Micro Price Dynamics during Japan’s Lost Decades

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December 17, 2015 @ BdF
Lost Decades of Japan

![Graph showing annual inflation rate from 1990.1.1 to 2015.1.1 with POS and CPI (Grocery) data.]
Scanner or Point of Sales (POS) data

- Gathered by Nikkei Digital Media from various retail shops throughout Japan
- From 1988 to 2013
- Daily
- Over 6 billion records
Price Changes of a Cup Noodle at a Store

Regular price is the mode price during the 3 months.
Frequency of Price Changes

Posted prices are extremely flexible. In the US, 40% for posted prices and 25% for regular prices (Klenow and Malin (2011))

<table>
<thead>
<tr>
<th></th>
<th>1988-1999</th>
<th></th>
<th></th>
<th>2000-2013</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>median</td>
<td>mean</td>
<td>median</td>
<td>mean</td>
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<tr>
<td><strong>Posted price</strong></td>
<td></td>
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<tr>
<td>All</td>
<td>237.0</td>
<td>306.1</td>
<td>415.3</td>
<td>492.4</td>
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<tr>
<td>Processed food</td>
<td>275.4</td>
<td>341.6</td>
<td>465.7</td>
<td>544.2</td>
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<tr>
<td>Domestic articles</td>
<td>106.6</td>
<td>118.0</td>
<td>217.7</td>
<td>233.4</td>
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<td><strong>Regular price</strong></td>
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<tr>
<td>All</td>
<td>15.9</td>
<td>15.2</td>
<td>19.3</td>
<td>19.8</td>
<td></td>
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<tr>
<td>Processed food</td>
<td>16.2</td>
<td>15.8</td>
<td>19.0</td>
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<td>11.4</td>
<td>12.3</td>
<td>21.1</td>
<td>19.5</td>
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</table>

Note: The monthly frequency (%) is calculated as the daily frequency multiplied by 365/12.
For M, we take the prices on the 15th D of the M, so as to be consistent with the official CPI.

Transformed to M frequencies, about 600% for D, 100% for W, 30% for M, 13% for Q, and 4% for Y.
Temporary Sales are Increasingly Important

**Frequency of sales**

- 1990: 10
- 1995: 15
- 2000: 20
- 2005: 25
- 2010: 30

**Magnitude of sales discounts**

- 1990: 1.4
- 1995: 1.6
- 2000: 1.8
- 2005: 2.0
- 2010: 2.2

**Quantity ratio of sales to regular**

- 1990: 15
- 1995: 20
- 2000: 25
- 2005: 30
- 2010: 35

**Revenue ratio of sales to total**

- 1990: 2.2
- 1995: 2.0
- 2000: 1.8
- 2005: 1.6
- 2010: 1.4
And Secular Decline in Hours Worked

[Graph showing trends in Frequency of sales and Hours worked from 1985 to 2015]
Also for a shorter time horizon, the business cycle, there is a correlation

- a period of 1.5 to 8 years using the Baxter-King band pass filter
- between the frequency of sales and the indicators of labor market.
Sign of Endogenous Bargain Hunting: Time Diary Survey

**Table**: Time Spent Shopping and Working (for workers, minutes per day)

<table>
<thead>
<tr>
<th></th>
<th>Shopping (Men)</th>
<th>Working (Men)</th>
<th>Shopping (Women)</th>
<th>Working (Women)</th>
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<td>1986</td>
<td>6</td>
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<td>1991</td>
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<td>345</td>
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<tr>
<td>2001</td>
<td>13</td>
<td>456</td>
<td>31</td>
<td>324</td>
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<td>2006</td>
<td>14</td>
<td>470</td>
<td>31</td>
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<tr>
<td>2006</td>
<td>15</td>
<td>466</td>
<td>32</td>
<td>326</td>
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</tbody>
</table>

Source: Statistics Bureau, *Survey on Time Use and Leisure Activities*.
Other Interesting Facts

- Price elasticity seems to have increased (albeit casual observation).
- Product substitution increased (Ueda, Watanabe, and Watanabe (2015))
  - # of products increased.
  - Seems to be an opportunity to get back to a desirable price level.
References for Japan