PCE Deflators for Medical Care: A Progress Report

Ana Aizcorbe and Nicole Nestoriak

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Measuring the Nation's Economy.

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Topics

- BLS/BEA project on Medical Care Prices

- Price index for prescription drugs constructed using insurance claims data

- Plans for episode-based, medical care expenditure index

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BLS/BEA Project on Medical Care Prices

- Goal: Follow up on recommendations of the National Academy Report "At What Price?"

- Key features:
  - Defer treatment of quality change
  - Focus on episode-based indexes
  - Use payments from all sources for weights

- Pricing episodes, not treatments, requires patient-level longitudinal data
  - BLS/BEA experience with insurance claims data

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PHARMetrics Data

- Insurance claims for over 40 million patients covered by over 70 health plans over 1997-2003.
  - BEA/BLS obtained 10% sample from 2001-2003

- Medical information for specific medical events:
  - diagnoses (ICD-9),
  - treatments (CPT-4), and
  - prescription drugs (NDC)

- Episodes of treatment are defined for each patient as combinations of medical events associated with a particular treatment regimen

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Defining the price

- **Available price variables**
  - Total charges -- "list" price
  - Allowed charges -- "transaction" price
  - Amount paid -- amount paid by insurance company

- **Data contain prices for each medical event (e) experienced by each patient (p) :** $P^p_{e,t}$

- **Component prices use unit values:**
  - For example, average price of a particular drug (n) over all patients:

$$P_{n,t} = (\Sigma_p EXP^p_{n,t}) / (\Sigma_p UNIT^p_{n,t})$$

Unit Values: What is the appropriate level of aggregation?

- Prescription drugs: NDC or molecule?
  - NDC level - highly granular definition for each drug
  - "Molecule" level - Generic version of drug is treated as "bioequivalent" to brand drug

- Separate treatments vs. episodes?
  - Price treatments separately: drugs, hospital stays, office visits, etc.
  - Define the price as "price per episode of treatment"

- Insurance coverage:
  - Average price over patients with a particular type of insurance coverage
  - Average price over all patients

