

Second IMF Statistical Forum,
Statistics for Policymaking Identifying Macroeconomic and Financial Vulnerabilities
Session IV, Real Estate Prices—Availability, Importance, and New Developments

Discussion of Robert Shiller (Yale University) & Mick Silver (IMF)

Real Estate Prices—Availability, Importance, and New Developments

Japanese experience and New challenge

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1. Macroeconomic Policy and Housing Market

- Fluctuations in real estate prices and economic activities.
- In Japan, a sharp rise in real estate prices during the latter half of the 1980s and its decline in the early 1990s has led to a **decade-long stagnation of the Japanese economy**.
- Shimizu,C and T.Watanabe(2010), “Housing Bubble in Japan and the United States,” Public Policy Review Vol.6, No.3, 431-472.
- *At the center of my definition of the bubble are the epidemic spread, the emotions of investors, and the nature of the news and information media. Bubbles are not, in my mind, about craziness of investors. (Robert Shiller (2014))*

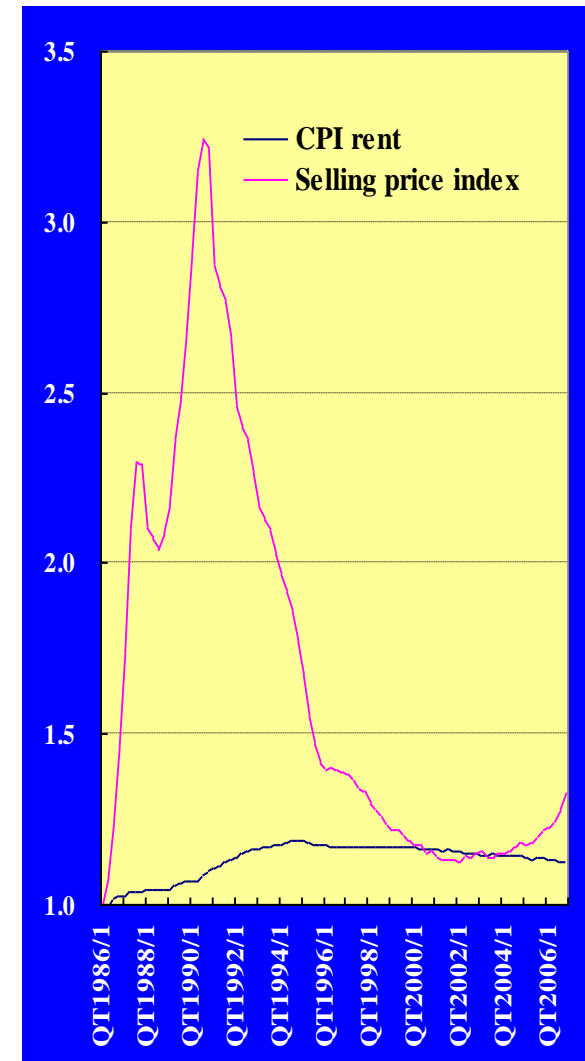
Official Statistics on Housing market: Rent and Prices.

Expenditures for housing services: 26.4%

Housing rents:	4.9%
Imputed rents from owner occupied housing:	19.4%
Housing maintenance and others:	2.3%

“Consumer Price Index (CPI) in Tokyo, 2010”

- The most important link between *asset prices* and *goods & services prices* is the one through **housing rents** (Goodhart 2001)
- **Fundamental Value**: Expected Present Value Models and Excess Volatility. **Robert Shiller** (1984, 1989).
- Housing rents account for more than **one fourth** of personal spending



