### International Income Comparisons

#### Who has the Larger GDP

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>Japan</th>
</tr>
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<tbody>
<tr>
<td>Per Capita Consumption of Hamburgers (pounds)</td>
<td>200</td>
<td>20</td>
</tr>
<tr>
<td>Rice (pounds)</td>
<td>20</td>
<td>300</td>
</tr>
<tr>
<td>Price of Hamburger (per pound)</td>
<td>$5</td>
<td>¥80</td>
</tr>
<tr>
<td>Price of Rice (per pound)</td>
<td>$4</td>
<td>¥300</td>
</tr>
<tr>
<td>Valuated in Yen</td>
<td>$166,000</td>
<td>1106,00</td>
</tr>
<tr>
<td>Valued in Dollars</td>
<td>$1080</td>
<td>$1300</td>
</tr>
</tbody>
</table>

#### Purchasing Power Equivalent

Equivalent: compute both countries GDP using one country’s prices.

\[
\text{Japan} = \frac{¥106,000}{¥166,000} = \frac{848}{125} = 68% \\
\text{US} = \frac{¥106,000}{¥166,000} = 64% \\
\]

This is the answer if you apply purchasing power using Yen.

The answer if you convert at the exchange rate.
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**Valuated in Yen**

- Price of Hamburger: ¥166,000
- Price of Rice: ¥106,000

**Valuated in Dollars**

- Price of Hamburger: $1,080
- Price of Rice: $1,300

The answer if you apply purchasing power using Dollars is Japan with a ratio of 120%.  

### A Quick Exam

- Per Capita GDP in Japan is
  - (a) 78%
  - (b) 64%
  - (c) 120%
  of that in the United States

### The True Answer

- While most comparisons are based on method (c), using US prices, this method is flawed.
- The true answer is
  
  \[
  (b) < \frac{\text{Japan}}{\text{US}} < (c)
  \]

### The Big Mac Index

**The Idea**

- Compute the Cost of a single common traded good in all countries.
- Convert to dollars using the exchange rate.
- The ratio would give a measure of differential living costs.

**An Example**

- Big Mac costs $1.50 in US
- Big Mac costs £1.00 in UK
- Exchange rate is £ = $1.65
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- Big Mac costs $1.50 in US
- Big Mac costs £1.00 in UK
- Exchange rate is £ = $1.65

\[
\frac{£1.00 (1.65/\$)}{1.50} = 110\%
\]

Danish per capita GDP, adjusted at the current exchange rate is 22% higher than that of the US. But prices are 32% higher, so Danes are worse off.