Today, discuss importance of generic and insurance issues

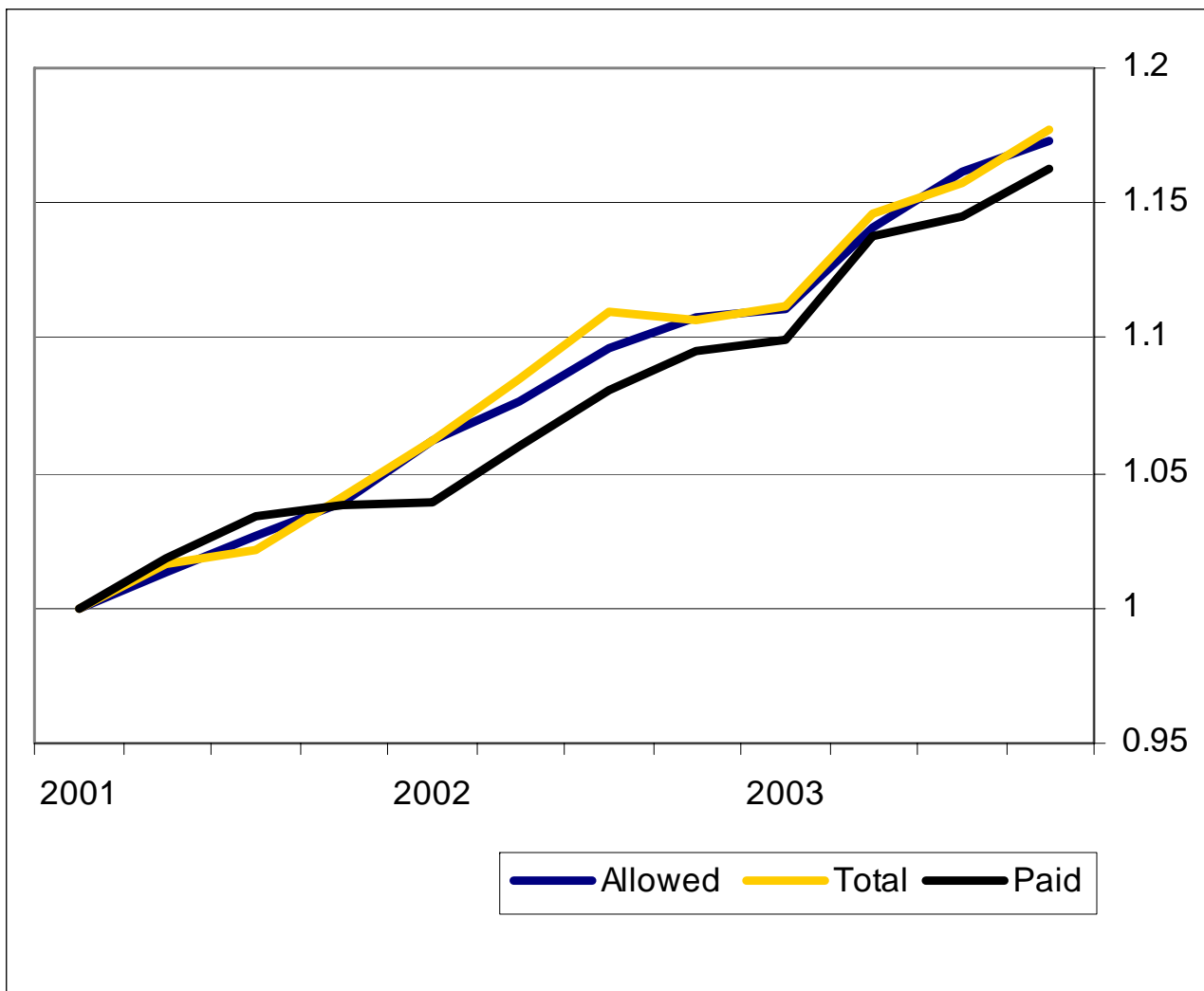# Price Indexes for Prescription Drugs

- Index includes all outpatient drugs
  (Berndt, Griliches and Rosett (1992) Slesnick and Wendling, 2005)

- Quarterly, chained Fisher Ideal index using price per unit across all patients as the "good"

$$I_{t,t-1} = \left[\frac{\Sigma_i (P_{i,t} \; Q_{i,t-1})}{\Sigma_i (P_{i,t-1} Q_{i,t-1})} \cdot \frac{\Sigma_i (P_{i,t} \; Q_{i,t})}{\Sigma_i (P_{i,t-1} \; Q_{i,t})} \right]^{1/2}$$

NDC-level: $\quad P_{n,t} = (\Sigma_p EXP^p_{n,t}) / (\Sigma_p UNIT^p_{n,t})$
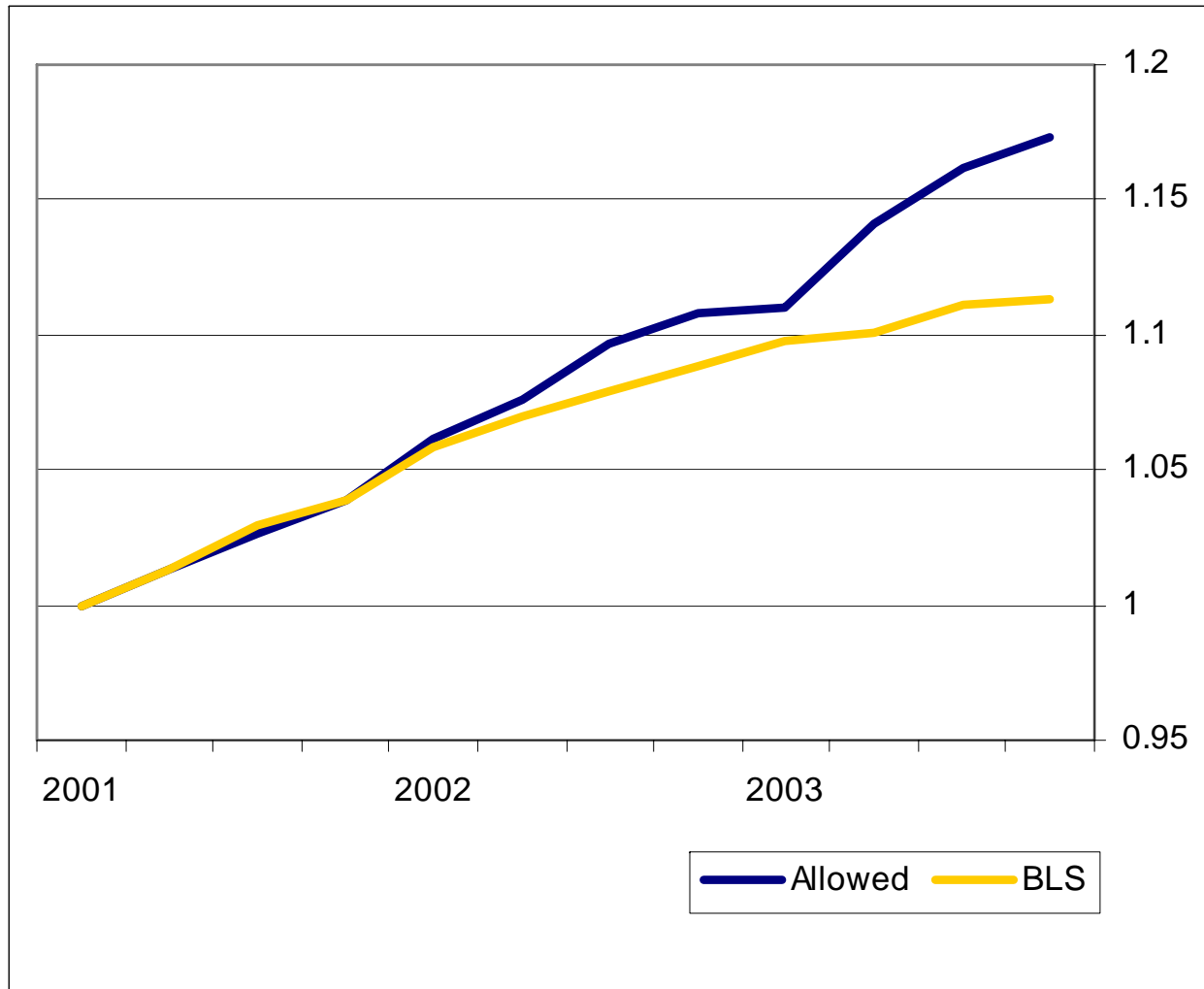
$$Q_{n,t} = (\Sigma_p UNIT^p_{n,t})$$