Frequency of Rent Adjustments

Price Change

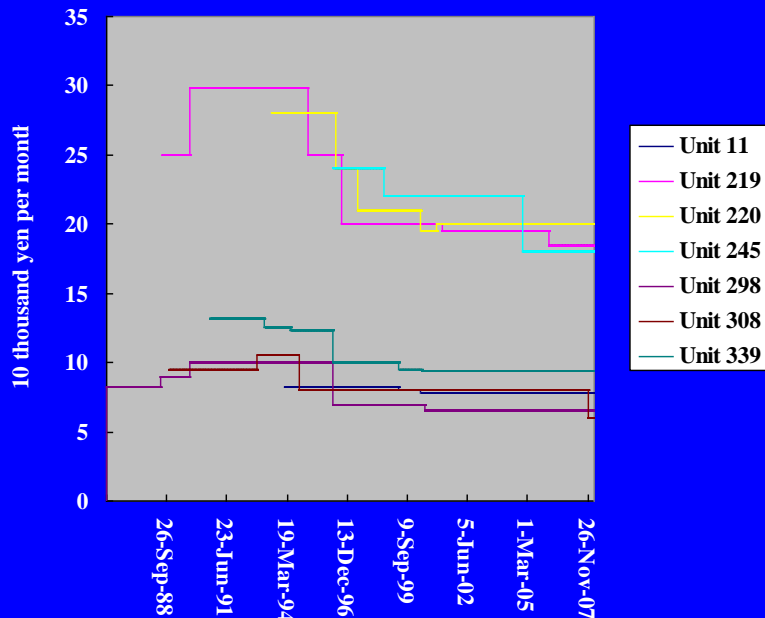
$$\Delta R_{it} \equiv R_{it} - R_{it-1}$$

Probability of event on *New Contract* (I^N)
and *Renewed Contract* (I^R)

$$\Pr(\Delta R_{it} = 0) = \left[1 - \Pr(I_{it}^N = 1) - \Pr(I_{it}^R = 1) \right]$$

$$+ \Pr(\Delta R_{it} = 0 \mid I_{it}^N = 1) \Pr(I_{it}^N = 1)$$

$$+ \Pr(\Delta R_{it} = 0 \mid I_{it}^R = 1) \Pr(I_{it}^R = 1)$$



Frequency of Rent Adjustments: Shimizu, Nishimura and Watanabe (2010)

	Negative	Zero	Positive	Number of Observations
Turnover Units	85 (0.162)	397 (0.755)	44 (0.084)	526 (1.000)
Rollover Units	18 (0.030)	576 (0.970)	0 (0.000)	594 (1.000)
All Units	103 (0.007)	15,492 (0.990)	44 (0.003)	15,639 (1.000)

