

# Consumption Measurement with Consumer Expenditure Surveys Data: A Research Project

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FESAC Meeting

Session: Planning for a Comprehensive Consumption Measure using Consumer Expenditure Data

December 10, 2021, 2:30–2:50pm

*Virtual presentation*



# Motivation and Goal

## ■ Motivation

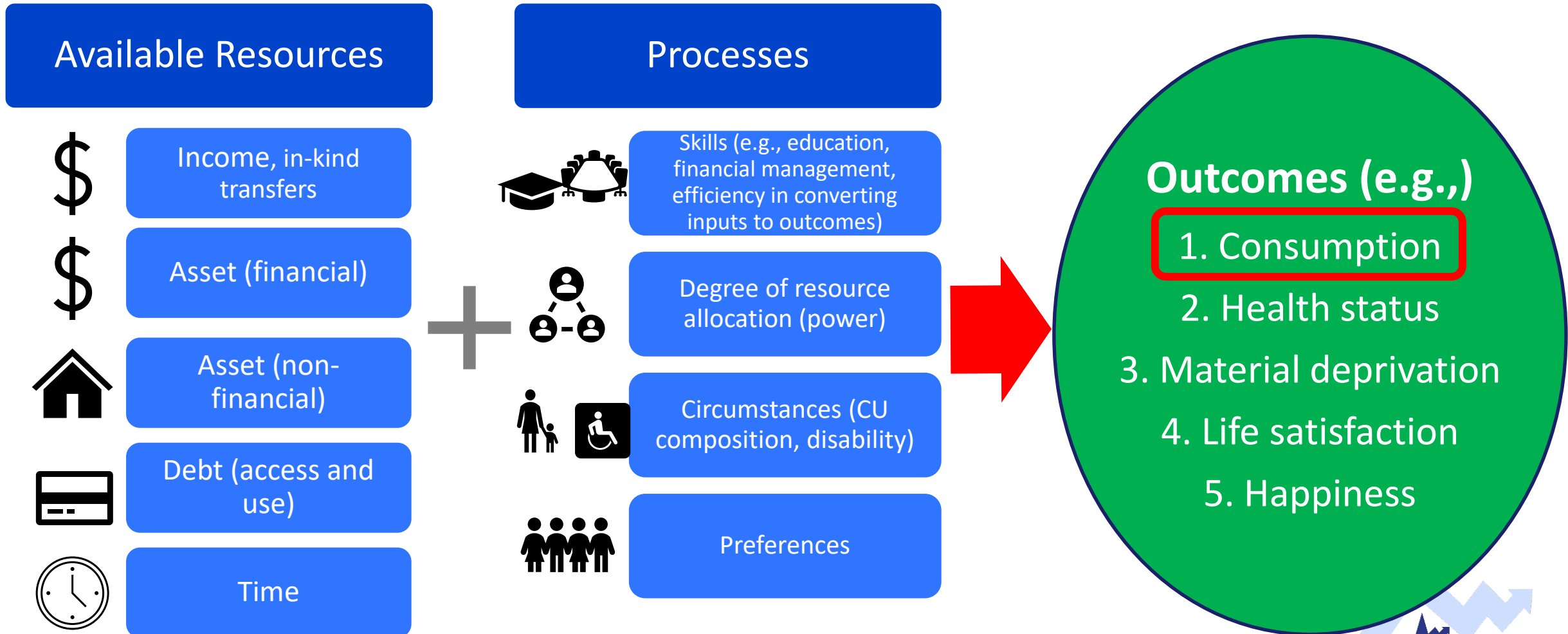
- ▶ BLS long term interest to produce consumption measure (smaller ongoing research projects) – responding to CE data users
- ▶ Period of COVID-19 with more goods and services produced by household members
- ▶ BLS is the producer of CE and ATUS data
- ▶ Commissioner Beach's support

## ■ Related: consistency with Interagency Working Group (ITWG) on Evaluating Alternative Poverty Measures recommendations

