

The Treatment of Owner-Occupied Housing in the U.S. CPI

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Outline

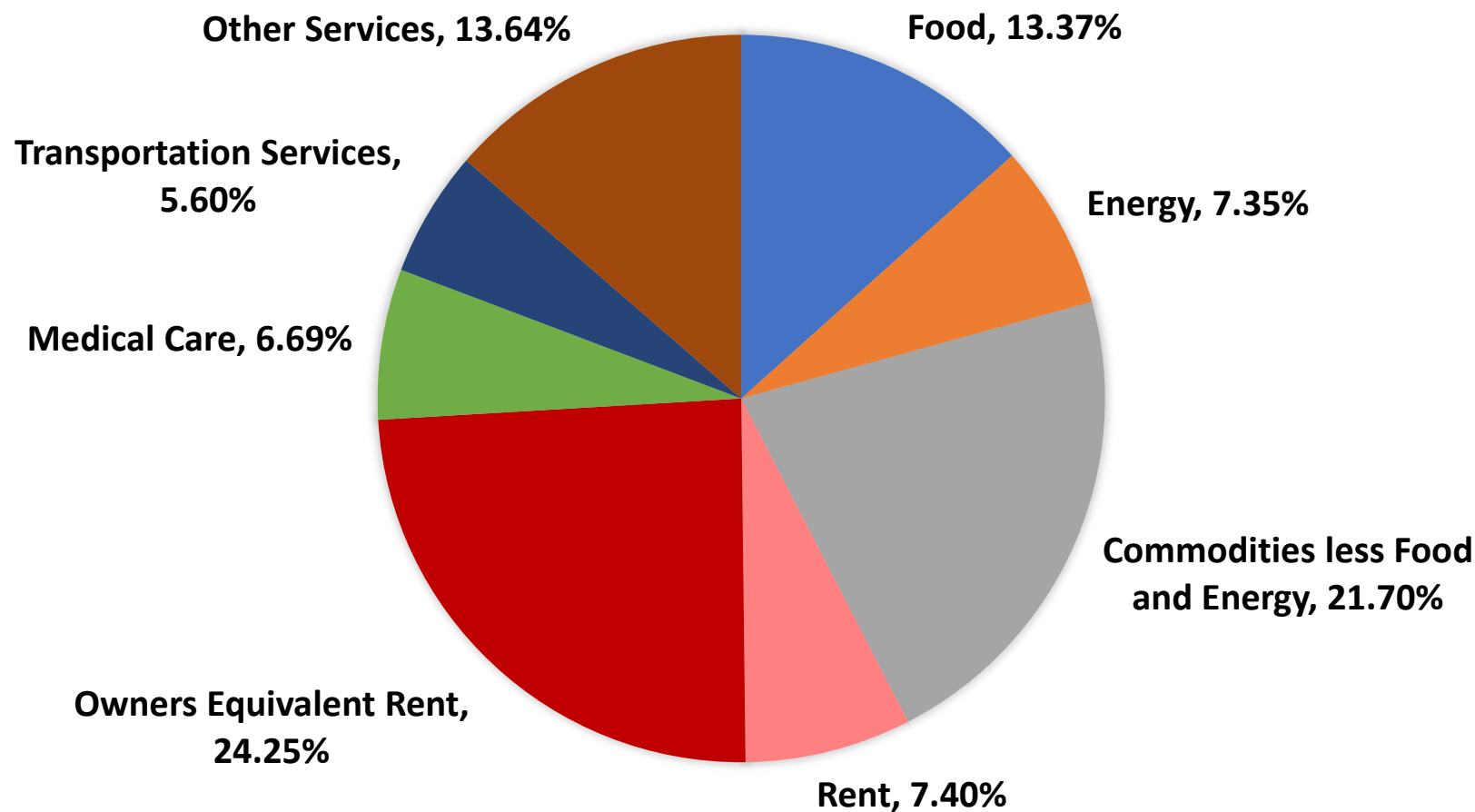
1. Introduction
2. History of BLS OOH Treatment
3. Rental Equivalence
4. Payments