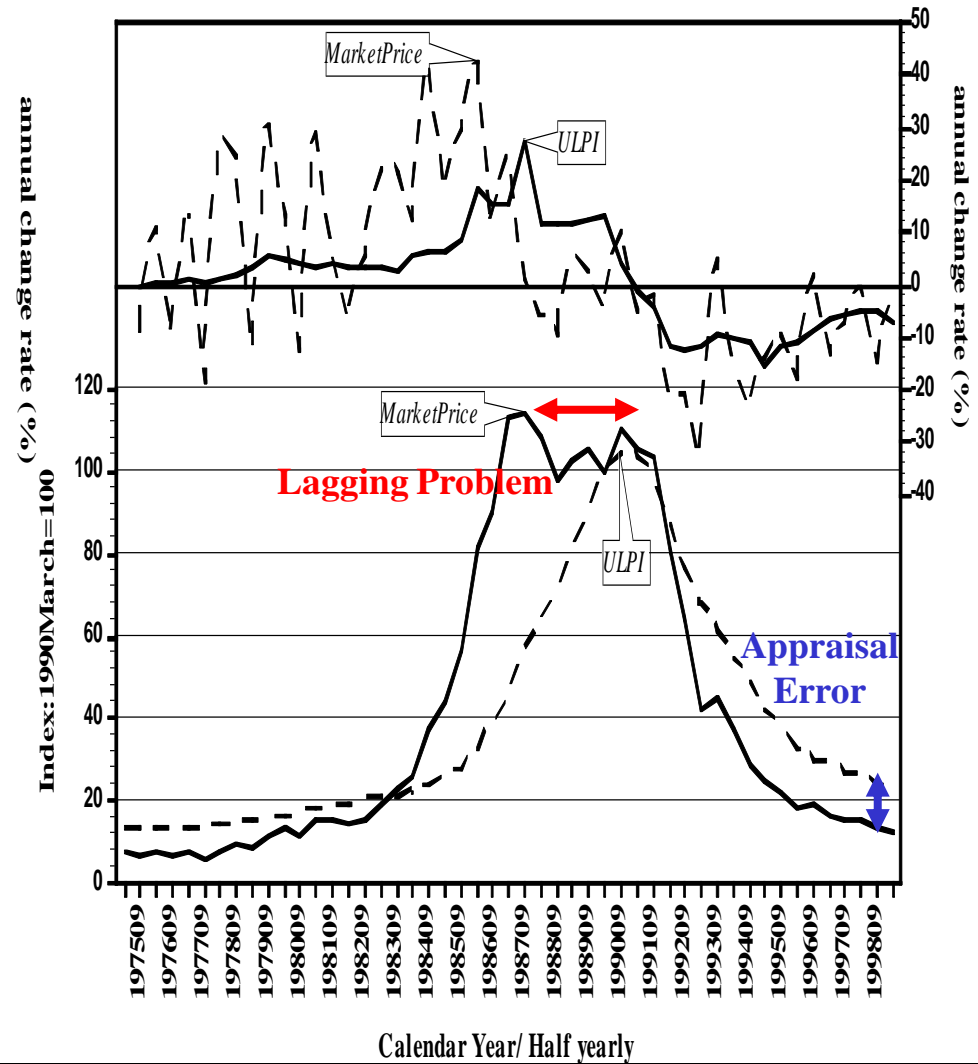
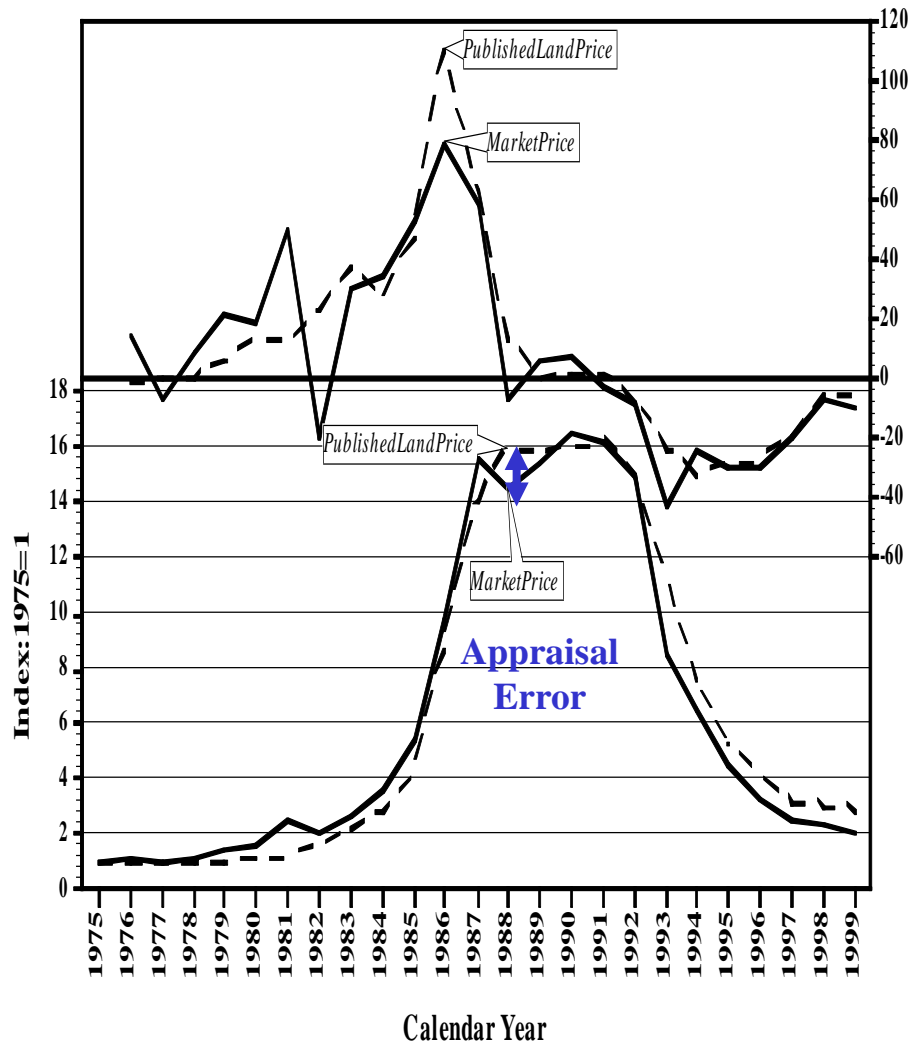
Fraction of housing units without no rent change per year

US	29%	Estimated by Genesove (2003)
Germany	78%	Estimated by Kurz-Kim (2006)
Japan	90%	Estimated by Shimizu et al (2010)

2. How should different countries construct *Residential property price indexes*?

- The Eurostat published *Handbook on Residential Property Price indexes*. **Mick Silver (2014)**.
- The housing rent in CPI did not work well as a “*mirror*” of **housing prices**.
- How should different countries construct residential property price indexes?
- With the start of the RPPI Handbook project, the government of Japan set up an Advisory Board in 2012 and is proceeding with the development of a new **transaction based residential property price index (RPPI)**.
- Japan had only **official appraisal based RPPI**.

