Federation of International Surveyors

The World Bank

National Technical University of Athens

National Society Professional Surveyors

Quantifying the Effects of Land Policy on a National Economy

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Key Steps to Achieve the Goals of the Model

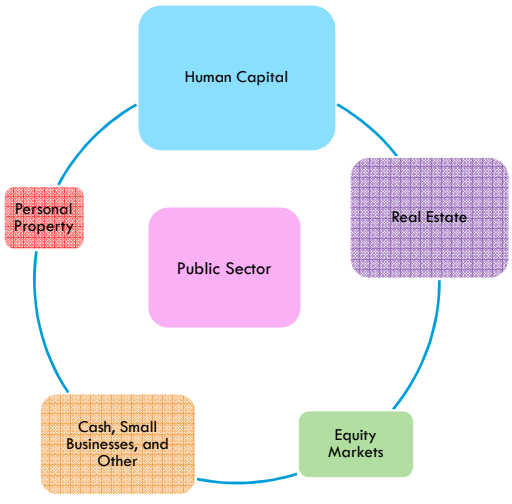
1. Understand the core value structure of an economy (multidimensional crystal matrix analysis)
2. Search for existing economic inefficiency points
3. Quantify the costs or efficiency losses of the inefficiency points
4. Determine the optimum level of model detail

This economic model taken to greater depth can be predictive, calculating and optimizing the operation of the core value components within any economic structure.

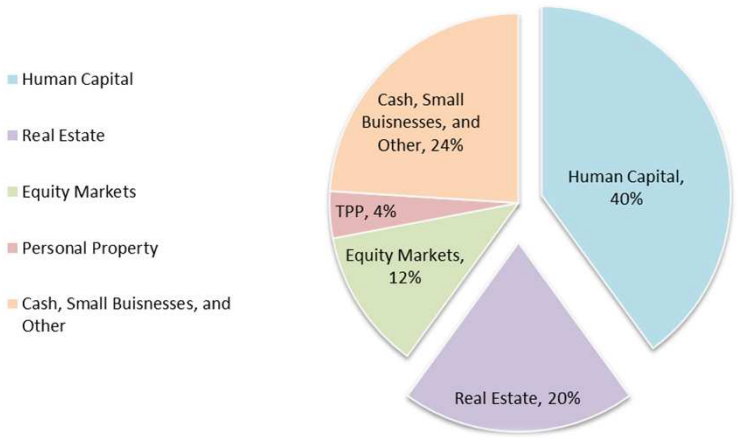
Understand the Core Value Structure of an Economy

National Economic Value Components

External Factors:
- Broad Market Influences
- National Antagonists
- National Protagonists
- Core Trade Markets