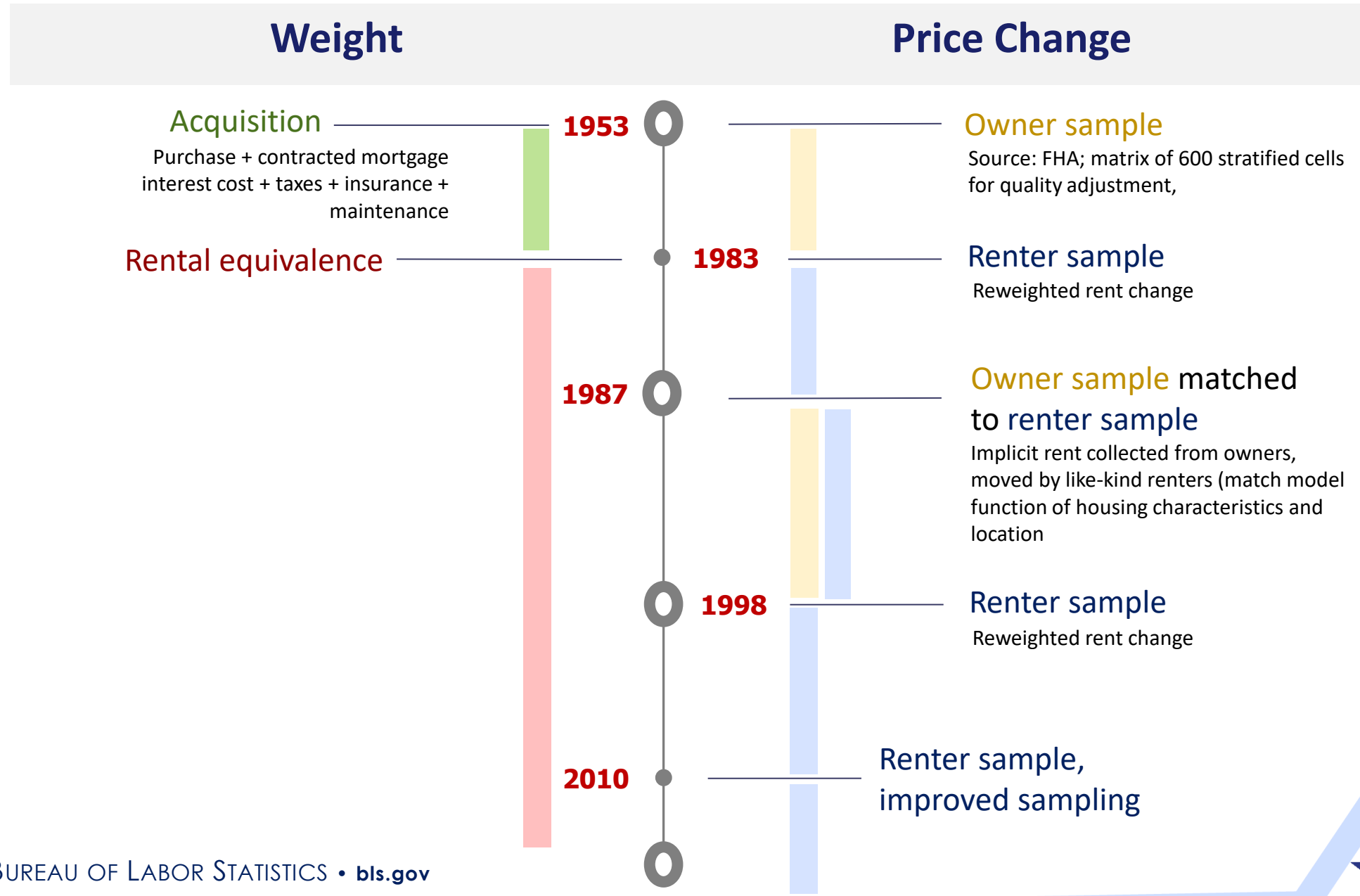
Price Index Timing

- Acquisition of, use or consumption of, and payment for a good or service may occur in different periods.
- Examples: Owner-occupied housing (OOH), storable or durable goods, advance purchases
- Three approaches to answering “when” and “how much”.
 - ▶ Acquisitions
 - ▶ Use (rental equivalence, user cost)
 - ▶ Payments

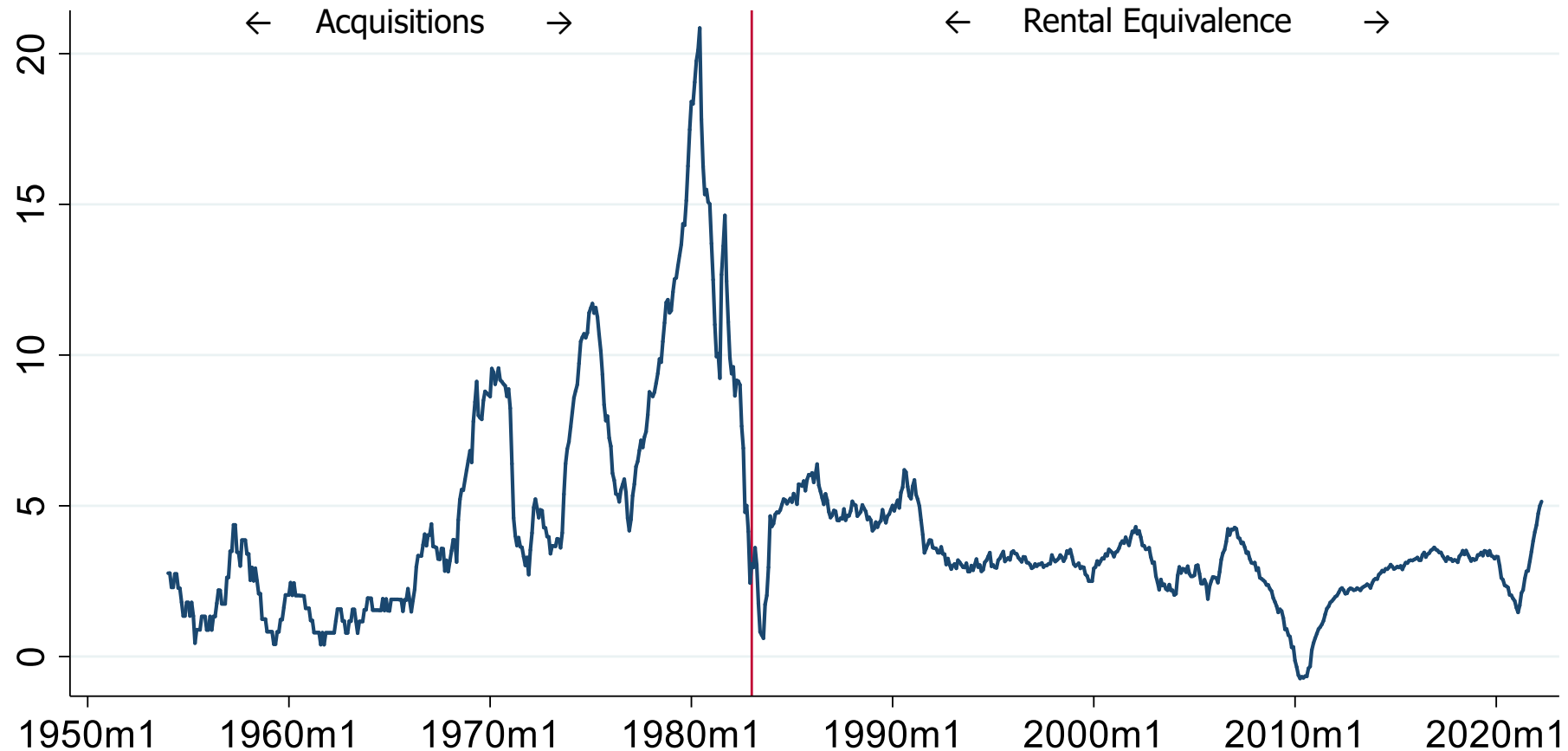
CPI-U Relative Importance, Dec. 2021



History of OOH treatment in US CPI



Acquisitions to Rental Equivalence



CPI: Shelter (12-month Percent Change)

