CONCEPTUAL FRAMEWORK FOR MEASUREMENT OF ASSET DEPRECIATION ON BUILDINGS

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by

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Background and statement of the research problem

- Depreciation of real estate assets – both physical and in terms of value – is one of the major cost-centers for the real estate owner and investor, private or public.
- As the asset depreciation is connected directly with the value and size of the capital investments of the real estate asset, influencing capital budgeting decisions in corporate finance and also major capital expenditure decisions that concern public and private sector long-term investments, then both over- and under-investments may harm the rate of return from the asset.
- The problem is especially topical in markets, where an old asset base is prevailing.
- Although the current literature about real estate assets depreciation in general is very broad and well-researched topic, there is still a lack of overall conceptual framework for the measurement of optimal level of depreciation in practice.
The aim of the study... 

...is to elaborate on conceptual framework for asset depreciation on buildings.

**Research question 1:** What is the optimal level of the rate of depreciation and repairment costs in order to avoid the loss in asset’s physical and market value?

**Research question 2:** Does the market rent level support the required level of capital investments at any times of the real estate market cycle?

**Research question 3:** Whether at the long-run equilibrium level, the cost of capital used to discount the cash flows from the building asset, should equal at least the depreciation rate of the same asset?
Asset depreciation: classification and measurement

Types of depreciation
(age and time effect)

Economic or monetary depreciation (ED)
• asset obsolescence
  (age-price profile)

Physical or efficiency depreciation (PD)
• asset deterioration
  (age-efficiency profile)

Measurements

Time-series or accounting depreciation

Cross-section depreciation

Retirement effect

Decay effect

Input decay

Output decay

An explicit relation between depreciation, asset price, rental price, capital expenditure and cost of capital

Source: compiled by the author.
The link between user cost, rental price and real estate price

Rental price \((R_t) = u_t \cdot P_t\)

User costs \((uc) = u_t \cdot P_t\)

Real estate price \((P_t) = \frac{R_t}{u_t}\)

Source: ela-bo-rated by the author.
The hypothetical components of market rent

- Side costs
- Costs of consumption services
- Costs of support services
  + Capital expenditures
    (capitalized costs)
  - Periodic repair cost
    (non-capitalized costs)
  - Maintenance costs
  - Real estate tax
  - Insurance
  - Cost of capital
  - Owner’s gain

Level I net rent

Total rent

Source: compiled by the author.
Proposition: There exists an optimal level of the rate of asset depreciation, which can be found from the equilibrium of capitalization rate and user cost of capital.

• The rate of overall depreciation is the weighted average depreciation of the buildings’ components.
• The current market rent structure may or may not support the investments into required capital expenditures of an asset.
• The optimal level of depreciation may avoid to over-invest at the top of the market cycle and under-invest at the lower point of the market cycle in order to maintain the asset market value on the competitive level.
Thank You for Your Attention!