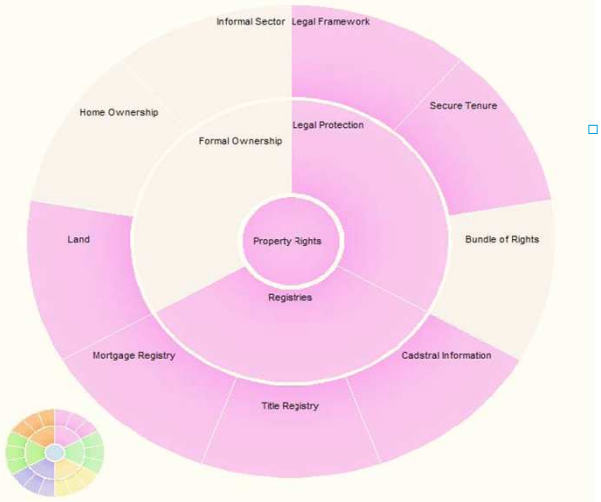


Gross National Private Sectorial Values



Property Market Foundation

Property Rights

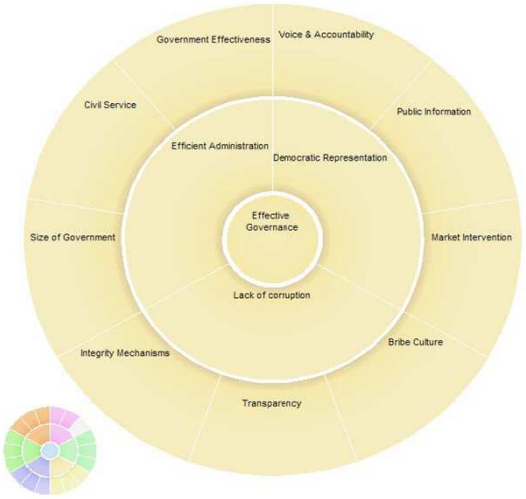


- **Goal – Property rights that are legally protected, secure, recorded in a single, accurate, electronically assessable registry and that lead to high levels of formal ownership for all citizens**

Access to Credit

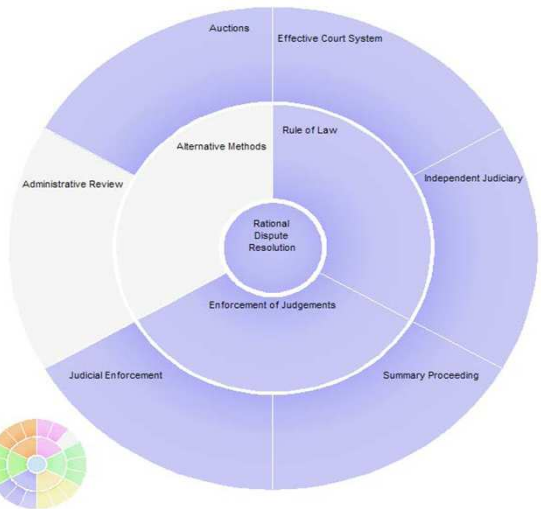
- **Goal – An efficient financial sector that allocates the resources saved by a nation's citizens as well as those entering the economy from abroad to their most productive uses. It includes a sound, trustworthy and transparent banking sector, well-regulated securities exchanges, venture capital, and accessible credit information.**

Effective Governance



- **Goal: A system of government in which citizens freely make political decisions by majority rule combined with guarantees of individual human rights and the rights of minorities.**
- **A government free of corruption and functioning efficiently enough to meet the needs of the people.**

Rational Dispute Resolution

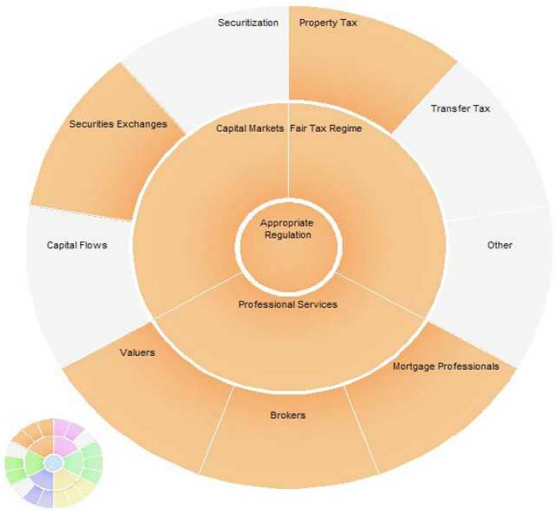


- **Goal: An efficient institutional framework that balances the rights of the public, owners, lenders and borrowers in the event of a dispute or loan default**

Financial Transparency

- **Goal: A highly developed and transparent financial system including policies, institutions and trained and ethical professionals that contribute to effective financial intermediation and deep and broad access to capital and financial services**