Rental Equivalence

■ Consumer Expenditure Survey (CE) questionnaire:

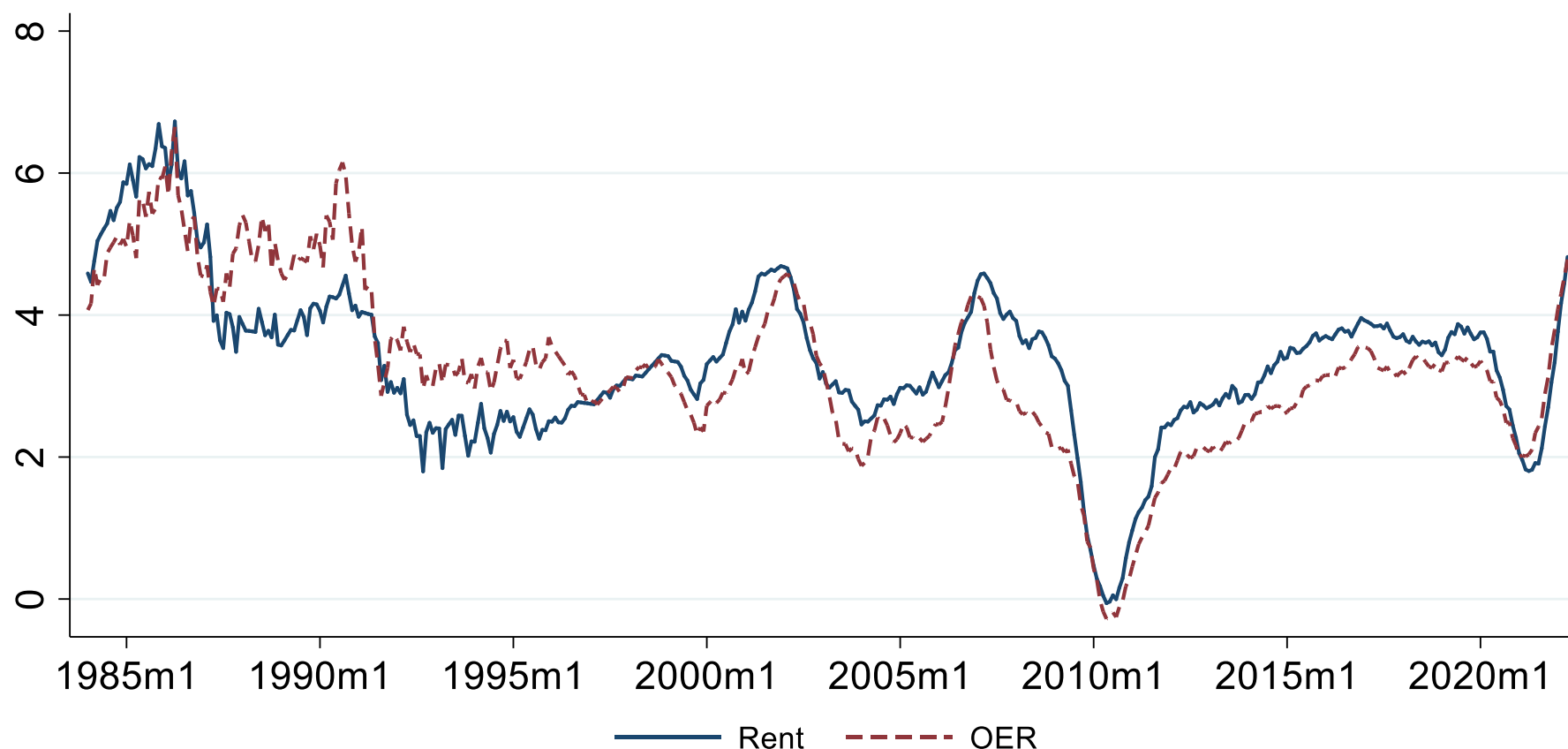
“If someone were to rent this (including part of the property currently being used for business, farming, or rented/home today) how much do you think it would rent for monthly, unfurnished and without utilities?”

BLS Owner Equivalent Rent (OER) Methodology

- **Sampling** – Target sample of 43,000 renters using probability proportional to size for primary sampling units, neighborhoods, and housing units
- **Collection** – Divide sample into six balanced panels and price each panel every six months (t and $t - 6$)
- **Review** – Trigger units based on rent, spec, and message changes to ensure constant quality
- **Estimation** – Produce 32 basic area indexes and aggregates monthly by taking sixth roots of six month rent changes