## ■ Ultimate goal after research is completed

- ▶ Regular production of official government statistics of consumption by consumers
- ▶ Release of micro (consumer unit) data file with detailed consumption components

# Well-being Outcomes as a Function of Resources and Processes



# New BLS Initiative to Produce a Comprehensive Consumption Measure

- Measure being designed to reflect how consumer units (CUs) use resources (e.g., income, wealth, time, in-kind benefits) to meet their consumption/material “needs”
- References regarding concept
  - ▶ OECD 2013 Framework (consumption expenditures and final consumption)
  - ▶ BEA framework for PCE
  - ▶ CE 2000 Framework for Consumer Expenditure Survey
  - ▶ Guidelines from ILO (2003) and UNECE (2017)
  - ▶ ITWG on Evaluating Alternative Measures of Poverty
- Key data sources: Consumer Expenditure Surveys and American Time Use Survey
- In-house research
- Outside research: contract on valuing home production for own consumption



# Concept: OECD 2013 Framework

- *Consumption expenditure* - value of consumption goods and services used or paid for by a household to directly meet its needs
  - ▶ Purchase of select goods and services in the market
  - ▶ In-kind transfers from employers (e.g., health insurance)
  - ▶ Household's own production of goods and services consumed
    - Owner-occupied housing
    - Owned vehicles
    - Durables
    - Other (e.g., child/elder care, meals)
  - ▶ In-kind transfers from other households and from businesses
- *Actual final consumption* - sum of
  - ▶ Consumption expenditure
  - ▶ Public in-kind transfers

Source: OECD (2013), *OECD Framework for Statistics on the Distribution of Household Income, Consumption and Wealth*, OECD Publishing, Paris, Chapter 5. Household Consumption, p.104.



# BLS Comprehensive Consumption Measure

## ■ Expenditures for own consumption



## ■ In-kind benefits public and private



## ■ Flow of services



## ■ Home production for own consumption



# Data Sources - 1

## Goods and Services

- Interview: in-person; Diary: record keeping
- Entire consumer unit
- Interview: up to 4, 3-month recall;
- Diary: daily for two consecutive weeks
- Different samples, data collection instruments, reference periods
- Out-of-pocket spending (acquisition approach/financial obligation)
- Rental equivalence for owned shelter
- Rent paid (market rent or less; related vars.)
- Stock of cars, trucks, and other vehicles

## Home Production

- American Time User Survey (ATUS)
- Telephone interview
- One person in household
- How time present on one day
- 24-hour time diary collects detailed account of respondent's activities, starting at 4 a.m. the previous day and ending at 4 a.m. on the interview day
- The only simultaneous activity ATUS regularly collects is secondary childcare





# Data Sources - 2

## In-kind Federal Government Benefits

- CPS-ASEC (households/members): reported receipt of government provided in-kind benefits
  - ▶ School meals (NSLP)
  - ▶ WIC
  - ▶ LIHEAP (receipt and values)
- USDA: food programs

## In-kind Transfers from Other Households and Non-profit Institutions

- *To be determined*

## In-kind Employer Benefits (*future*)

- National Compensation Survey (private + state & local government employers)
  - ▶ Childcare
  - ▶ Subsidized commuting
  - ▶ Wellness programs
  - ▶ Employee assistance programs
- Federal Benefits
  - ▶ Health insurance (OPM only)
  - ▶ Childcare
  - ▶ Subsidized commuting
  - ▶ Wellness programs
  - ▶ Employee assistance programs



# BLS Consumption Symposium: September 22-23, 2021

- Purpose and topics
- National and international representation: 177 registrants and 31 presenters
- Major take-aways
  - ▶ Herculean goal, but worthy; BLS work will advance well-being measurement
  - ▶ Challenges regarding
    - Public in-kind benefits not universally provided by government
    - Private in-kind benefits (employer, private organizations)
    - Transfers/gifts of goods and services received by the CU for own consumption from other CUs
    - Accounting for home production for own consumption
    - Controversial: health, education, in-kind benefits universally provided (e.g., public schools, roads, defense)
    - Comparability to PCE (ongoing research within BLS and BEA)