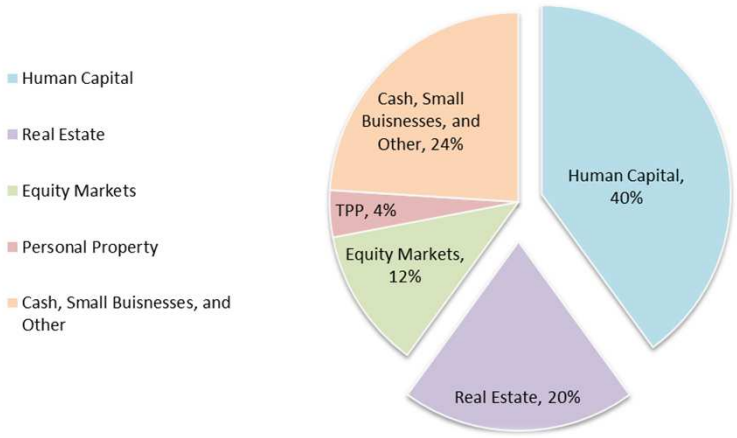
Appropriate Regulation



- **Goal: A comprehensive regulatory regime that is transparent, efficient, simple in its implementation and that leads to investments with the highest rate of return**

Property Market Foundation

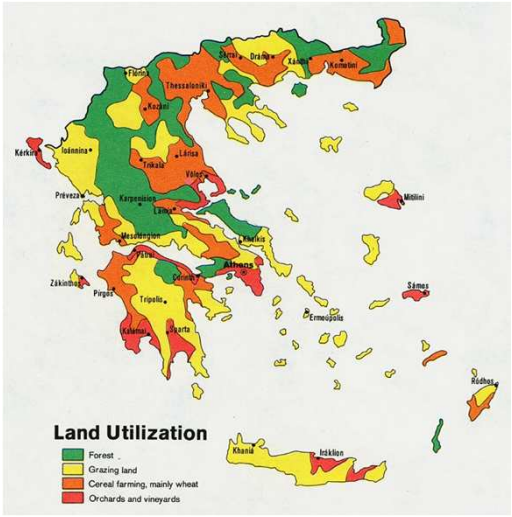
Gross National Private Sectorial Values



Search for Existing Economic Inefficiency Points

Quantify the Costs or Efficiency Losses of the Inefficiency Points

Case Study: Greece



Economic Snapshot of Greece

GDP 2014	• $241.7 Billion
Unemployment 2014	• 27.1% • Age 15-24 51.2%
Population	• 11 million

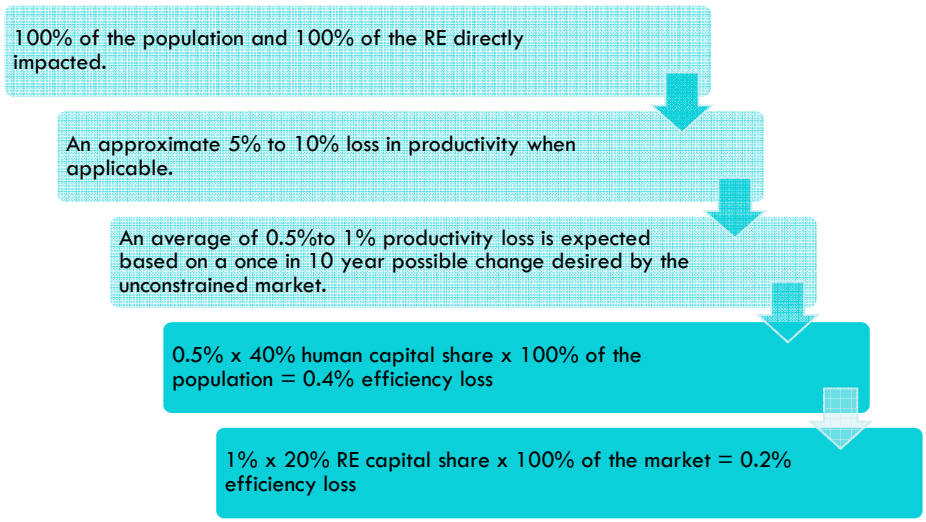
Effects of Lower Unemployment on GDP & the Deficit

- Assumptions: Pro employment and private market growth land policies, regulations, and possibly a privatization of some of the currently public held industries/markets.
- Applying an Okun's Law level multiplier effect of 2x to 3x equates to;
- **As a result of market improvements, if Greek Unemployment were to drop to 7%-10%;**
- **GDP would increase to $320 Billion to $360 Billion.**

Overly Complex Zoning Regulation

- 26,000 pages of zoning regulations.
- Overly complex & bureaucratic.
- Planning studies take 15 years and cost 6,000 euro per hectare.
- This unnecessarily increased uncertainty, delays, and costs.