PHARMetrics Chained Fisher Indexes for Prescription Drugs

Allowed and total charges show similar growth rates

CAGR, 2001-2003

Allowed	6.0
Total	6.1
Paid	5.6

Price Indexes for Prescription Drugs, 2001-2003

PHARMetrics index shows faster growth than CPI
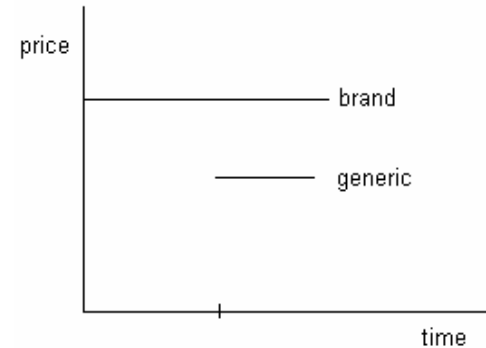
CAGR, 2001-2003

Allowed   6.0

CPI   4.0

Important difference: BLS uses a weighted combination of brand and generic price changes and NDC index does not

Allowed — BLS

Issue 1. Treatment of Generic Drugs

- Example: Generic drug is introduced, no price change for either drug

- As consumers switch to generic drug, nominal expenditures fall
- NDC price index shows no price change
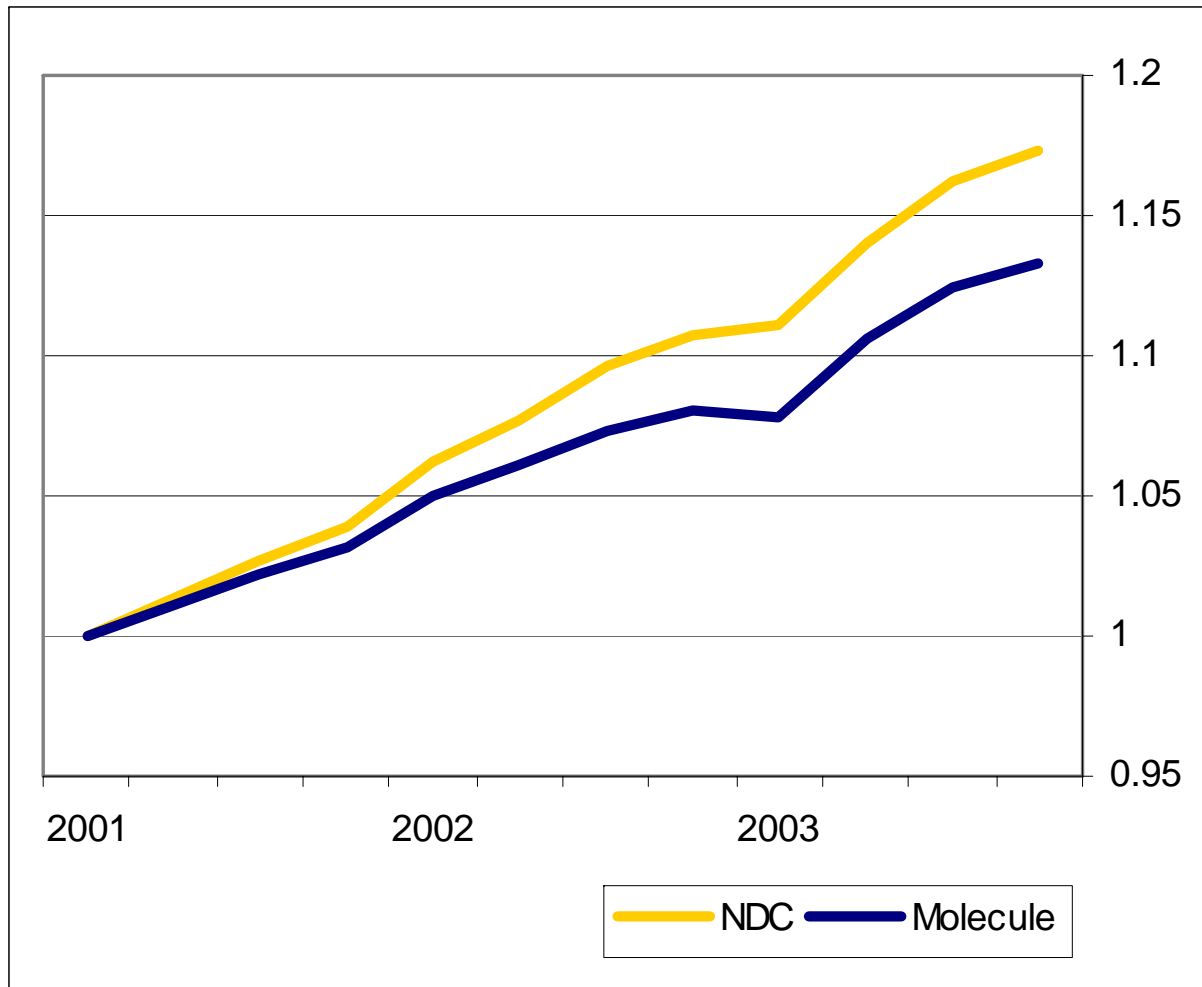- Real expenditures fall even if quantities did not

Solution: treat branded and generic as the same drug (FDA definition)

Molecule level: $P_{m,t} = (\Sigma_{n \in m} \Sigma_p EXP^p_{n,t}) / (\Sigma_{n \in m} \Sigma_p UNIT^p_{n,t})$

$Q_{m,t} = (\Sigma_{n \in m} \Sigma_p UNIT^p_{n,t})$

Entry of generic drugs has a non-trivial impact on overall price index for prescription drugs

CAGR, 2001-2003

NDC	6.0
Molecule	4.7
BLS	4.0

Note: Indexes are not comparable (e.g. PHARMetrics only covers the insured population)
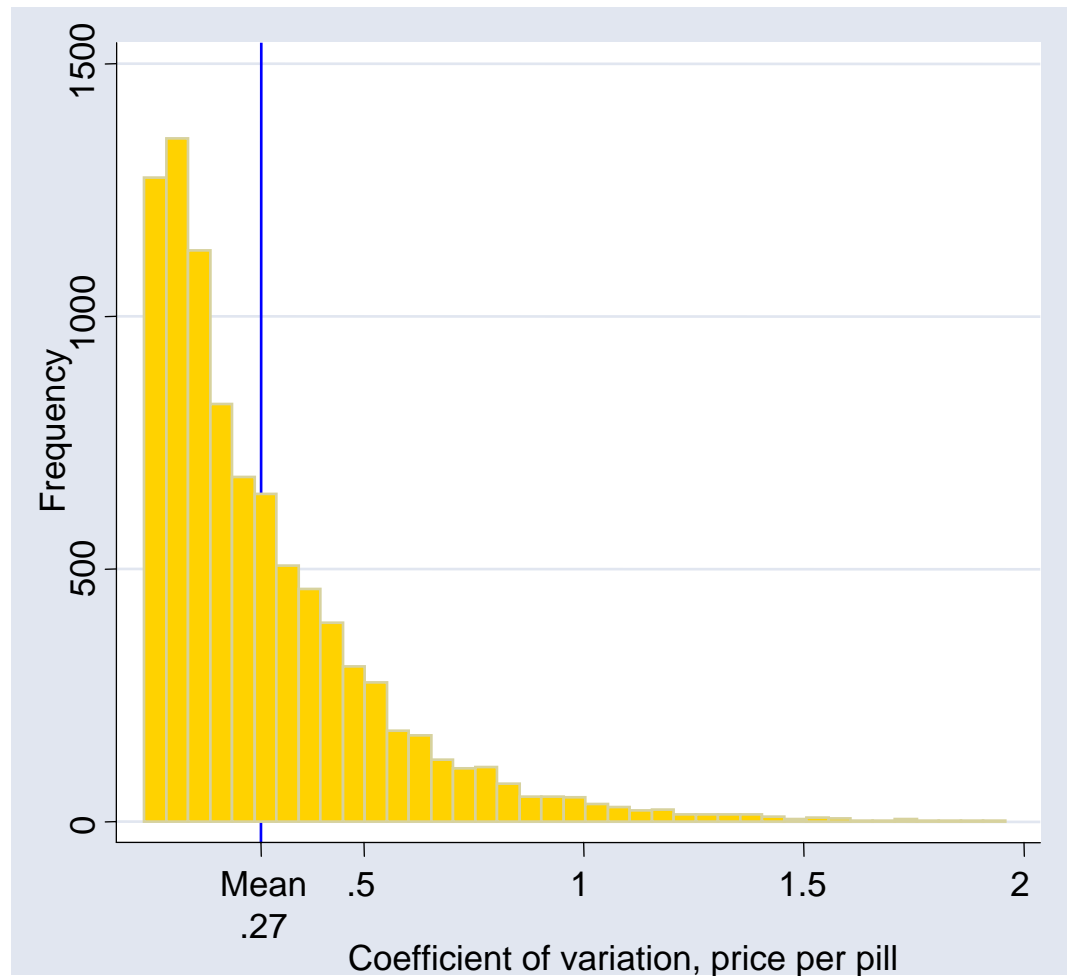
Issue 2. Treatment of Insurance Coverage