Transaction price-based index and Appraisal value based index in Tokyo.



Estimation Methods for Constructing Residential Property Price Indexes

- **Housing:** The location, history and facilities of each house are *different* from each other in *varying degrees*.
- Houses have “*particularity with few equivalents*.”
- **Quality-Adjustment Methodology** in House Price Index
- → **Hedonic method and Repeat sales method**

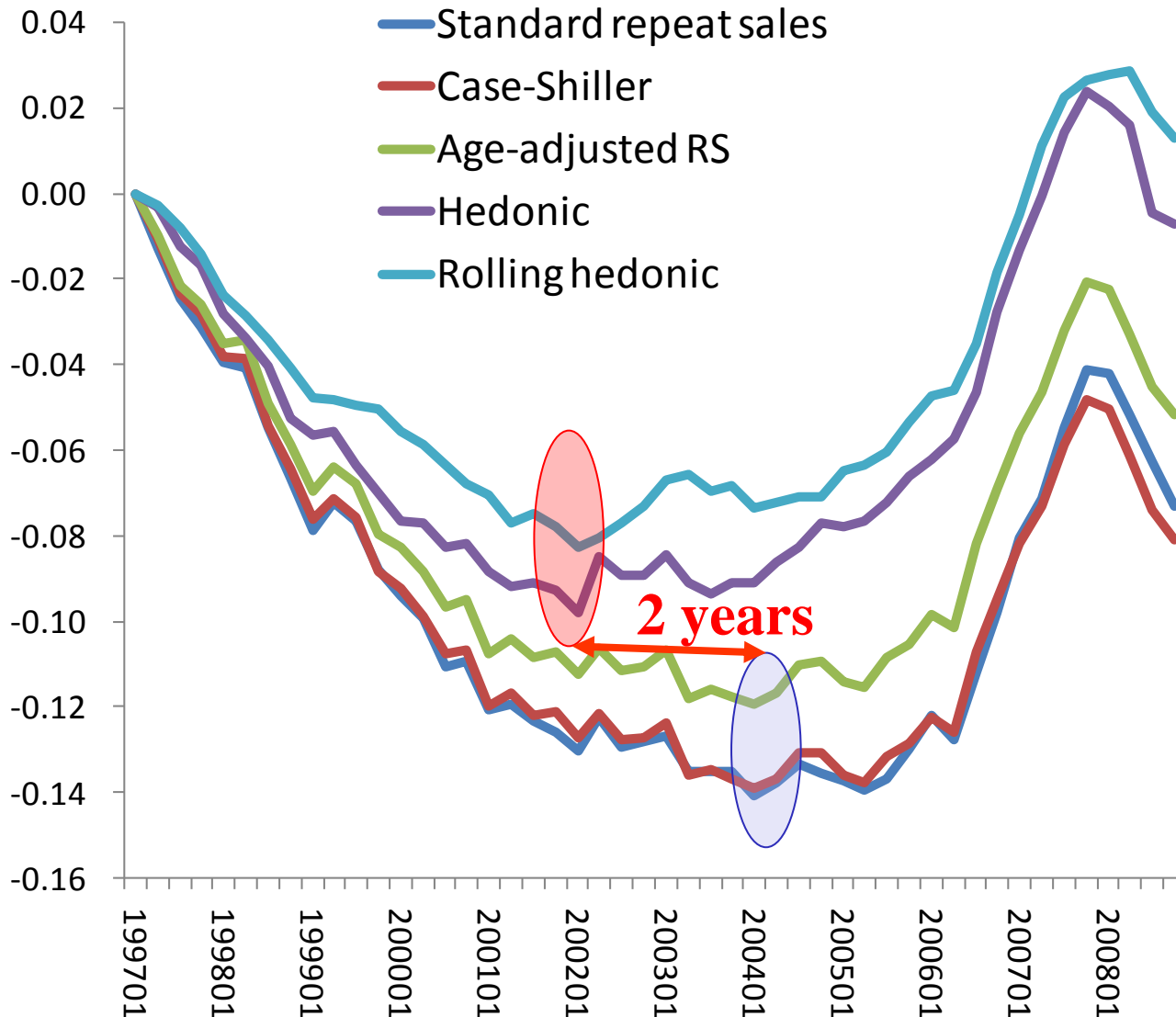
Heteroskedasticity and *Age Adjustments* to the Repeat Sales Index

