Impact Assessment of Land Use - An Economist’s Perspective: Why Market Solutions Do Not Always Work in Land Markets

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April 2008
Overview

• Challenges facing economists in dealing with multifunctional land use
• Land use in economic theory – insights
• Land and the market system
Challenges

• Markets for allocation – efficiency gains.
• Some areas where markets do not work so well:
  – Externalities
  – “Public goods”
  – Competition
  – “Non-convexities”
  – Equity
Insights from Economic Theory

• Importance of land in economic theory driven by changing nature of economy.
• Some insights from the past:
“An improved farm may very justly be regarded in the same light as those useful machines which facilitate and abridge labour, and by means of which an equal circulating capital can afford a much greater revenue to its employer. An improved farm is equally advantageous and more durable than any of those machines, frequently requiring no other repairs than the most profitable application of the farmer's capital employed in cultivating it”

(Smith, Book 2, Chapter 1).
“No limits whatever are placed to the productions of the earth; they may increase for ever and be greater than any assignable quantity; yet still the power of population being a power of a superior order, the increase of the human species can only be kept commensurate to the increase of the means of subsistence, by the constant operation of the strong law of necessity acting as a check upon the greater power.”

(Malthus, First Essay on Population)
“If all land were equally fertile there would be no rent. Rent is not the result of the generosity of nature but of her niggardliness”
Robert Solow

\[ y = f(K, N) \]

Later

\[ y = f(K, N, D) \]

where \( D \) is exhaustible natural resources
Land in Economic Theory

• Role of land as a concept in economic thought has diminished with the rise of technology.
• Increased awareness of the scarcity of land and the need for appropriate policy to ensure the appropriate consideration of factors such as multifunctionality, the need for the appropriate consideration of environmental externalities, other market failures and distributional concerns is clear.
Land and the Market System

• Pollution externalities and non-convexities:
  – Spatial dimension
  – Regulation:
    • Direct controls
    • Fiscal instruments
Options for Pollution Control

![Graph showing options for pollution control. The graph features axes labeled 'MAC/MD' and 'Emissions', with points and lines indicating different options. The label 'MAC' is shown on the left side, 'MD' on the right, and 'E' at the intersection-defined point where emissions are controlled.](image-url)
Options for Pollution Control

What is the optimal level of regulation?

[Diagram showing cost and emissions relationship]
Options for Pollution Control

What is the optimal level of regulation? Multiple equilibria.

Need Cost Benefit Analysis of the options, taking account of the impacts of emissions on different land areas.
Non-convexities

- Discontinuities => multiple equilibria
Difficulties

- Non-convexities => multiple equilibria
- Each source has unique footprint
- Identification of “hot spots”
- Externalities are a function of land allocations
Marginal external costs of passenger transport per transport mode (Euro/vehicle km for aviation; Euro/10 vehicle km for other modes)

Transport

• Each allocation of land for a particular use implies a certain level of externalities from the required transport.
• Subtracting these from the private values attached to the land use will give the social values of land for different uses and it is these social values that should determine land use allocations rather than the private values.
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Need for a Computable General Equilibrium tool to capture externalities in a spatial context

Con: No accounting for the complex linkages between different sectors of the economy

Pro: decentralized and operational
Other Market Failures

• Highest bidder allocation => concentrations of one kind of activity
  – Bath and Venice – tourism
• Markets can fail to allocate land optimally
A model

- Fixed amount of land
- Two activities: domestic and tourist
A model

Maximum value = 80% Tourism, 20% domestic

The bid rent that providers of tourist services are willing to pay is higher than the rent that providers of domestic services are willing to pay.
A model

The two rent bids are equal only when the amount of land given to tourism goes to 98.5 percent and only around 1.4 percent to domestic services. At that point it is also the case that the net profits from both activities are driven to zero.
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Reason: imperfect competition
Spillover Benefits

Even with ‘internalisation’ of the spillover externality the market does not result in an optimal allocation.
Distributional Considerations

- A utility maximising use of land may require an unequal distribution of welfare across individuals.
- E.g. monocentric town, in which all activity is concentrated at the centre.
- Utility maximising solution will involve some inequality – individuals closer to the centre will benefit relative to those further away.
Distributional considerations

• Rents = payments that can be taken away without influencing the allocation of resources; hence they are an attractive target for taxation.

• Henry George proposed a tax on the unimproved value of land as the unique tax to finance the budget.

• Problem with the idea is making it operational.
Distributional considerations

- Problem with the idea is making it operational:
  - Disincentives to improvements
  - Violation of horizontal equity
  - Not enough tax to cover all government expenditure
  - Informational issues
Distributional considerations

- A unique land tax not a possibility.
- But taxation of land rents needed in some form for efficient system
  - Tax “windfall gains”
  - Taxes on minerals
Conclusions and lessons for policy

• Land is a unique resource and cannot rely on markets uniquely to ensure efficient allocation.

• Unique nature gives it a special role in fiscal system.

• Multifunctionality => need for fresh examination of role of markets in allocating land
Conclusions and lessons for policy

• Market failures and multiple equilibria => need for careful Cost-Benefit Analysis
• Unique spatial footprint of pollution => market based instruments are a compromise:
  – Need good spatial modelling to estimate costs and benefits of tax regimes
• We should design the pattern of land use and the regulatory instruments simultaneously.
Conclusions and lessons for policy

• Competitive land allocations in the presence of local monopolies are not optimal.

• Land as a resource is a cause of inequality => instruments for redistribution