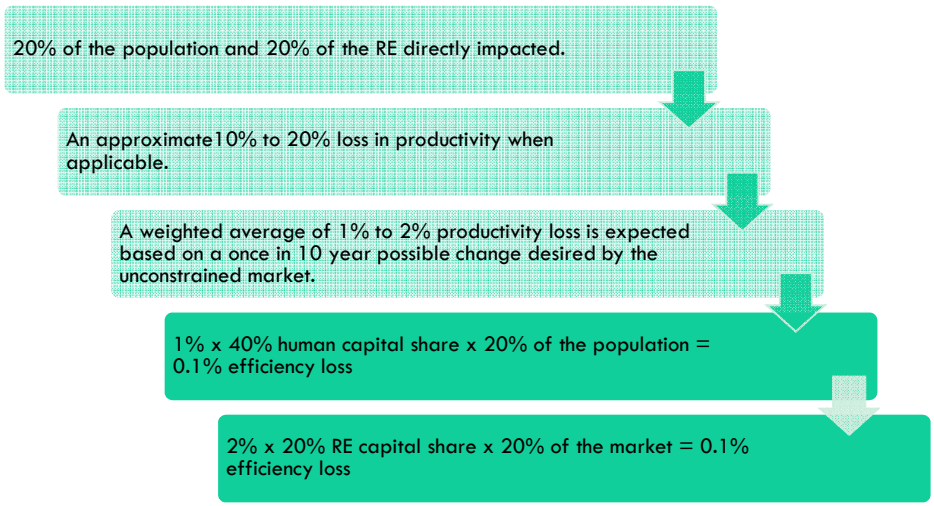
Overly Complex Zoning Regulation



Dead Capital and Informal Development

- Can't sell (at more than 50% value?)
- Mortgage
- Difficulty inheriting
- Can't legally expand
- Human capital is much less mobile
- Corporate assets are much less mobile
- Can't tax
- Uncertainty increased
- Can't register with cadaster
- Formalization has a high cost (7-20% of property value)
- Formalization permits are for 30 years only
- Formalization increased uncertainty
- 1 million constructions are deemed illegal (and this excludes the 1.5 million with minor informalities); totaling about 72 billion euro in value.

Dead Capital and Informal Development



Forest Land Policy Inefficiencies

- 48% of all land registered in the cadaster is informal since it has recently been claimed to be in new or historic forest lands.
- State claims ownership rights.
- No construction can commence.
- There are no completed forest or coastal zone maps
- owners must prove chain of title back to 1884.
- There has been a history of significant corruption in this process.

Forest Land Policy Inefficiencies

- Title chain research is a long costly process tending to rule out small and medium investors from the market.
- The state has often claimed land in suburbs, even land registered with services available, taxes being paid, and a resident in place for over 20 years.
- The presence of a forest (25% canopy) at any time in the past based on ortho photos from as far back as 1945 allow the government to make these claims to ownership.

Forest Land Policy Inefficiencies

- Rural land that is not cultivated may also “become” forest land and then the state can make claim. In informal & unplanned areas it can take 2-3 years for "possible" approvals for any construction, and denial is very possible.
- Constructions are commonly built informally because of this.
- To build in unplanned areas requires up to 25 agencies, may take several years, often court decisions ruling our small players.
- The process is slow and the lack of spatial data (forest maps & coastal zone maps) makes it even longer when there is existing formal & informal development already in place.

Forest Land Policy Inefficiencies

12% of the population and 12% of the RE directly impacted (we used 1/4 of the land area as our guide assuming lower values and population in these areas).

An approximate 10% loss in productivity when applicable.

A weighted average of 2% productivity loss is expected based on a once in 20 year possible change desired by the unconstrained market.