- **Case-Shiller adjustment:**
- Case and Shiller (1987, 1989) have proposed a model in which a GLS estimation is performed taking account of *heteroscedasticity*.
- **Age-adjustment to repeat sales index:**
- The number of years for which are houses in the market is remarkably short, *the depreciation problem* is potentially significant in Japan.
- To take account of the *age effect*, we estimate Age-adjustment to repeat sales index.(Shimizu, Nishimura and Watanabe(2010), Wong, Chau and Shimizu(2013)).

Case of Japanese RPPI: **Methods**

- *The question of which method is “best” remains open but the depreciation bias in the standard repeat sales method tends to lead us to prefer **hedonic methods**. (Handbook on Residential Property Price indexes by EuroStat (2013))*
- The government of Japan decided to prepare an official residential property price index based on *the hedonic method*.
- In particular, it has been determined that it will be estimated with *the rolling window hedonic method* proposed by Shimizu, Takatsugi, Ono and Nishimura (1998) and Shimizu, Nishimura and Watanabe (2010) and system development is underway.

When did the condominium price hit bottom?



The Selection of Data Sources for the Construction of Housing Price Indexes: **Mick Silver (2014)**.

- Are house prices different depending on the stages of the buying/selling process?

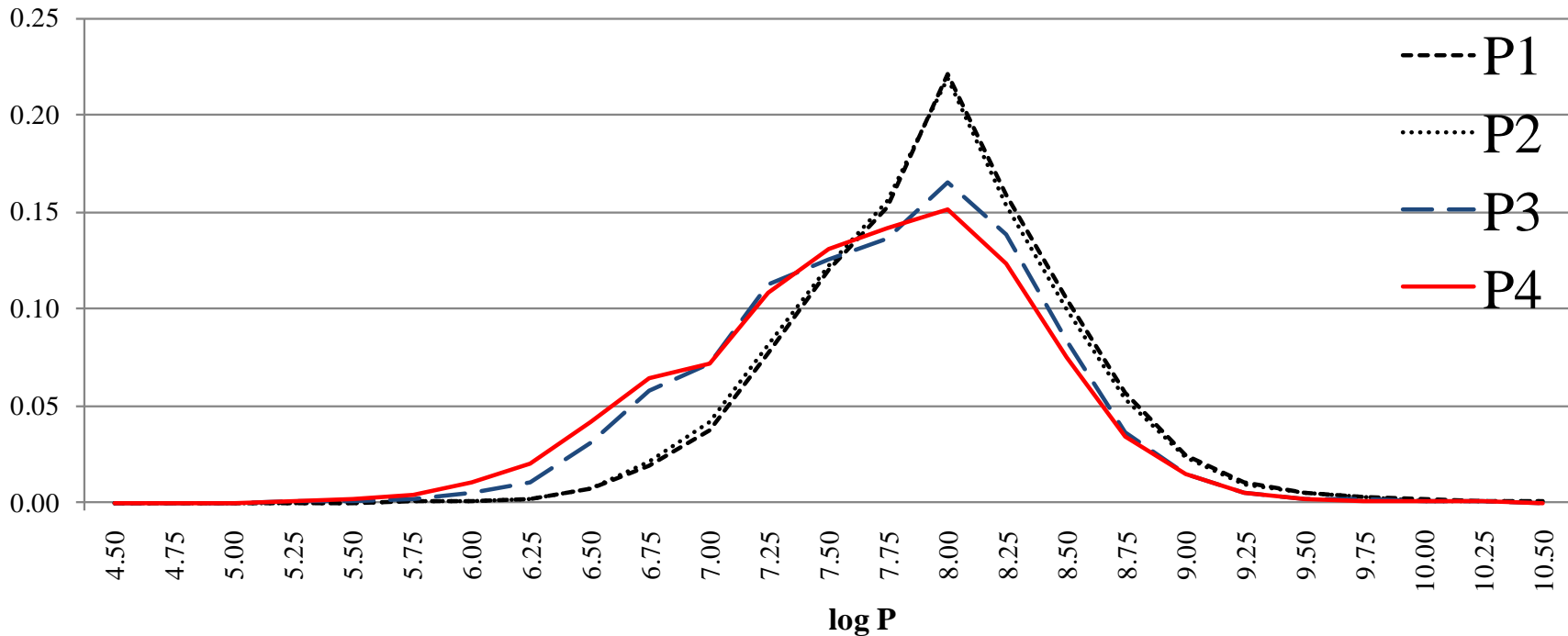


- We address this question by comparing the distributions of prices collected at **different stages of the buying/selling process**, including:
 - **(1) initial asking prices** listed on a magazine or website,
 - **(2) asking prices** at which an offer is made by a buyer,
 - **(3) contract prices** reported by realtors after mortgage approval,
 - **(4) contract prices** from registry prices.

