Some implications of product creation and destruction on Japan’s deflation

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Deflation in Japan

Product creation and destruction at the barcode level

Price changes over the product life

Price changes at the time of product turnover

Price indexes incorporating price changes at the time of product turnover
  - Feenstra (1994)
  - Bils (2009)

Proposal of a new approach
Deflation in Japan

[Graph showing CPI Inflation and Overnight Call Rate over time]
Unit value vs. Price level implied by matched sample inflation: The case of shampoo
Product Turnover at the barcode level

Number of products

- No. of entries
- No. of exits
- No. of products

No. of entries
No. of exits
No. of products

100x10^3

Number of products

Stylized fact #1: More and more products experience a price decline over the life during the deflation period.
How much do prices decline over the product life?

Probability density function of price changes over the life:
The case of shampoo
How much do prices decline over the product life?

Probability density function of price changes over the life:
All products
Which product experiences a more rapid price?

Life span vs. the rate of deflation
The case of shampoo
The rate of inflation in 1995-2007 by life span:

All products
Stylized fact #2: Prices decline more rapidly for products with shorter life span.
Stylized fact #3: The price change over the product life is uncorrelated with the length of product life
When do products exit from the market?

Probability of exit given the difference of the current price level from the price level at the birth

Probability of death

Difference of the current price level from the price level at the birth
Stylized fact #4: The price of a new product is higher than the price of its predecessor product at the time of its death, but it is almost the same as the price of its predecessor at the time of its birth.
How much does the quantities sold for a new product differ from the quantities for its predecessor product?

Difference between the quantities sold for a new product and the quantity of its predecessor at its birth (BLACK) & Difference between the quantities sold for a new product and the quantity of its predecessor at its death (BLUE)

Stylized fact #5: The quantities sold for a new product is greater than the quantities of its predecessor product at the time of its death, but it is almost the same as the quantities of its predecessor at the time of its birth
The inflation rate estimated using the matched sample & the inflation rate adjusted for product turnover
Tentative conclusions

Stylized fact #1: More and more products experience a price decline over the life during the deflation period

Stylized fact #2: Prices decline more rapidly for products with shorter life span

Stylized fact #3: Price change over the product life is uncorrelated with the length of product life

Stylized fact #4: The price of a new product is higher than the price of its predecessor product at the time of its death, but it is almost the same as the price of its predecessor at the time of its birth

Stylized fact #5: The quantities sold for a new product is greater than the quantities of its predecessor product at the time of its death, but it is almost the same as the quantities of its predecessor at the time of its birth

Our exercises suggest that the rate of Inflation in Japan over the last 15 years is very close to zero once it is adjusted for product turnover.