

Matching Indices for Thinly-Traded Commercial Real Estate in Singapore: A Comment

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Comparison: Singapore, Tokyo, and NYC

	Singapore	Tokyo	New York City
Area	707 km ²	623 km ²	786 km ²
Population	5,410,000	9,057,000	8,175,000
Population Density	7,613	14,566	10,630

(Data Sources: Wikipedia)

Problems with Real Estate Price indices

- ▶ Heterogeneous properties are traded infrequently and irregularly over time.
- ▶ Only a fraction of the stock in the market is traded during any given period.
- ▶ Highly variable liquidity in the market affects the observable transaction price data.

Quality-Adjusted Real Estate Price indices

- ▶ The Hedonic Price Method

 - Rosen (1974)



A Matching Approach (McMillen (2012))



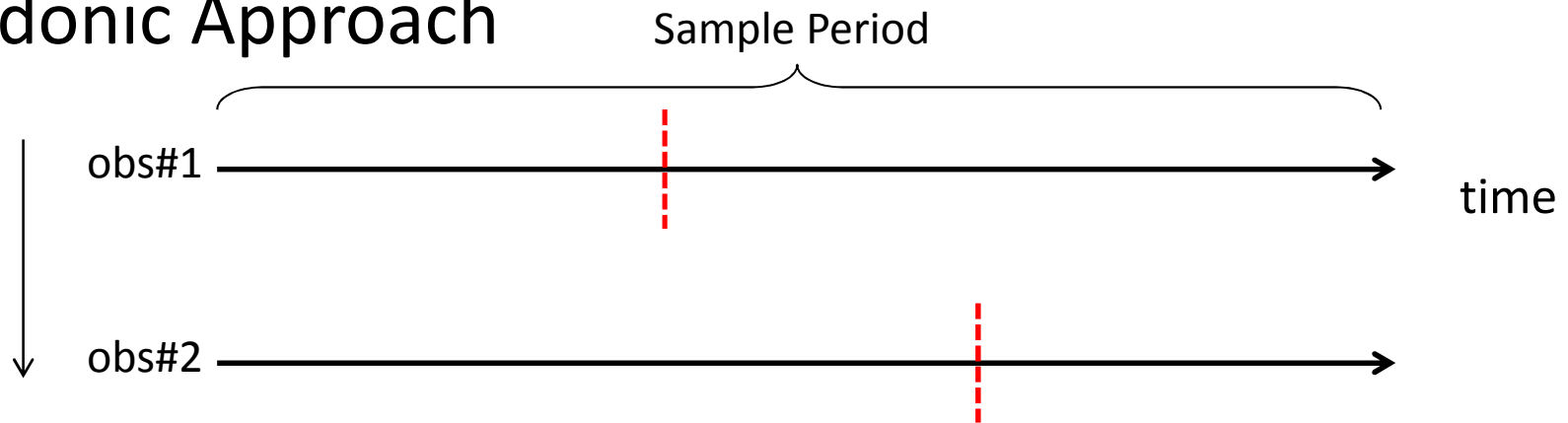
- ▶ The Repeat-Sales Method

 - Baily, Muth, and Nourse (1963)