2% x 40% human capital share x 12% of the population = 0.1% efficiency loss

2% x 20% RE capital share x 12% of the market = 0.05% efficiency loss

Human Capital and Cost Inefficiencies

- Real estate values are inflated due to mortgages only available in the planned areas, pushing the populations into the urban areas where they might not go were their mortgage options expanded.
- Engineering inspections for informalities are required for each transfer (increasing costs).

Human Capital and Cost Inefficiencies

100% of the population and 100% of the RE directly impacted.

An approximate 1% loss in productivity.

A weighted average of 1% productivity loss is expected relative to an unconstrained market.

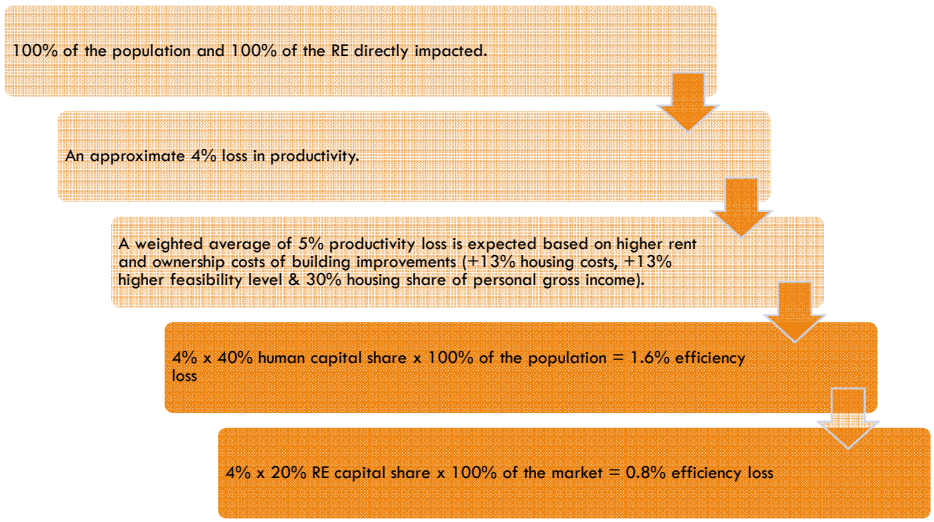
1% x 40% human capital share x 100% of the population = 0.4% efficiency loss

1% x 20% RE capital share x 100% of the market = 0.2% efficiency loss

Tax on New Construction

There is a 23% tax due on all new constructions forcing up real estate values by raising the feasibility level for new constructions well above what is efficiently demanded by the market.

Tax on New Construction



Multiplicative Inefficiency Factors

- The effects of lost efficiency on GDP is multiplicative.
- We will multiply all of these factors and arrive at a composite factor.
- We have also applied an efficiency factor to account for other inefficiencies in the market that were not explicitly factored in here. These are typically Public Sector factors.
- These other factors would apply downward pressure on the effect of the items noted here and a range of 0% to 50% for other inefficiencies (corruption other weak institutions, tax revenues needed to be gathered if taken away from new construction, etc.).

Multiplicative Inefficiency Factors

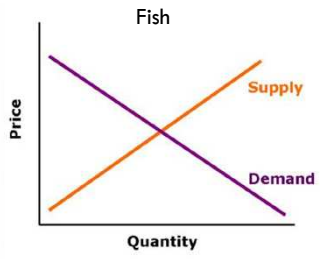
- In this instance we have estimated a 35% loss of efficiency factor before determining the expected effect of these policies and practices on GDP.
- Lastly, we have not accounted for the effect these items have on personal property, cash & small business sector or the equity markets.
- These markets are also be affected by these same factors, but likely to a lesser extent.