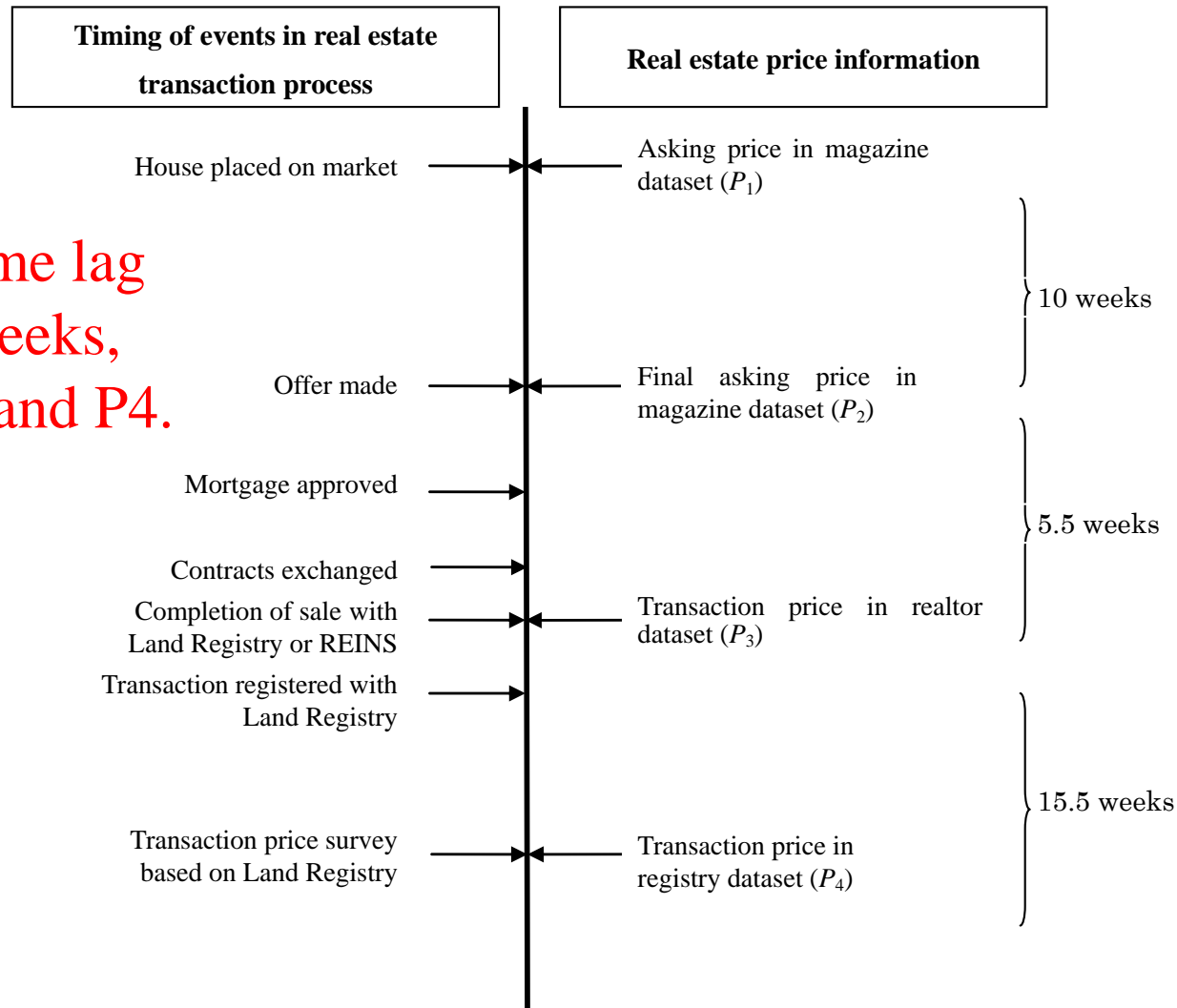
Price distributions

: Price densities for P1, P2, P3, and P4

The distribution of transaction prices, P3 and P4 differs substantially