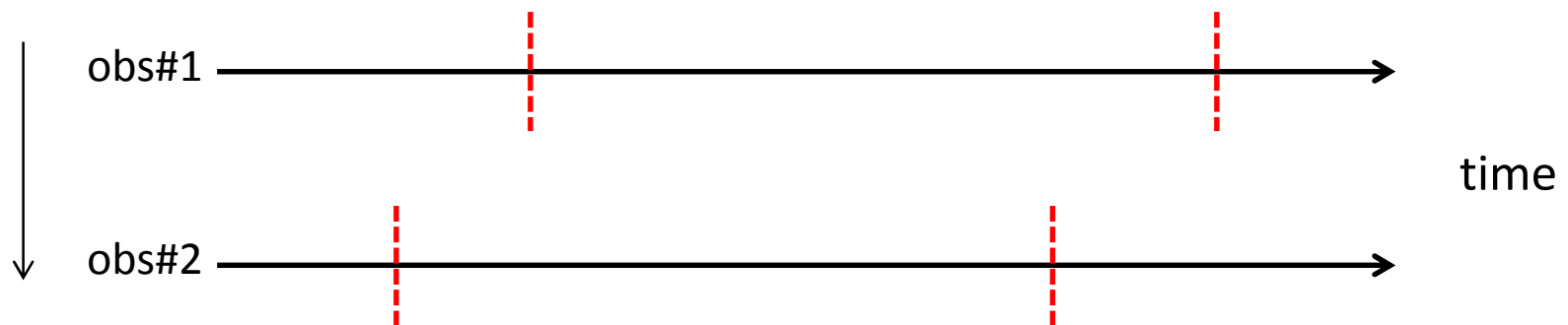
- ▶ Appraisal-Based Method

How to Increase the Sample Size

Hedonic Approach

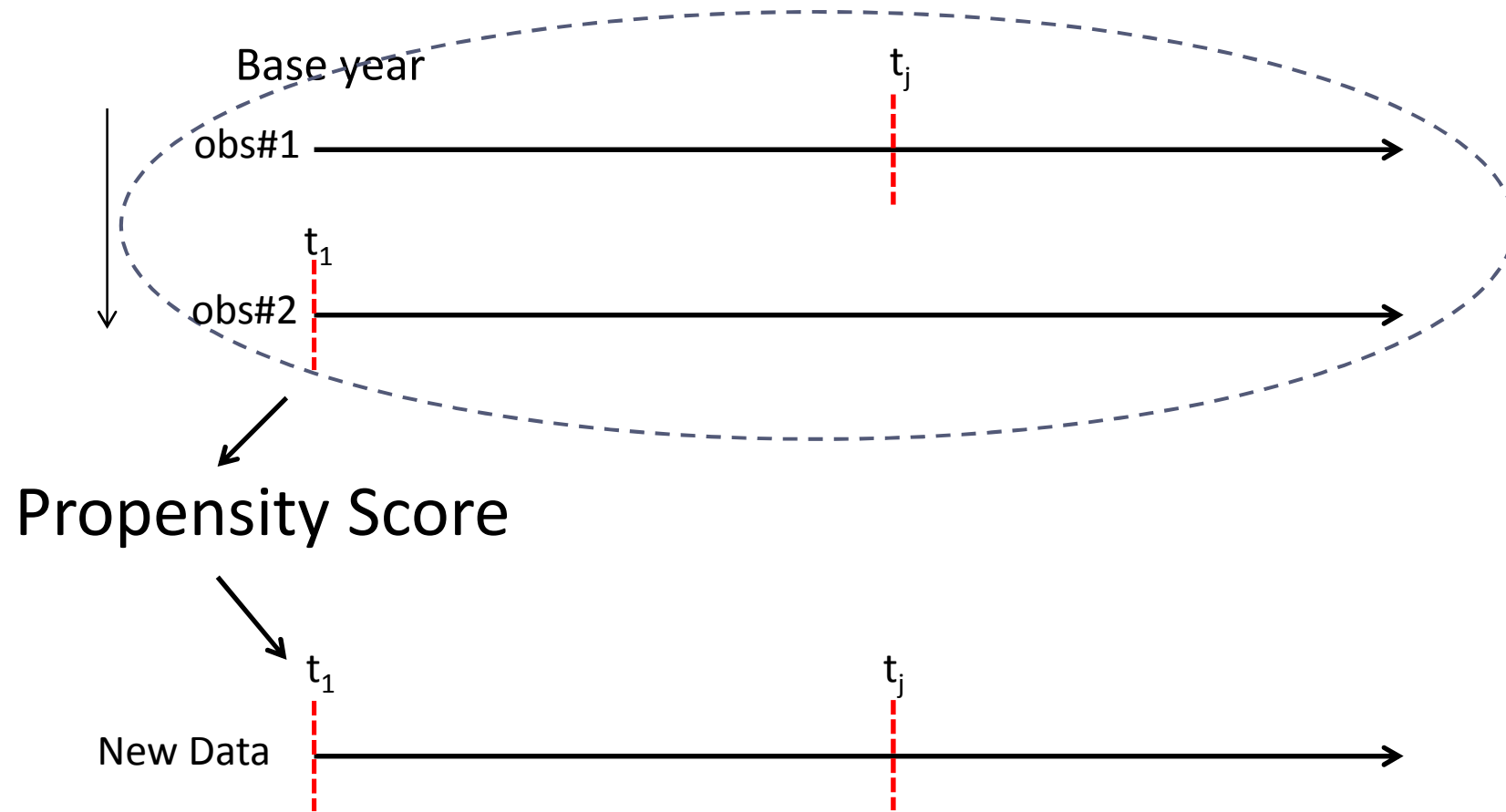


Repeat-sales Method



How to Increase the Sample Size

Matching Approach



Matching Approach

▶ Merits

- preserves much larger sample sizes than the repeat-sales approach.
- require less preimposed structure than the hedonic approach.
- makes it easy to characterize changes in the price distribution for a constant-quality commercial real estate.

▶ Demerits? or Questions?

1st Question (Data Augmentation?)

What is the treatment in this model? Time?

		Treatment	Control
Treatment	Yes	$Y(t_j)$ (period t_j)	observable
	No	$Y(t_1)$ (base period t_1)	unobservable

e.g.

Articles refereed to by the authors	Treatment (Experiment)
Bondonio and Engberg (2000)	Enterprise zones
Bondonio and Greenbaum (2007)	Enterprise zones
Cho (2009)	Maternal imprisonment
List et al. (2004)	Environment regulation
McMillan and McDonald (2002)	zoning
O'Keefe (2004)	Enterprise zones
Romero (2009)	Area-based intervention

2nd Question (Changing Building Structure)

Property Attributes	Location Attributes (km)	Neighborhood Attributes (yes=1; No=0)
Log Sale Price (in Singapore Dollars)	Log Distance to CBD	Inside of CBD
Log Floor Area of Unit (in square meters)	Log Distance to Airport	MRT or LRT Station within 0.3km
	Log Distance to Seaport	Expressway within 0.3km
	Log Distance to nearest MRT or LRT Station	Shopping center within 0.3km
	Log Distance to Expressway	Public Housing within 0.3km
		Building with Car-park

An increase in the demand for the electric power due to IT Revolution in the late 1990's ⇒ Diversity of the demand and supply of commercial real estate

3rd Question (Commercial Land Price Indices?)

- ▶ By the same token, the matching method can not separate price changes into the land and structure components of each property.
- ▶ In other words, the matching method might be more appropriate for creating commercial land price indices.

Other Questions (I am curious about...)

- ▶ If a different base year were chosen, then how would the results here change?
- ▶ How are the movements of commercial property price indices different from those of residential housing price indices in Singapore?

“Private Residential Price Indices in Singapore: A Matched Approach,”
Regional Science and Urban Economics, 2012.