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Towards a New Version of the IMPEC Model
Plan of the presentation

Problems of operationalization of IO models

Errors and structural changes

Polish data: hard, soft or … liquid?

Danger! IMPEC

Conclusions
## Problems of operationalization of io models

<table>
<thead>
<tr>
<th>Type of problem</th>
<th>Type of equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>output</td>
<td>( X = AX + Y )</td>
</tr>
<tr>
<td>price</td>
<td>( p^T = p^T A + d^T )</td>
</tr>
<tr>
<td>dynamization</td>
<td>( X_t^0 = A_t^0 X_t^0 + Y_t^0 )</td>
</tr>
<tr>
<td>treatment of imports</td>
<td>( p_t^T = p_t^T A_0 + d_t^T )</td>
</tr>
<tr>
<td>classifications of Y &amp; M categories</td>
<td>( X_t^0 = A_t^0 X_t^0 + B_t^C c_t^0 + B_t^G g_t^0 + B_t^I i_t^0 + B_t^E e_t^0 - B_t^M m_t^0 )</td>
</tr>
<tr>
<td></td>
<td>( X_t^0 = A_t^0 X_t^0 + B_t^V y_t^0 - B_t^M m_t^0 )</td>
</tr>
</tbody>
</table>
...continued

availability of $A$ and $B$ matrices

valuation of output & flows

classification of output and flows

source of $A$ matrix

consistency of data

\[
\hat{X}_t^0 = A_0 X_t^0 + B_0^Y y_t^0 - B_0^M m_t \\
\hat{p}_t^T = p_t^T A_0^d + p_t^{mT} A_0^m + d_t^T \\
r_t^X = \hat{X}_t^0 - X_t^0 \\
r_t^p = \hat{X}_t^0 - X_t^0
\]

basic vs. purchasers’ prices

industry & commodity: M&U tables

IO or use table

within time series & cross section data
"r" as a measure of structural changes
Polish data: hard, soft or ... liquid?

<table>
<thead>
<tr>
<th>IO tables</th>
<th>M&amp;U tables</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 1995 (pp, 57 sectors)</td>
<td>• 1995 – 2004</td>
</tr>
<tr>
<td>• 2000 (bp, pp, imports, 54 sectors)</td>
<td>• 54 industries &amp; commodities</td>
</tr>
</tbody>
</table>

**SNA time series: 1992 - 2006**

- output – sections & subsections, by industries, current and constant prices
- va – sections & subsections, by industries, sectors current prices
- fd – time series of totals of fd categories
Polish data: hard, soft or ... liquid?

prod – output (make&use tables), current prices, commodity classification
out – output (SNA time series), current prices, industry classification
IO2000 – output (IO table 2000), commodity classification
Polish data: hard, soft or ... liquid?

prod  output (make&use tables), current prices, commodity classification
out  output (SNA time series), current prices, industry classification
IO2000  output (IO table 2000), commodity classification
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IO2000 – output (IO table 2000), commodity classification

Example graph showing data for Tabacco (16) from 1992 to 2004.
<table>
<thead>
<tr>
<th>Year</th>
<th>outR</th>
<th>outVR</th>
<th>prodRp</th>
<th>prodRo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>264</td>
<td>264</td>
<td>-368</td>
<td>231</td>
</tr>
<tr>
<td>1993</td>
<td>492</td>
<td>492</td>
<td>-179</td>
<td>348</td>
</tr>
<tr>
<td>1994</td>
<td>512</td>
<td>512</td>
<td>-198</td>
<td>365</td>
</tr>
<tr>
<td>1995</td>
<td>618</td>
<td>618</td>
<td>-147</td>
<td>430</td>
</tr>
<tr>
<td>1996</td>
<td>840</td>
<td>840</td>
<td>31</td>
<td>544</td>
</tr>
<tr>
<td>1997</td>
<td>962</td>
<td>962</td>
<td>61</td>
<td>625</td>
</tr>
<tr>
<td>1998</td>
<td>1255</td>
<td>1255</td>
<td>344</td>
<td>778</td>
</tr>
<tr>
<td>1999</td>
<td>1805</td>
<td>1805</td>
<td>956</td>
<td>1035</td>
</tr>
<tr>
<td>2000</td>
<td>2056</td>
<td>2056</td>
<td>1163</td>
<td>1163</td>
</tr>
<tr>
<td>2001</td>
<td>1725</td>
<td>1725</td>
<td>700</td>
<td>1027</td>
</tr>
<tr>
<td>2002</td>
<td>2120</td>
<td>2120</td>
<td>1085</td>
<td>1210</td>
</tr>
<tr>
<td>2003</td>
<td>2796</td>
<td>2796</td>
<td>1874</td>
<td>1526</td>
</tr>
<tr>
<td>2004</td>
<td>1756</td>
<td>1756</td>
<td>359</td>
<td>1466</td>
</tr>
<tr>
<td>2005</td>
<td>3789</td>
<td>3789</td>
<td>2894</td>
<td>2039</td>
</tr>
<tr>
<td>2006</td>
<td>2865</td>
<td>2865</td>
<td>1647</td>
<td>1681</td>
</tr>
</tbody>
</table>

**Graph:**

- **outR** – output, constant prices, industry classification
- **prodRp** – estimated output (with use of make matrix – method I), constant prices, commodity classification
- **prodRo** – estimated output (with use of make matrix – method II), constant prices, commodity classification
Illustration of resR time series
resR – deviations - „r” - real side, commodity classification, actual output estimated with method II
Illustration of of resP regression results

resP – deviations - „r” – price side, commodity classification, actual prices estimated with method II
Regressors – time trend and relative imprt price for a given sector
Conclusions

- Problems of operationalization of IO models are connected with the framework of national accounts and data availability.
- Deviations ("r") deliver useful information on structural changes which can be used in models to lessen forecast errors.
- Polish data include most information necessary to build fairly disaggregated, sophisticated model but…
- Quality of some of the data is questionable.
- Mathematical methods used to transform data from one classification to another should be used carefully, because they can produce senseless results.