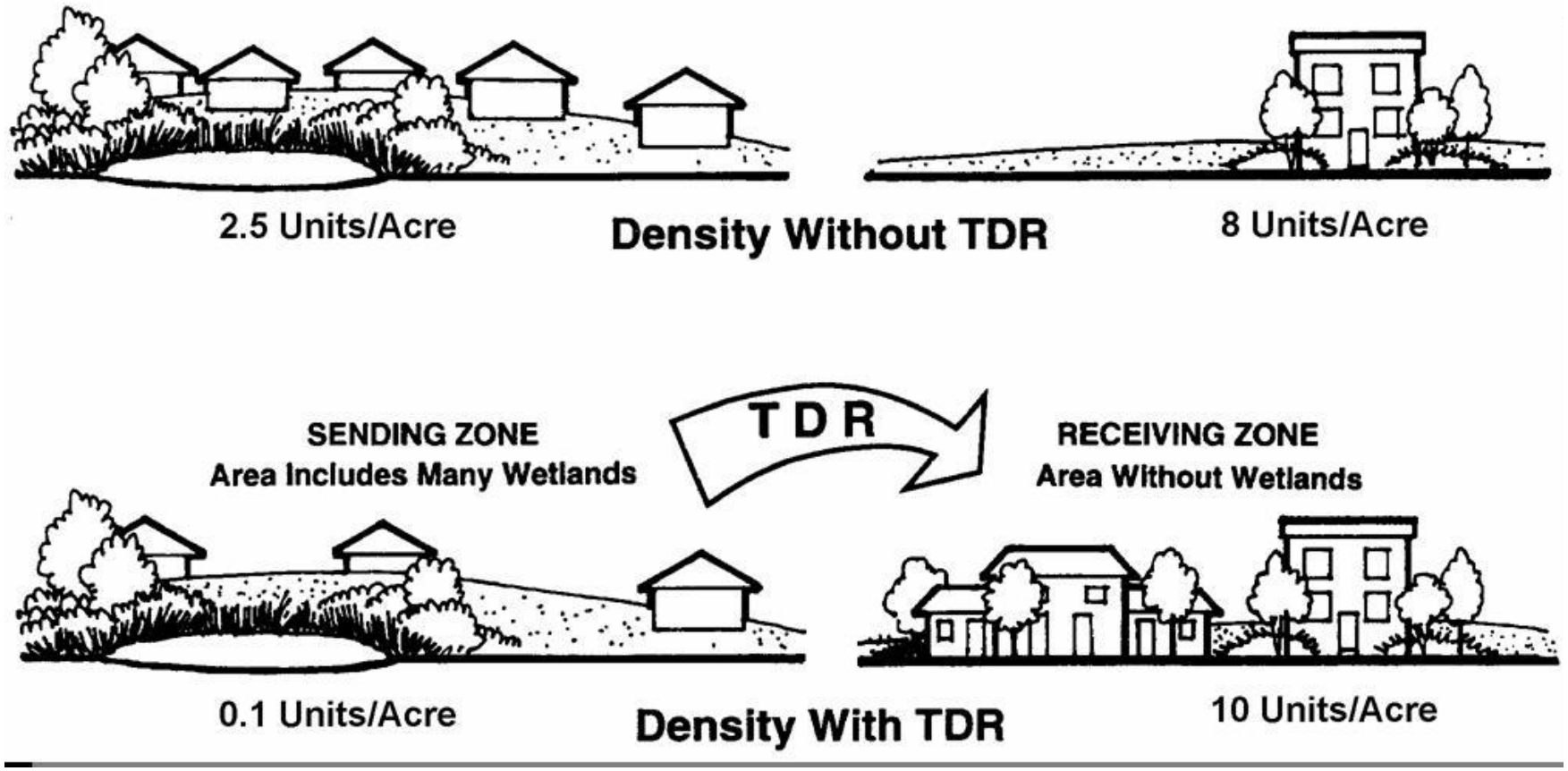
Transfer of Development Rights



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7. Land re-adjustment

- Change of property boundaries: All owners will contribute a part of their plot
- Land reclamation
- Changes in land use
- Provision of services and infrastructure

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8. Inclusionary Zoning / Housing

These are land use regulations in which developers allocate a specific percentage (5–30%) of their market-rate residential development units in order to supply affordable housing to households that cannot afford it on the open market.