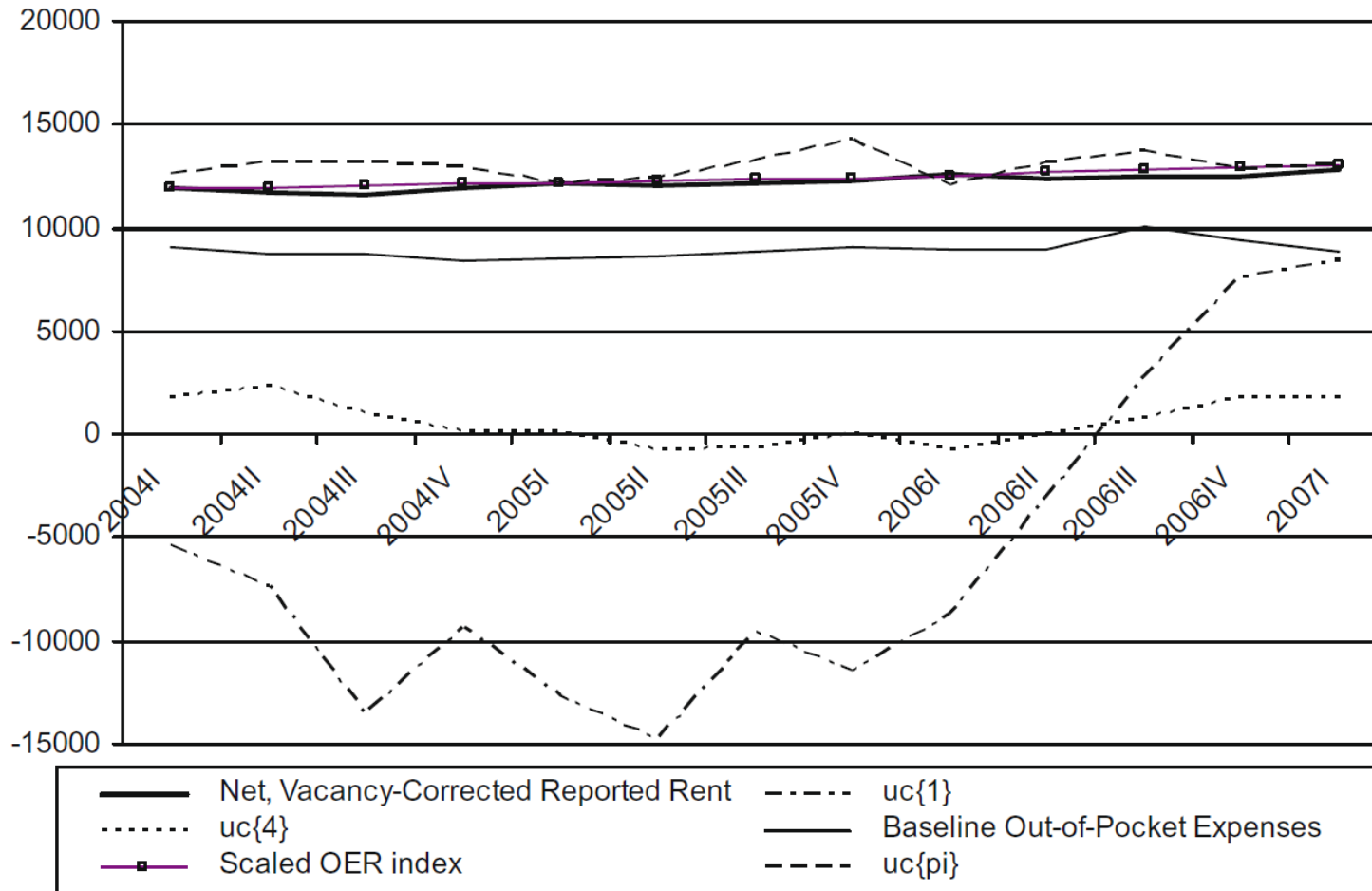


Rent and Owner Equivalent Rent Comparison



CPI: Rent and Owner Equivalent Rent (12-month Percent Change)

Rents vs. User Costs (1-yr.) Over Time



■ User Cost (UC)

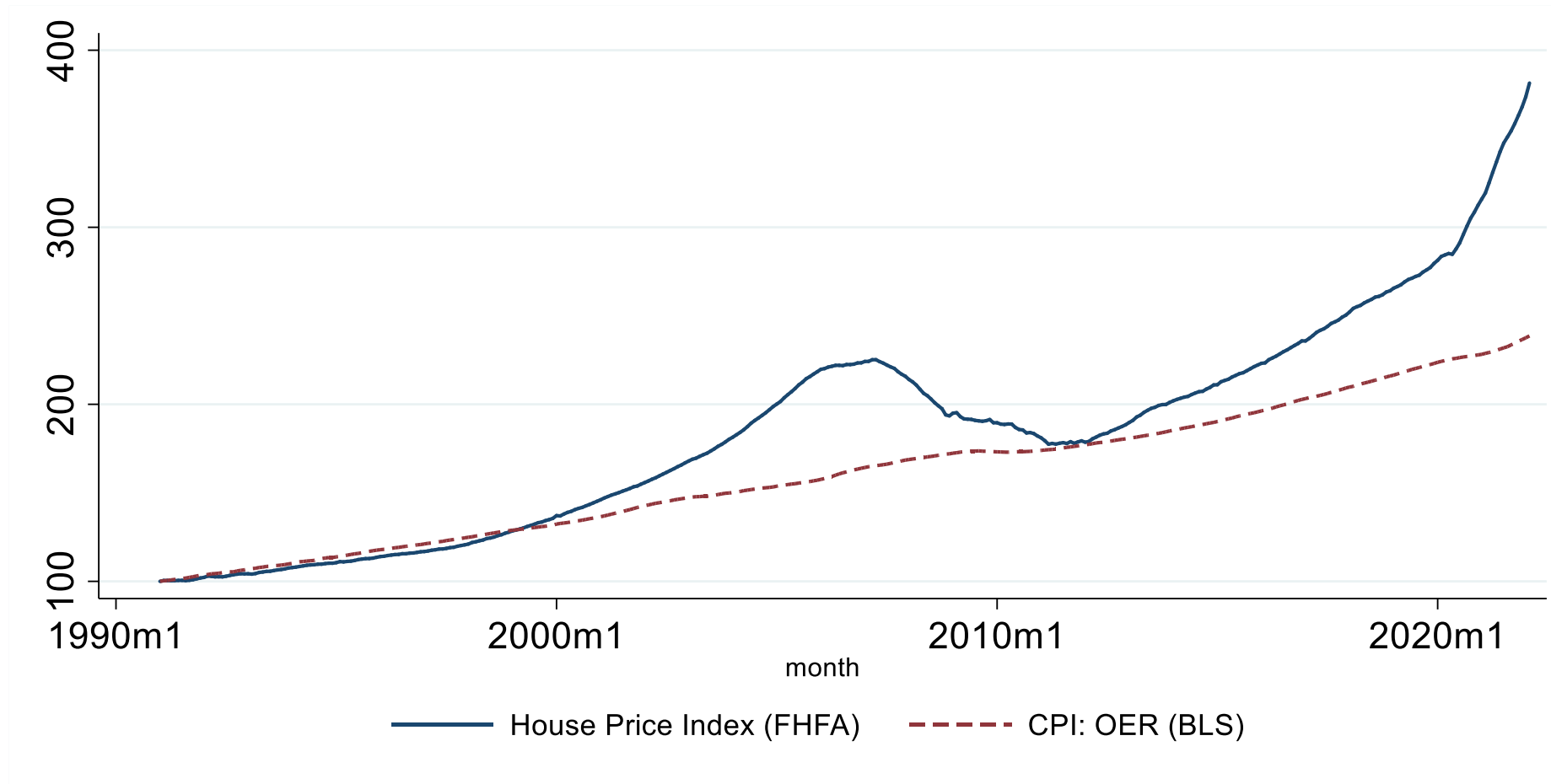
= interest
+ depreciation
+ property taxes
+ insurance
+ expected
appreciation or
depreciation