from that of asking prices, P1 and P2.

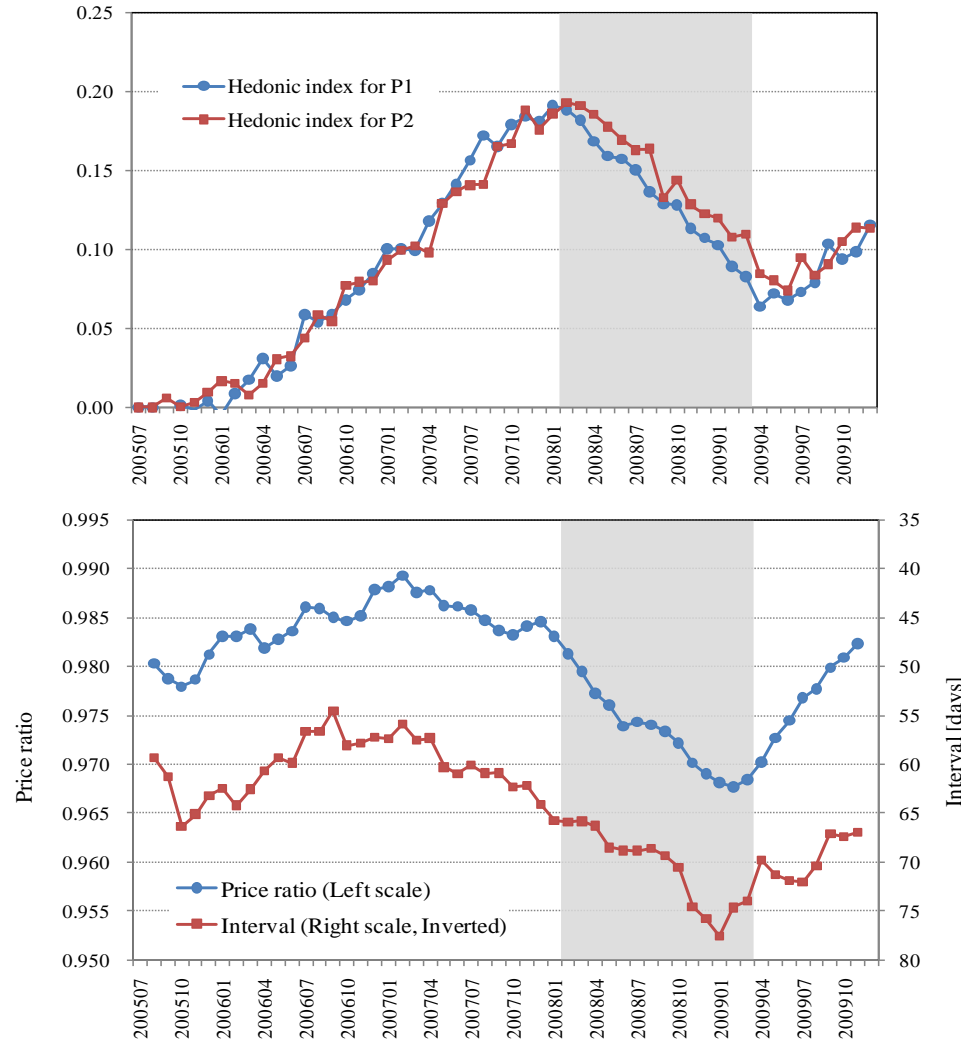


House purchase timeline



There is a time lag around 30 weeks, between P_1 and P_4 .