(Calavita & Malach 2010)

By capturing market-generated resources, it is possible to create affordable housing, public spaces and facilities, and promote social inclusion through the use of the planning system.

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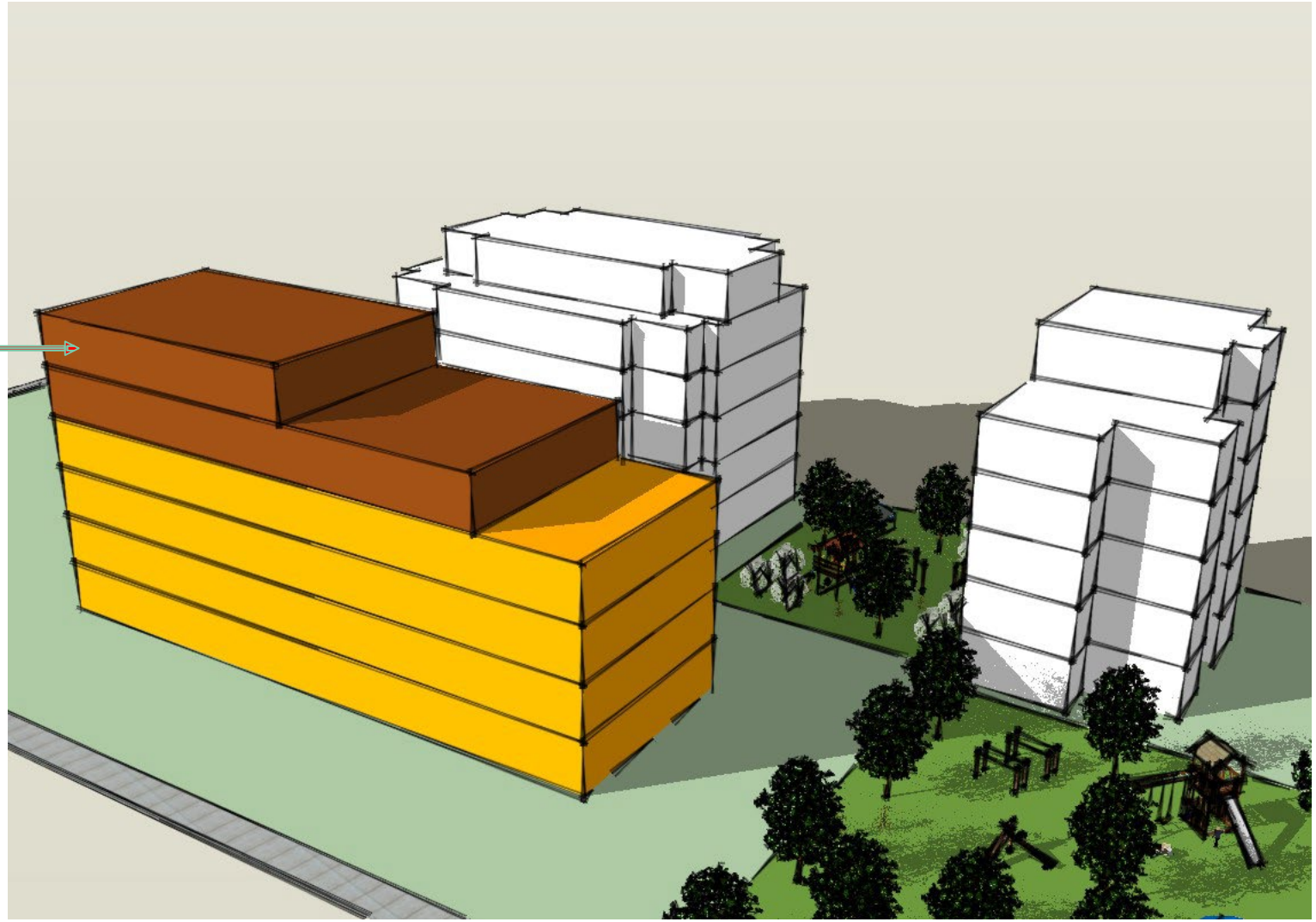
9.Bonus FAR