Source: Garner and Verbrugge (2008). Fig. 7. Alternative Shelter Costs over Time - National

Rental Equivalence: Challenges and Issues

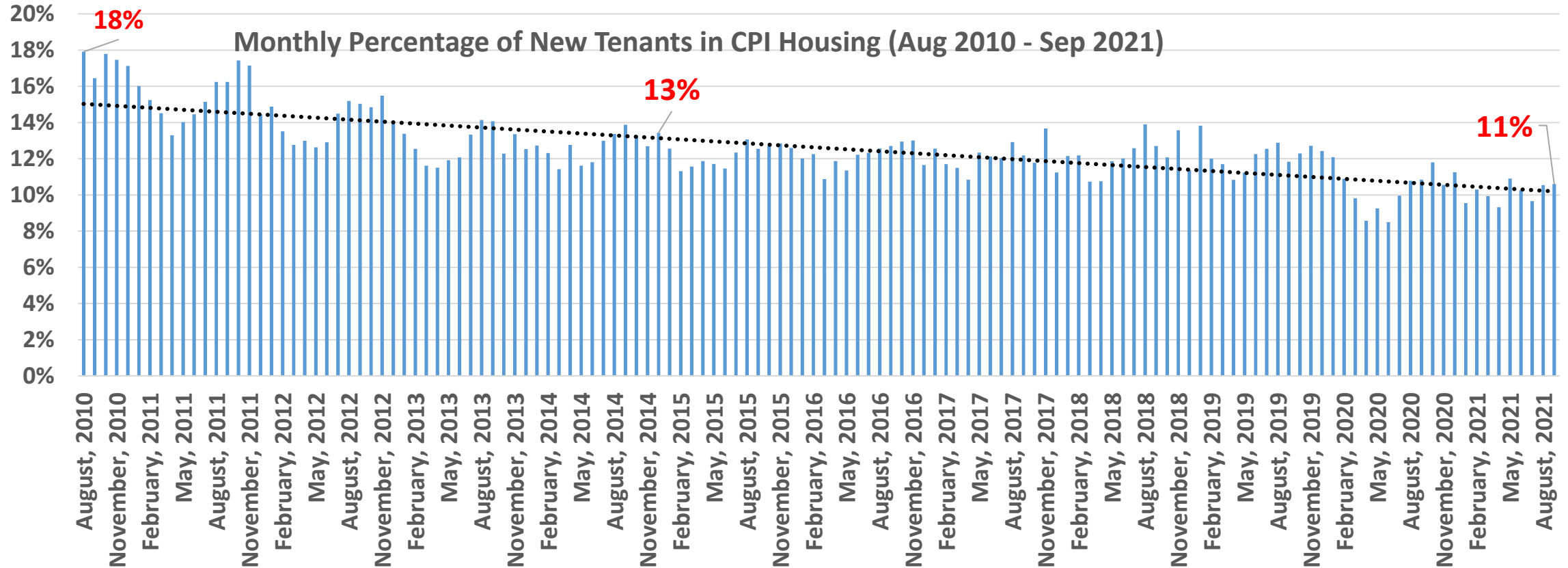
- Using rents to impute OOH – no observed prices
- Comparisons to home values or new tenant indexes
- Lagged rent changes due to $rent_{it}/rent_{i,t-6}$ construction
- Structure-type composition