Allowed charges

- are negotiated
- vary with insurance coverage
- variation is substantial
- Coefficient of Variation= standard deviation/mean

BLS CPI defines the transaction as the purchase of a particular drug using a particular type of insurance coverage
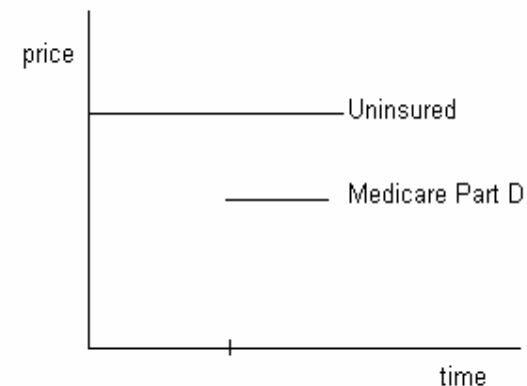
Does this make sense for a PCE deflator?

Treatment of Insurance Coverage by BLS

Example: Uninsured seniors switch to Medicare Part D coverage in January 2006 and begin to pay lower prices

- As seniors switch,
   nominal expenditures fall

- Usual price index shows no price change

- Real expenditures fall even if quantities
   did not

Do we anticipate distortions to real PCE for drugs once Medicare Part D goes into effect?

- There could be distortions to the extent that:
  - Seniors switch to Medicare Part D
  - Prices under Part D are different from what seniors previously paid either because
    - Program promotes switching to cheaper drugs, or
    - Pharmacy Benefit Managers (PBMs) negotiate prices below list price

- At this point, any potential distortions are expected to be small
  - Effect of switching to cheaper drugs is expected to be minimal
  - Law provides little incentive for PBMs to negotiate prices

Implications of insurance issue for future work

- Our indexes must allow for substitution across different types of insurance coverage
  - Unit values must be formed over all types of patients

- Because data for patients with different types of coverage will come from different sources, this will require that treatments/ episodes be defined comparably across data sources

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Towards an Episode-Based Price Deflator for PCE

- Explore properties of episode-based indexes based on PHARMetrics data:

  - Are the PHARMetrics data representative for patients covered with Commercial insurance?

  - Is there a right-censoring problem in forming episodes?

  - How should we handle records that can't be grouped into episodes?

  - Do different groupers yield similar indexes?

For Medicare/Medicaid and uninsured patients

- Explore the possibility of applying the PHARMetrics grouper to data covering other patients

- Possible data sources
  - Medicare claims data
    - Only covers Medicare patients
    - Does not report drug records over history
  - Medicare Current Beneficiary Survey
  - Medical Expenditure Panel Survey (Slesnick and Wendling(2005)

- Explore using PHARMetrics data on Medicare Risk patients as proxy

Questions

- Do you agree with the recommendations of the National Academy Report?

- Do you have concerns with the use of claims data in price indexes?

- Any suggestions on the next steps for this project?

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