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
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
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
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:
    \[
    P_{n,t} = \frac{\sum_p EXP_{n,t}^p}{\sum_p UNIT_{n,t}^p}
    \]
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”

\[
l_{t,t-1} = \left[ \frac{\sum_{i} (P_{i,t} Q_{i,t-1})}{\sum_{i} (P_{i,t-1} Q_{i,t-1})} \cdot \frac{\sum_{i} (P_{i,t} Q_{i,t})}{\sum_{i} (P_{i,t-1} Q_{i,t})} \right]^{1/2}
\]

NDC-level: \[ P_{n,t} = \frac{\sum_{p} \text{EXP}_{n,t}^{p}}{\sum_{p} \text{UNIT}_{n,t}^{p}} \]

\[ Q_{n,t} = \frac{\sum_{p} \text{UNIT}_{n,t}^{p}}{\sum_{p} \text{UNIT}_{n,t}^{p}} \]
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.
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:

\[ P_{m,t} = \frac{\sum_{n \in m} \sum_{p} EXP_{n,t}^p}{\sum_{n \in m} \sum_{p} UNIT_{n,t}^p} \]

\[ Q_{m,t} = \sum_{n \in m} \sum_{p} UNIT_{n,t}^p \]
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)
 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?
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
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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