Consumption vs. Investment

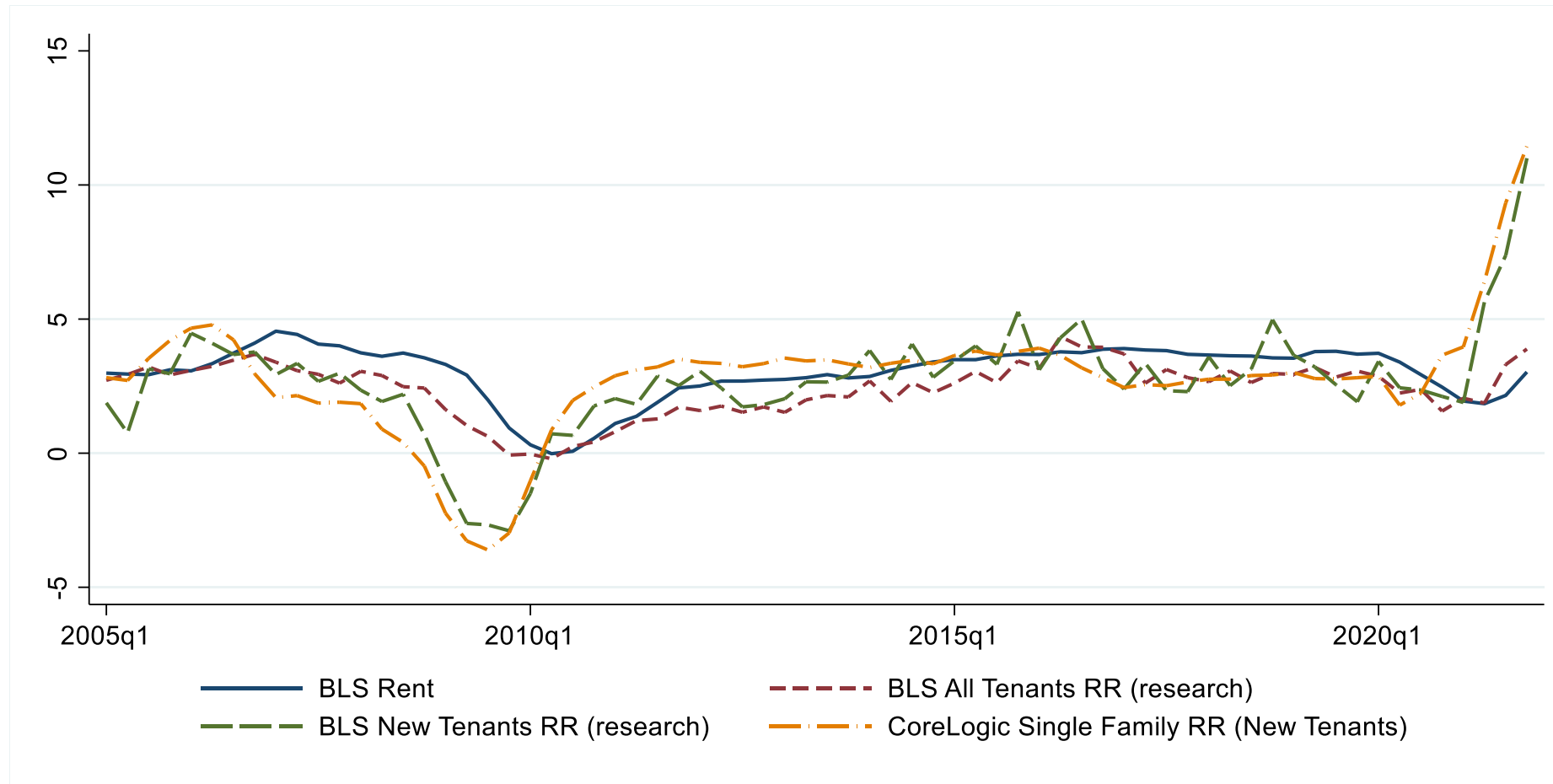


Growth in Different Housing Price Concepts (1991m1=100)

New vs. Same Tenants



BLS Rent Index vs. Alternative Methods



Comparing rent index methods (four quarter percent changes)

Structure-Type Composition

- Adams and Verbrugge (2020) show that the CPI housing rent sample underrepresents single family houses in its OER estimator
 - ▶ 33.6% vs. 86.6%
- Estimated contribution to OER mismeasurement $\approx 0.34\%$ per year from 2013-16
- Using a type-of-structure re-weighting solution could account for the mis-measurement

CNSTAT Recommendations

- Continue to use REQ as primary approach for housing services
- Seek new data sources for single-family homes
- Make use of characteristics in tax data
- Consider a supplementary series with repeat sales approach
- Research user cost and opp. cost approaches as comparisons
- Use same methodology for subgroup cost-of-living indexes

Payments Research

- The Use approach (rental equivalence or user cost) is appropriate for measuring implicit prices of housing services for a consumer price index or cost-of-living index.
- The Payments approach measures the change in explicit expenditures required for the household to access (pay for) housing services.
- Payments captures different aspects of the household experience, particularly for certain subpopulations.

Owner-Occupied Housing

Payments Approach	Rental Equivalence
<ul style="list-style-type: none">• Intended to reflect actual homeownership expenses• Includes property taxes, mortgage interest, full value of regular maintenance, etc.• Usually excludes mortgage principle, major renovations	<ul style="list-style-type: none">• Intended to capture implicit consumption of housing services• Rent as a proxy (OER)• Excludes investment• For some groups, may differ substantially from actual spending (e.g., owners w/o mortgages)

CPI-U Expenditure in 2018: Payments vs. REQ

Major Group	Expenditure (bil. \$)		Share of total	
	PAY	REQ	PAY	REQ
Food	1,047	1,047	16.7%	14.8%
Housing	2,127	2,948	34.0%	41.7%
Apparel	216	216	3.5%	3.1%
Transp.	1,145	1,145	18.3%	16.2%
Medical	609	609	9.7%	8.6%
Recreation	408	408	6.5%	5.8%
Education & Communication	484	484	7.7%	6.8%
Other	215	215	3.4%	3.0%
Total	6,251	7,072	100%	100%

CPI-U Expenditure in 2018: Payments vs. REQ

Select Items within Housing

OER
currently {

ITEM	Description	Expend. (bil. \$)		Share of total	
		PAY	REQ	PAY	REQ
HC01	Primary residence expenses	623.5	1,585.4	10.0%	22.4%
HC09	Unsampled secondary residence exp.	22.3	85.0	0.4%	1.2%
HD01	Tenants' and household insurance	59.3	27.4	0.9%	0.4%
HH01	Floor coverings	16.0	4.7	0.3%	0.1%
HK01	Major appliances	27.7	5.4	0.4%	0.1%
HK02	Other appliances	10.6	10.0	0.2%	0.1%
HK09	Unsampled appliances	0.2	0.1	0.0%	0.0%
HM01	Tools, hardware, and supplies	23.9	15.7	0.4%	0.2%
HM09	Unsampled tools, hardware, ...	78.4	13.5	1.3%	0.2%
HP04	Repair of household items	65.1	9.0	1.0%	0.1%
HP09	Unsampled household operations	13.9	5.2	0.2%	0.1%
Sum		940.7	1,761.5	15.0%	24.9%

CPI-U Expenditure in 2018: Payments vs. REQ

Payments HC01: Primary Residence Expenses

Sub-Item	2018 Share
Ground Rent	0.10%
Property Tax	4.42%
Mortgage Interest	5.33%
Parking	0.02%
Property Management	0.11%