# In-house Research: Service Flows from Non-financial Assets

- Limited to
  - ▶ Owner-occupied housing
  - ▶ Vehicles
- Primarily two main valuation approaches used internationally
  - ▶ Rental equivalence
  - ▶ User costs
- Both can be used to measure changes over time in the value for the flow of services consumed by owner-occupants or vehicle owners
- In theory, both approaches should produce equivalent values, but rarely do empirically
- Choice of valuation approach dependent on presence of rental market (but also data available)
- Literature
  - ▶ Primarily focuses on owner-occupied housing
  - ▶ Implication that the same or similar methods can be used for durables or non-financial assets like vehicles (see ILO 2003, paragraph 292)



# Rental Equivalence versus User Costs

- ***Selling price of the service:*** “...rental equivalence approach attempts to measure the *change in the price* of the housing service consumed by owner-occupants by estimating the market value of those services” (ILO 2004, p. 180)
- ***Costs of producing (using) the service:*** “...user cost approach attempts to measure the *changes in the cost* to owner-occupiers of using the dwelling; user costs account for both recurring costs and the opportunity cost of having money tied up in the dwelling rather than being used for some other purpose” (ILO 2004, p. 179).
- Applicable to vehicles and durables



# Owner-occupied Shelter: Rental Equivalence

- *If someone were to rent this “dwelling” how much do you think it would rent for monthly, unfurnished and without utilities?*
  
- Optional treatments for owner shelter-related expenses (those not implicitly included in rental equivalence)
  1. Exclude all
  2. Ratio adjust as is done for Consumer Price Index to make them “renter-like”, for example
    - Adjust expenditure for homeowners’ insurance premium by a factor is 0.41 to reflect the share that only covers “contents and personal items” (tenants’ insurance)
    - Adjust expenditures for homeowners’ landscape maintenance by a factor of 0.061 to reflect share not covered by rental equivalence (rental contracts that require renter to maintains the yard at their own expense)

# Stock of Owned Vehicles: User Costs

- User costs components
  - ▶ Depreciation
  - ▶ Opportunity costs
  - ▶ Recurring costs (vehicle insurance, maintenance & repairs, gasoline & oil, and electric for electric vehicles)
- Based on stock of vehicles (CE Interview)
- Impute current market value for new and used cars and trucks using
  - ▶ Vehicle make, model, and year
  - ▶ Vehicle purchase price
- Derive *depreciation* from calculated depreciation rate applied to imputed current market value
- Derive *opportunity costs* by applying U.S. Securities rates (inflation indexed) to current market value
- *Recurring costs* added for all vehicles (cars, trucks, motorized camper-coach, motorcycle, boat with motor, private plane)

# In-house Research: Statistical Modeling

## Market Rent imputations

- CE Interview
- Market and reported rents & rental unit characteristics
- SAS Proc QLIM
- Imputed rents for:
  - ▶ Receive government assistance paying
  - ▶ Live in public housing
  - ▶ Live in rent-controlled unit
  - ▶ Receive rent as pay
  - ▶ Live rent-free

## In-kind Benefits

- CPS-ASEC to CE
- CU and household characteristics
- CE and CPS ASEC pooled
- SAS Proc MI
- CPS ASEC receipt assigned to CE consumer units with “missing” benefit receipt/value
  - ▶ NSLP
  - ▶ WIC and infant formula rebate
  - ▶ LIHEAP (receipt and value)



# FY22 Contract Research: Levy Institute Team

## Home Production and Interhousehold Transfers Received

- Surveys
  - ▶ ATUS (individual person's time use)
  - ▶ Augmented with data from
    - PSID (time use within household)
    - SIPP (receipt of childcare from outside HH)
    - HRS (receipt of adult care from outside HH)
  - ▶ Impute to CE consumer units
- A major challenge: assigning one-day individual time use to three-month time period of CUs

