Panel Discussion: Future Directions in Measurement and Analysis

Kevin J. Fox
The University of New South Wales
Centre for Applied Economic Research
& School of Economics
Sydney, NSW 2052, Australia.
E-mail: K.Fox@unsw.edu.au
Fax: +61-2-9313-6337
Tel: +61-2-9385-3320

Presentation Prepared for the Productivity Perspectives 2006 Forum
23 March 2006, Canberra
Net Versus Gross Output

Diewert and Fox (2005): “The New Economy and an Old Problem: Net Versus Gross Output”

1. The OECD *Economic Outlook* for December 2002 mentioned GDP 531 times and did not make a single reference to NDP.

2. However, net output has long been considered the correct measure of output.

3. Quality adjustment of deflators may be driving up estimates of gross investment and hence GDP.
4. Using net investment reduces the share of investment in GDP and reduces the importance of the investment deflator.

5. Problem is then how to calculate net output.
Hedonism versus Asceticism

1. The possibility of hedonic adjustment potentially raising GDP growth has been noted and investigated:

- Nordhaus (2002)
- Coleccia and Schreyer (2001)
- Landefeld and Grimm (2000)
- Scheuer (2001)
2. Bottom line is that it can only partially explain growth differences between e.g. U.S. and European countries in the late 1990s.

3. But still a problem — different countries use different approaches and introduce methods at different times. Even small differences in comparisons can accumulate over time.
Canada: Deflator for Machinery and Equipment

<table>
<thead>
<tr>
<th>Year</th>
<th>Price Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>0.7</td>
</tr>
<tr>
<td>1980</td>
<td>0.8</td>
</tr>
<tr>
<td>1990</td>
<td>0.9</td>
</tr>
<tr>
<td>2000</td>
<td>1.0</td>
</tr>
</tbody>
</table>
NZ: Deflator for Plant, Machinery and Equipment

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Price Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>0.95</td>
</tr>
<tr>
<td>1990</td>
<td>0.95</td>
</tr>
<tr>
<td>1992</td>
<td>0.95</td>
</tr>
<tr>
<td>1994</td>
<td>0.95</td>
</tr>
<tr>
<td>1996</td>
<td>0.95</td>
</tr>
<tr>
<td>1998</td>
<td>0.95</td>
</tr>
</tbody>
</table>
Net Output

1. If net output is the appropriate measure of output, then how should we measure it? Again, different approaches used by different countries.

2. Spant (2003): “Given the dominant role of GDP and low interest in NDP, it is very possible that the current estimates of depreciation for certain countries are not based on up-to-date estimates of the service lives of capital assets and hence may not be capturing true changes in depreciation patterns.”
Table 1: Gross versus Net Domestic Product Growth

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>3.87</td>
<td>3.59</td>
<td>0.27</td>
<td>15.63</td>
<td>16.95</td>
<td>1.33</td>
</tr>
<tr>
<td>Austria</td>
<td>2.40</td>
<td>2.26</td>
<td>0.15</td>
<td>14.05</td>
<td>14.78</td>
<td>0.73</td>
</tr>
<tr>
<td>Belgium</td>
<td>2.41</td>
<td>2.22</td>
<td>0.19</td>
<td>14.22</td>
<td>15.17</td>
<td>0.95</td>
</tr>
<tr>
<td>Canada</td>
<td>3.56</td>
<td>3.41</td>
<td>0.15</td>
<td>13.16</td>
<td>13.90</td>
<td>0.74</td>
</tr>
<tr>
<td>Denmark</td>
<td>2.48</td>
<td>2.05</td>
<td>0.43</td>
<td>15.98</td>
<td>18.07</td>
<td>2.09</td>
</tr>
<tr>
<td>Finland</td>
<td>4.11</td>
<td>4.67</td>
<td>-0.56</td>
<td>18.17</td>
<td>15.48</td>
<td>-2.69</td>
</tr>
<tr>
<td>France</td>
<td>2.48</td>
<td>2.42</td>
<td>0.06</td>
<td>13.74</td>
<td>13.98</td>
<td>0.24</td>
</tr>
<tr>
<td>Germany</td>
<td>1.60</td>
<td>1.38</td>
<td>0.21</td>
<td>14.79</td>
<td>15.87</td>
<td>1.07</td>
</tr>
<tr>
<td>Greece</td>
<td>3.54</td>
<td>3.50</td>
<td>0.04</td>
<td>9.07</td>
<td>9.28</td>
<td>0.22</td>
</tr>
<tr>
<td>Iceland</td>
<td>4.60</td>
<td>4.09</td>
<td>0.52</td>
<td>14.69</td>
<td>17.18</td>
<td>2.49</td>
</tr>
<tr>
<td>Italy</td>
<td>1.92</td>
<td>1.80</td>
<td>0.12</td>
<td>13.10</td>
<td>13.69</td>
<td>0.59</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3.29</td>
<td>3.20</td>
<td>0.10</td>
<td>15.12</td>
<td>15.60</td>
<td>0.48</td>
</tr>
<tr>
<td>Spain</td>
<td>3.64</td>
<td>3.52</td>
<td>0.12</td>
<td>13.00</td>
<td>13.61</td>
<td>0.60</td>
</tr>
<tr>
<td>Sweden</td>
<td>2.90</td>
<td>2.68</td>
<td>0.22</td>
<td>13.34</td>
<td>14.44</td>
<td>1.10</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2.76</td>
<td>2.85</td>
<td>-0.09</td>
<td>12.09</td>
<td>11.65</td>
<td>-0.45</td>
</tr>
<tr>
<td>United States</td>
<td>3.42</td>
<td>2.93</td>
<td>0.48</td>
<td>11.58</td>
<td>14.03</td>
<td>2.45</td>
</tr>
<tr>
<td>Unweighted 16-country average</td>
<td>3.06</td>
<td>2.91</td>
<td>0.15</td>
<td>13.86</td>
<td>14.60</td>
<td>0.756</td>
</tr>
</tbody>
</table>

3. Table 1: the Finnish and UK numbers looks unlikely. Large differences between countries.

4. Suggests that it is timely to consider different methods of calculating depreciation and their impact on estimates of net output growth.

5. Hyperbolic depreciation used by the ABS (and other agencies): appropriate?
Some Other Priorities

1. Land.

2. Inventories.

3. Coverage.

4. Imputing a net return to government capital.

5. Treatment of negative user costs?
6. Treatment of low internal rates of return?

7. Capitalization of R&D.