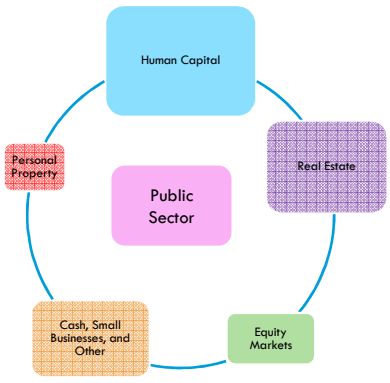
Multiplicative Inefficiency Factors

- Composite of the above factors is 1.1% loss of efficiency.
- Applying the 65% efficiency factor (or loss of efficiency for other factors) shows 0.74% (1.55% for construction alone).
- Applying an Okun's Law level multiplier effect (2x to 3x) gives us a 1.5% to 2.2% GDP effect for these factors (3.1% to 4.6% for construction alone).
- ***The annual GDP effect is 3.6 to 5.3 Billion.***
- ***As GDP effect, given time, with Construction VAT lowered from 23% to about 3% is an additional 7.4 to 11 Billion***

Determine the Optimum Level of Model Detail

Micro to Macro Economics





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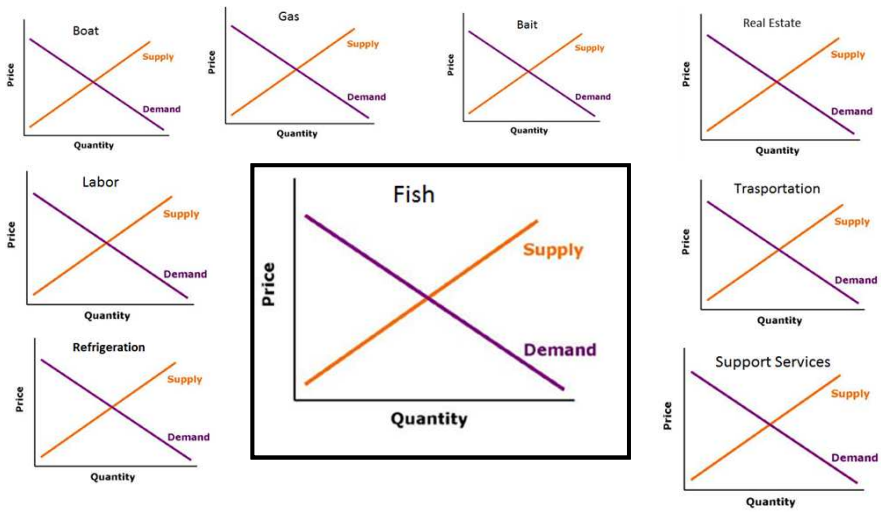
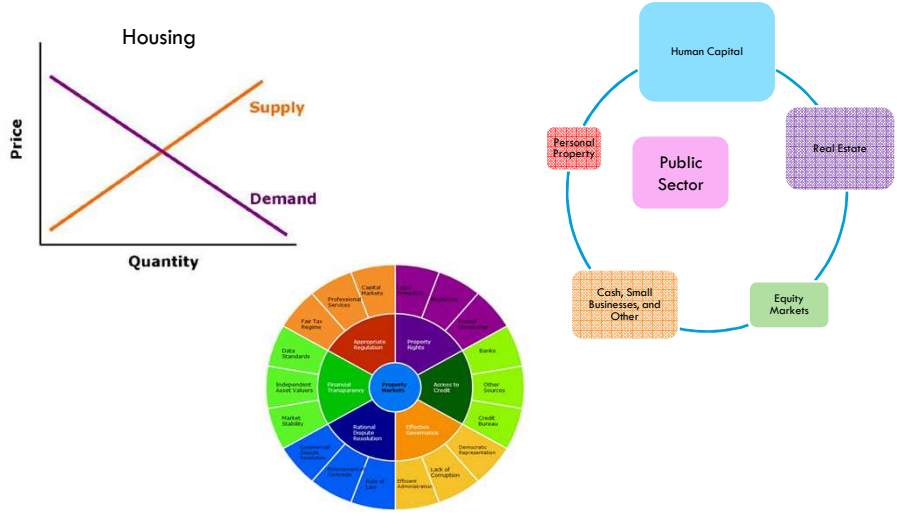


Micro to Macro Economics



Thank you!

"A good legal property system is a medium that allows us to understand each other, make connections, and synthesize knowledge about our assets to enhance our productivity"

- Hernando de Soto