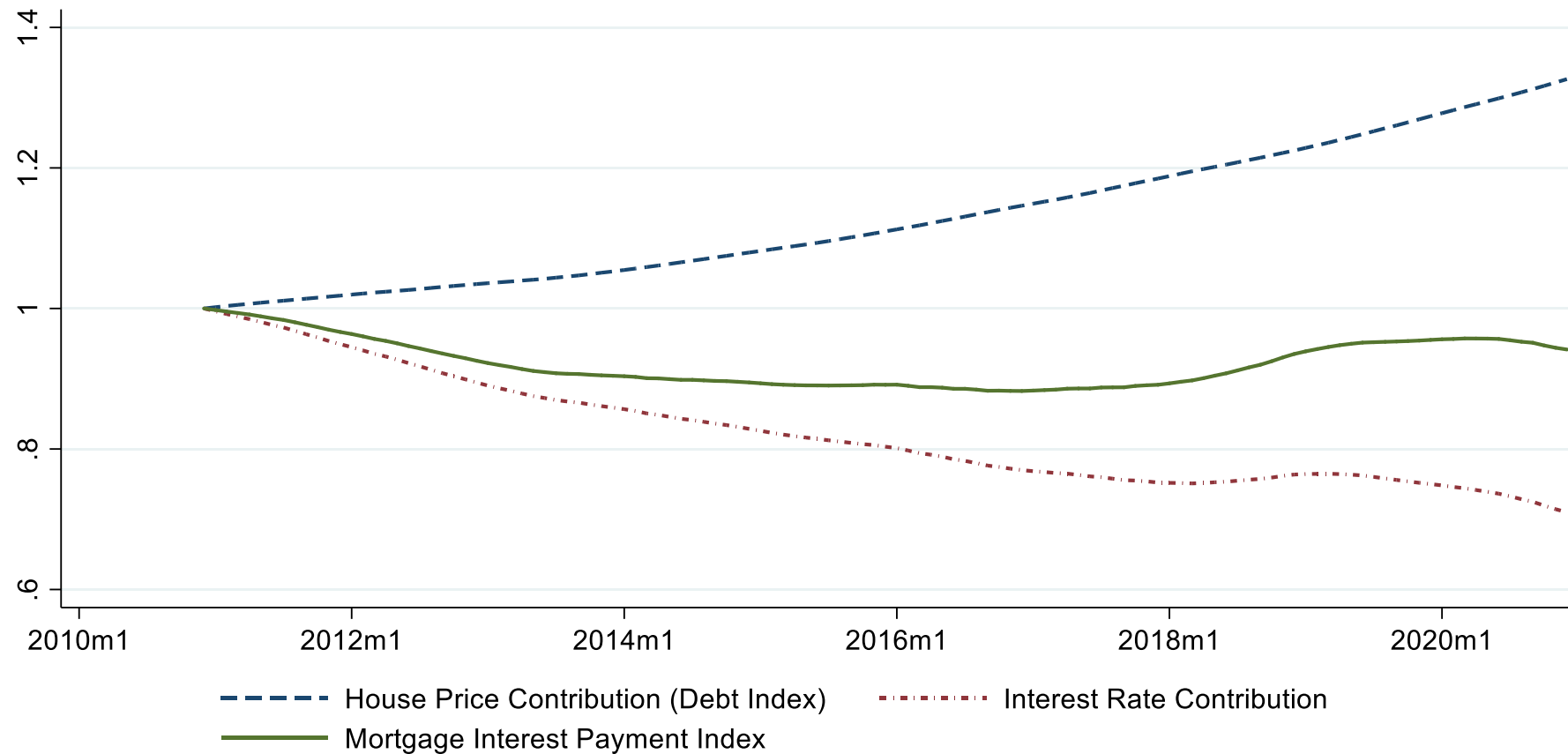
Preliminary Price Analysis: Data

- Repurposing existing datasets
- Consumer Expenditure Survey
 - ▶ Property tax expenditures, Property values
 - ▶ Mortgage loan information (restricted to 30-year fixed rate)
- Federal Housing Finance Agency House Price Index
- Freddie Mac Primary Mortgage Market Survey

Preliminary Price Analysis: Methods

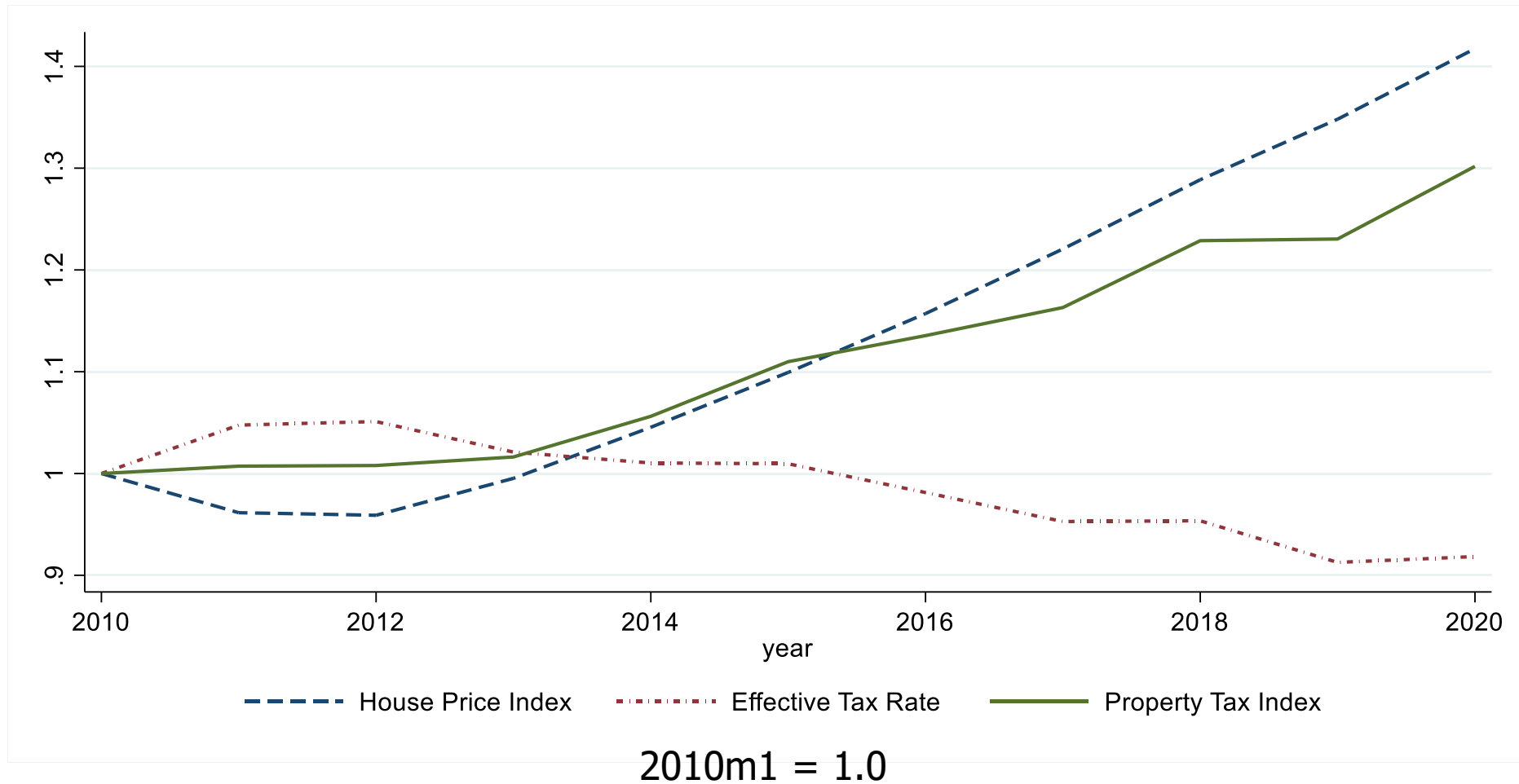
- Following ILO (2004, Ch. 10) recommendations for
 - ▶ Fixed loan-age approach for mortgage interest payment index
 - Requires long timeseries...0 to 360 months prior to index base period
 - ▶ Multiplying percentages (i.e., interest rates or property tax rates) by monetary bases (a debt index or house price index)
- Ongoing discussion: Should a payments index include the impact of home prices when these reflect (potentially unrealized) capital gains or losses to the household?