Proposed FAR = 3
Bonus FAR = 1,5
Total FAR = 4,5

Development value generated > condition value and within the profit margin for the developer



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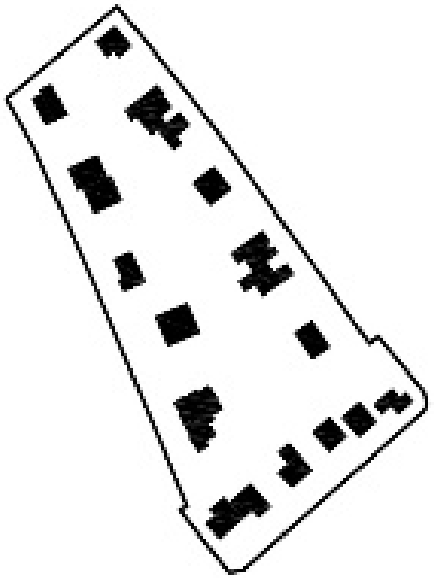
FAR – coverage - height

1. Point type, low-rise

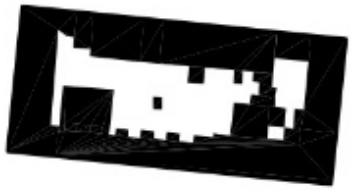


Wageningen Hoog

Wageningen

FSI_i	0.18
GSI_i	0.10
OSR_i	5.12
L	1.84

8. Block type, mid-rise



De Pijp

Amsterdam

FSI_i	2.84
GSI_i	0.75
OSR_i	0.09
L	3.79

Source: Meta Berghauser et al, 2015

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Example

New residential development

30 new apartments
3000 sq m

2000 € / sqm land value
400 € / sqm cost

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Land value assessment	€
Total revenues	6,000,000
(-) Total cost of development	1,200,000
(-) Developers profit (30% of development cost)	360,000
(-) Value of land (payed to owners – 40% of revenues)	2,400,000
(=) Residual value for public use	**2,040,000**

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Exercise

Title: Calculating land value capture for (green) public interventions

This exercise is designed to help students grasp the fundamentals of assessing the feasibility of green interventions within urban development areas.

- Choose a development area from PRG Torino.
- Analyze key land development indicators.
- Select from various land-based instruments discussed in class.
- Propose a nature-based solution to enhance climate resilience in the chosen area, drawing inspiration from examples provided on day 2 of the course.
- Understand the dynamics and interactions among stakeholders in this scenario.

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Exercise

0_Development Revenues	
Area for residential use (m^2)	
Area for commercial use (m^2)	
Total built area (m^2)	0
Total revenues from residential use (€) A	
Total revenues from commercial use (€) B	
Total revenues (€) A+B	0
1_Cost	
Land Cost (version 1)	
Developed area (m^2)	
Land price	
Land Cost (version 2)	
Land cost based on development revenue	0
Construction cost	
Total construction cost for residential use (€) A	
Total construction cost for commercial use (€) B	
Total construction cost (€) A+B	0
Total development cost (land + construction)	

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Exercise

2_Developer profit	
Requested developers profit (€)	
3_Taxes	
Impact fee (€)	
Registration tax (€)	
Total taxes	0
Residual Land Value = 0-(1+2+3)	
Total Residual Land Value (€)	0
RLV per m2 (€)	
RLV per Development Revenues (%)	

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GAME

Simulation of Land Market Transactions

Stage 1_ Unregulated market
Stage 2_Regulated market – introduction of land-based instruments

3 land plots will be auctioned

- Max density: 8 houses (chairs) per parcel
- Budget: Poor (600) Mid-income (1000) Rich (1500)
- P-M-R: 3-5-2
- Transport cost: 0; 100; 200
- Construction cost: 300

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Thank You!

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