Purpose

- Present economic data about the Japanese pulp and paper companies.
- Try to find reasons for differences in return on capital.
Approach

• Describe the studied companies.
• Identify possible clusters.
• Study possible correlations between a set of dependent and independent variables.

Population

Dependent Variables

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on equity before tax</td>
<td>Income before tax related to stockholders’ equity (%)</td>
</tr>
<tr>
<td>Profit margin</td>
<td>Income before tax related to total sales (%)</td>
</tr>
<tr>
<td>Asset utilization rate</td>
<td>Sales related to value of assets on the books</td>
</tr>
</tbody>
</table>

Independent Variables

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mill size</td>
<td>Paper and paperboard and pulp, respectively</td>
</tr>
<tr>
<td>Productivity</td>
<td>Labor, Capital</td>
</tr>
<tr>
<td>Production line</td>
<td>Share of paper of total paper and paperboard production, Share of pulp of total paper and paperboard production</td>
</tr>
<tr>
<td>Financial data</td>
<td>Assets, Solidity</td>
</tr>
<tr>
<td>Use of wood resources</td>
<td>m³/ton, waste paper/total prod., imp. of wood, own wood</td>
</tr>
</tbody>
</table>
Use of Pulp and Waste Paper

Pulpwood Sources
Financial Performance
Return on Equity

Paper Mill Size
Productivity

Cluster of Companies

• Production line does not explain differences in profit
• Size of the company seems to be positively correlated with return on equity
• Paper mill size seems to be positively correlated with rate of return and asset utilization rate and negatively with profit margin
• Pulp mill size seems to be positively correlated with rate of return and profit margin
Statistical Analysis

• The econometric analysis indicates that the best model fit is found when using asset utilization rate as dependent variable.
• Significant variables are labor productivity, capital productivity, paper production as a share of total paper and board production and solidity.
• Labor productivity and solidity are positively correlated with asset utilization rate.

• The negative correlation for capital productivity may indicate that total value of assets on the books is large in relation to total production of paper, paperboard and pulp.
• “Paper-share-production” has as paper and board mill size (not significant) a negative correlation with asset utilization rate.
• Pulp production as share of total paper and board production and average pulp mill size are positively correlated with asset utilization rate. This may indicate that there is profitability in pulp production (mill size and production line) but not in paper and paperboard production (mill size and production line).