## Approaches and Valuation

- From ATUS to CE (donor to recipient records)
  - ▶ Prediction
  - ▶ Statistical matching
- Valuation
  - ▶ Opportunity costs
  - ▶ Replacement/market costs



# Discussion

## Motivation

- Outcome: How we live
- Consumption smoothing

## Challenges and Opportunities

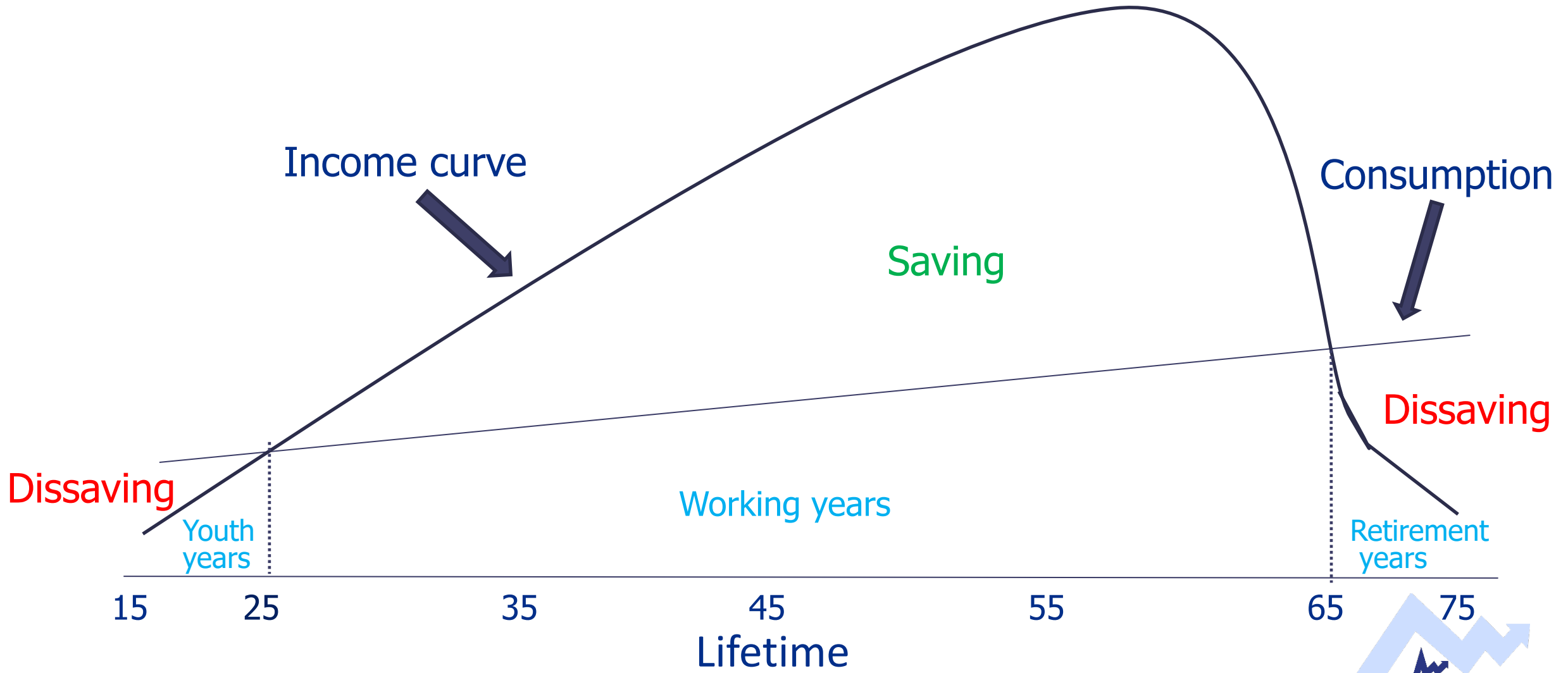
- Scope and valuation
- Consumer Expenditure Survey
- American Time Use Survey