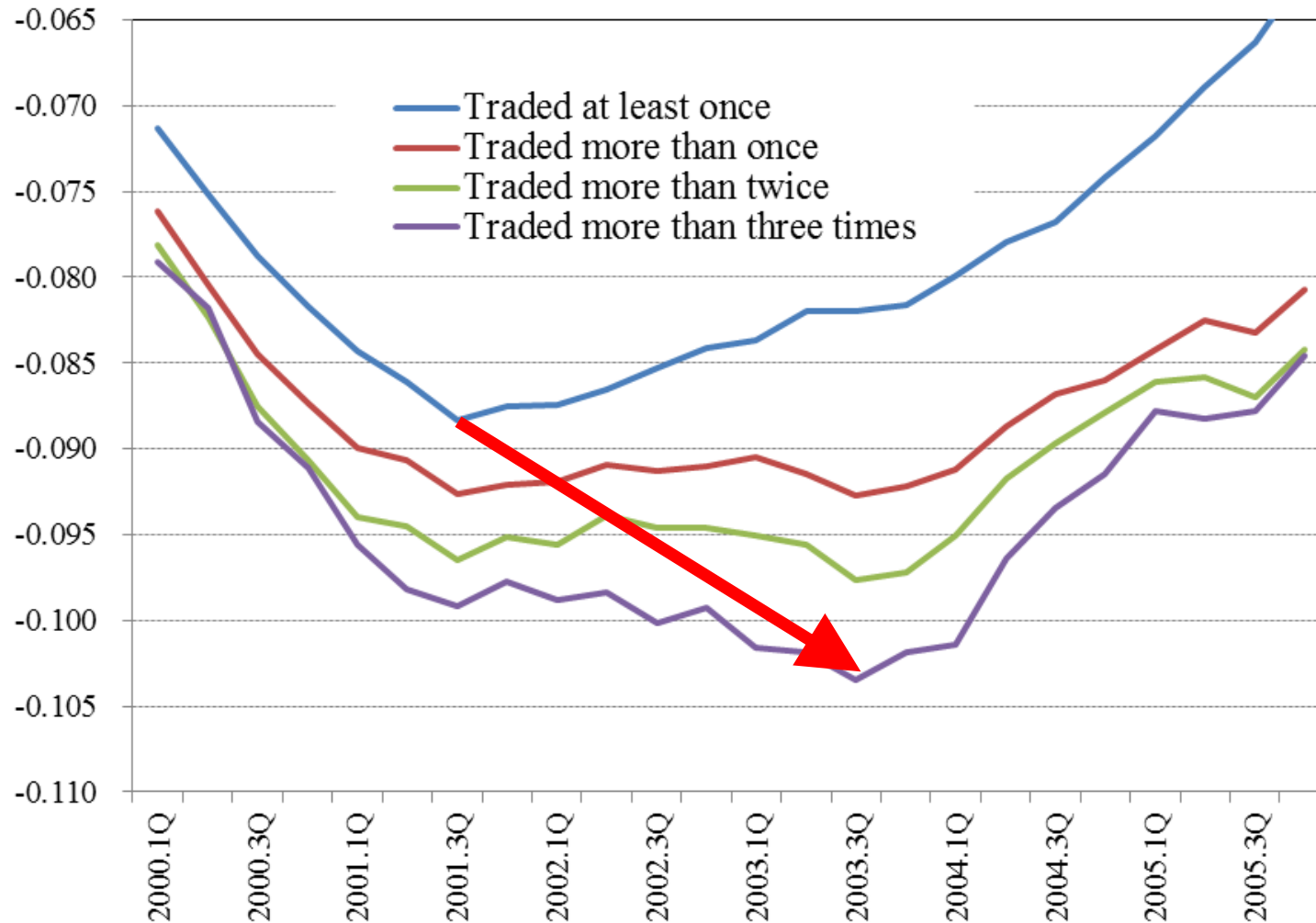
Fluctuations in the price ratio and the interval for P_1 and P_2



3. Overall conclusions: Lessons from Shiller and Silver

- Q1: How do property prices affect *the economic system* or *the financial system*?
- → **Robert Shiller (2014)**
- Q2: Do the different methods lead to different estimates of property price changes? If the methods do generate different results, *which method should be chosen*.
- Q3: *Which data source should be used* for property price indexes?
- → **Mick Silver (2014) & Robert Shiller (1987, 1989)**

Hedonic indexes estimated using repeat-sales samples



Densities for relative prices

