



Chapter 4: Conceptual Framework for Commercial Property Price Indexes

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ECB Workshop on Handbook on Commercial Property Price Indexes, Frankfurt, September 29-30, 2014

CPPIs

- The hard area of irregular transactions on heterogeneous properties
- Authors and Erwin Diewert

Needs of chapter 4:

- **A conceptual framework** for price index number measurement against which alternative measurement methodologies and data sources can be better formulated/judged.
- **Some issues aligned with 2008 SNA**, such as sector coverage, type of property (classification), geography (residency), valuation, definitions of key variables including capital consumption, fixed capital formation; need for CPPIs to be closely aligned to an integrated system of economic statistics.

Uses

- The framework should relate to Uses (chapter 3), most importantly:
 - financial soundness indicator (FSI). IMF and ECB; timely, high-frequency, responsive at turning points, adjusted for changes in quality mix. Structure-land decomposition not necessary.
 - price-volume decompositions for which the chapter should draw from the 2013 *Residential Property Price Index Handbook*; 2008 *SNA*; 2009 *XMPI Manual*; 2009 *Guidelines on CPI*; 2004 *PPI Manual*; and 2004 *CPI Manual*.

The framework: capital expenditures and capital consumption

- Capital expenditures and capital consumption included as adjustment for quality adjustment.
- Akin to perpetual inventory measure of capital stock.
- **Capital consumption** linear path assumed.

$$\frac{P^t}{P^{t-1}} = \frac{K^t - CE + Dep}{K^{t-1}}$$

Capital expenditure (chapter 6)

- *Capital expenditures comprise:*
 - *leasing costs (tenant build-outs, improvement expenditures, leasing commission to buyer)*
 - *Property improvements (major repairs , replacement of major replacement of major equipment, major remodeling of building, grounds and fixtures and expansion of rentable area).*
- *Capital expenditures do not generally imply any expansion of enhancement of property size and quality beyond its original size and quality. At most they forestall or slow down the rate of real depreciation the property experiences due to physical and functional obsolescence.*

Conceptual framework for a single matched comparison: quality adjustment

- period 0 regression with k price-determining characteristics:

$$\ln p_i^0 = \beta^0 + \sum_k \beta_k^0 z_{ik}^0 + \varepsilon_i^0$$

- period 1 price quality-adjusted for changes in quality between periods 0 and 1, using period 0 marginal valuations:

$$\hat{p}_i^0(z_i^1) = p_i^0 \exp\left[\sum_k \beta_k^0 (z_{ik}^1 - z_{ik}^0)\right]$$

- and the index is some weighted form, preferably superlative, of:

$$\frac{\hat{p}_i^1(z_i^1)}{\hat{p}_i^0(z_i^1)}$$

- There are many formulations: de Haan, Diewert, Hill, Silver, Triplett. Some theoretical backbone: Rosen (1974) Diewert (1976, 78 and 2004). Applies to aggregates. No need for matched properties

Because

- without defining concepts, the reader is ill-informed about the many caveats underlying the proposed methodology;
- The example is not helpful.

Way forward:

- Possibly:
 - "Handbook" too ambitious at this stage. A publication that educates compilers and users about issues, areas of further research that will eventually lead to a Handbook.
 - Currently vast amount of good material that needs refocussing/directing.