## Framework Comparison

- OECD/PCE
- CE definition of expenditures
- Consumption

# Life Cycle Theory of Consumption

suggests that individuals plan their consumption and savings behavior over the course of their lives



# Challenges and Opportunities

- Scope and valuation
- Consumer Expenditure Surveys
  - ▶ Interview, Diary, both (or integration of Diary and Interview survey data at the CU level)
  - ▶ No to little data collected on in-kind transfers (public, private); dependent on imputation
  - ▶ Availability and timeliness of administrative and employer provided data for benefits & permission to use
  - ▶ Quality of data adjustments (e.g., imputation, allocation)
  - ▶ Production of annual estimates dependent on longitudinal weights which are not currently available (issue of seasonality)
  - ▶ Redesign efforts could complicate production of a consistent measure of consumption over time
- American Time Use Survey
  - ▶ Scope of home production (e.g., childcare, elder care, meals)
  - ▶ Conversion of person-day data to quarterly

# Framework Comparison: Consumption

Item	Consumption / Expenditures (OECD / PCE) *	CE Definition of Expenditures	Proposed BLS Consumption	Planned Research
Acquisition cost of services and non-durable goods	Yes	Yes ^	Yes	n/a
Financial services	Yes	Yes	Yes	n/a
Service flow from housing services	Yes	No	Yes	n/a
Service flow from vehicles **	Yes/No	No	Yes	Yes
Service flow from other durable goods **	Yes/No	No	Yes	No
In-kind receipt of goods and services ***	Yes	No	Yes	Yes
Other home production **	Yes/No	No	Yes	Yes
Interhousehold transfers (including gifts received) **	Yes/No	No	Yes	Yes
Health	Yes	Yes	??	Yes
Education	Yes	Yes	??	n/a

\* Purchased by consumers or through transfers from employer, government, or private institutions serving households

\*\* Yes/no: in OECD, not PCE

\*\*\* Only food and rent as pay for CE publication

^ For CE, all goods and services



# Framework Comparison: Not Consumption

Item	Consumption / Expenditures (OECD / PCE) *	CE Definition of Expenditures	Proposed BLS Consumption
Gifts (G&S) given outside household	Yes	Yes	No
Life insurance/other personal insurance	Yes	Yes	No
Cash contributions **	No/Yes	Yes	No
Purchase price of vehicles **	No/Yes	Yes	No
Purchase price of other durables **	No/Yes	Yes	No
Annuities, pension, other retirement contributions	No	Yes	No
Mortgage interest payments	No	Yes	No
Vehicle loan interest payments	No	Yes	No
Interest payments on other debt	No	Yes	No

\*\* No/Yes: Not OECD but in PCE



# Questions for FESAC

1. Do you agree with the proposed BLS consumption framework?
2. What about the treatment of health and education: consumption or investment?
3. Should we consider calibrating consumption estimates to PCE aggregates?
4. What are your suggestions for identifying and valuing in-kind transfers of goods and services?
5. Is it desirable to consider how consumption is “funded”?
  - Current income and in-kind benefits
  - Withdrawals from assets
  - Use of debt
6. What is the role of subjective assessments in the determination of inputs and outcomes?
  - Difficulty meeting financial obligations (e.g., rent payments) and/or consumption needs of family
  - Food security, happiness, etc.



# Contact

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# Health Insurance & Education

- Approaches to valuing health insurance consumption
  - ▶ Willingness to pay
- Requires further research
  - ▶ Treatment of health/medical out-of-pocket expenditures not covered by insurance, e.g., co-pays, deductibles, prescription drugs, and over the counter items
- Expenditures on education be excluded
  - ▶ Why? Because education generally considered an investment in human capital
- Whether and how to treat education within a consumption measure
  - ▶ Additional stakeholder and expert engagement
- Use of Medicare, Medicaid, employer provided health insurance data to facilitate estimating a value of health insurance ; Focus on health insurance in terms of consumption, therefore using Medicare, Medicaid, and benefits data to impute