Mortgage Interest Payments

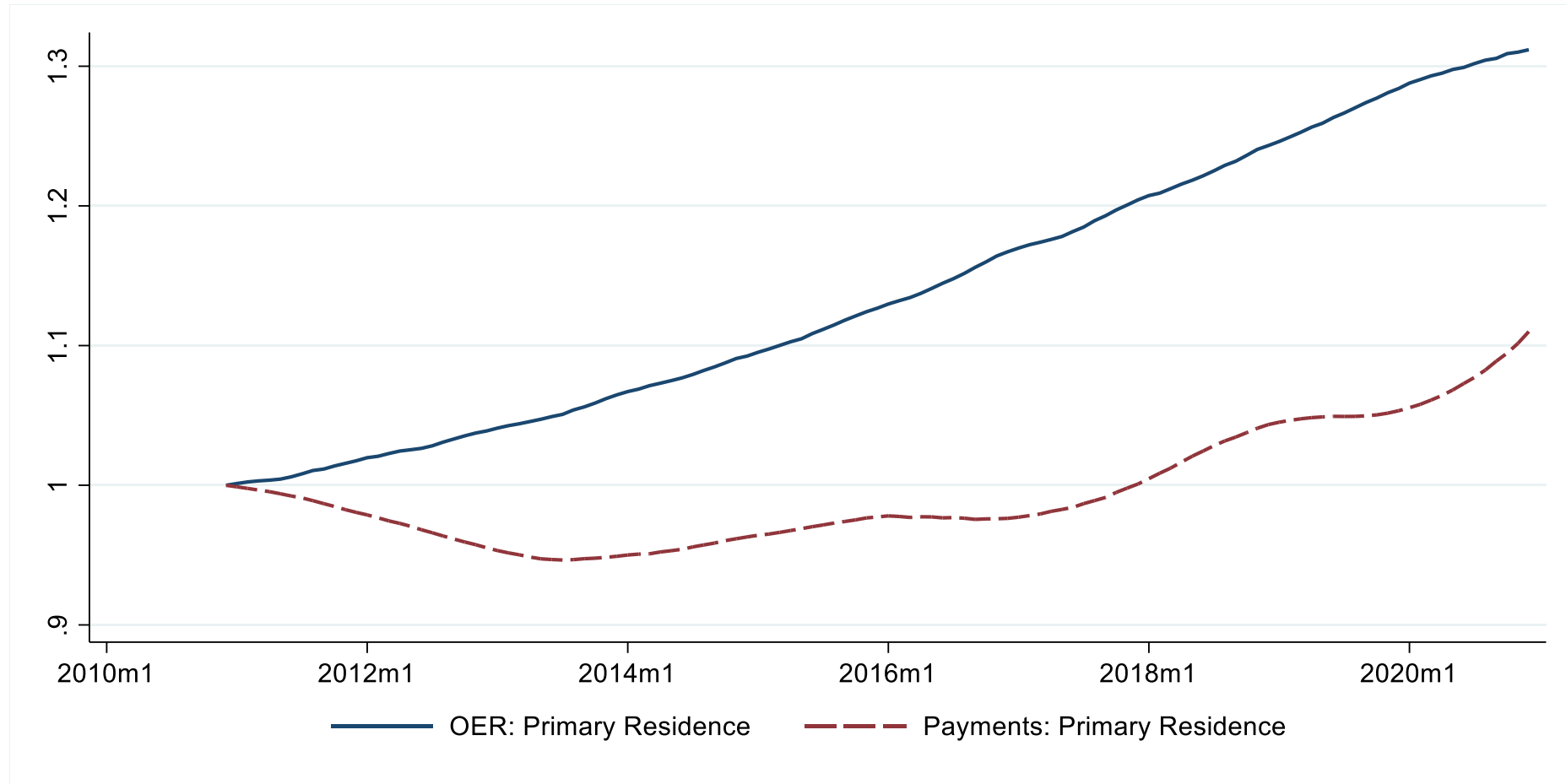


2010m12 = 1.0

Property Tax Payments



Payments Index vs. OER



2010m12 = 1.0

Closing Thoughts

- Rental equivalence designed to measure the implicit prices of housing services.
 - ▶ Key considerations include timing, structure type, and quality change.
- The Payments approach aims to measure explicit prices paid to access housing services, which may differ considerably from implicit rents.
 - ▶ Key questions surround eligibility of specific expenditures and sources of price change.
 - ▶ We look forward to learning from the NSOs who use Payments

Thank you!

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