Aid and Dutch Disease in the South Pacific

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Does aid have a Dutch Disease effect?

- Aid inflows → higher demand for non-traded goods → real exchange rate appreciation, and a potential decline in competitiveness.
- But if some of the goods are investment goods, then increased capacity can offset this effect, at least in the long run.
- There is mixed evidence from around the world, from both econometric and calibrated models.
Capital productivity may depend on:

- The average capital-labour ratio
- Macroeconomic policy
- Trade policy
- The quality of public services
- Political stability
What this paper does

• **Measurement** of the size of the Dutch Disease effect, using time-series data from 10 Pacific island states and 16 other small island states.

• **Explanation** of the country-specific characteristics that determine the size of the effect, using these 26 states as a cross-section.
<table>
<thead>
<tr>
<th>Country</th>
<th>POP (000)</th>
<th>GDP ($bn)</th>
<th>ODA (% GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook Islands</td>
<td>21</td>
<td>0.11</td>
<td>26.7</td>
</tr>
<tr>
<td>Fiji</td>
<td>906</td>
<td>5.38</td>
<td>2.9</td>
</tr>
<tr>
<td>Fr. Polynesia</td>
<td>276</td>
<td>4.58</td>
<td>11.3</td>
</tr>
<tr>
<td>Kiribati</td>
<td>105</td>
<td>0.79</td>
<td>39.7</td>
</tr>
<tr>
<td>N. Caledonia</td>
<td>219</td>
<td>3.16</td>
<td>12.7</td>
</tr>
<tr>
<td>Samoa</td>
<td>177</td>
<td>1.00</td>
<td>15.6</td>
</tr>
<tr>
<td>Solomon Is.</td>
<td>552</td>
<td>0.80</td>
<td>20.8</td>
</tr>
<tr>
<td>Tonga</td>
<td>115</td>
<td>0.24</td>
<td>19.3</td>
</tr>
<tr>
<td>Tuvalu</td>
<td>12</td>
<td>0.02</td>
<td>81.9</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>209</td>
<td>0.58</td>
<td>21.8</td>
</tr>
</tbody>
</table>
**Measurement**

- We fit a very simple time-series model:

\[
B(L) \begin{bmatrix}
\ln(y_t) \\
\ln(s_t) \\
\pi_t
\end{bmatrix} = c(L)aid_t + \begin{bmatrix}
u_t^1 \\
u_t^2 \\
u_t^3
\end{bmatrix}
\]

- \(y\) = real GDP
- \(s\) = real exchange rate
- \(\pi\) = inflation (flexible exch. rate states only)
- \(aid\) = ODA/GDP in previous year
- \(u^i\) = reduced-form shock to equation \(i\).
## Growth rates in $y$ and $s$

<table>
<thead>
<tr>
<th>Country</th>
<th>$y$ mean</th>
<th>$y$ std. dev.</th>
<th>$s$ mean</th>
<th>$s$ std. dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook Islands</td>
<td>1.06</td>
<td>5.39</td>
<td>2.16</td>
<td>9.20</td>
</tr>
<tr>
<td>Fiji</td>
<td>3.17</td>
<td>4.69</td>
<td>-0.46</td>
<td>9.14</td>
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<td>French Polynesia</td>
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<td>4.57</td>
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<td>11.94</td>
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<tr>
<td>Kiribati</td>
<td>0.95</td>
<td>15.58</td>
<td>-0.70</td>
<td>6.31</td>
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<tr>
<td>New Caledonia</td>
<td>2.42</td>
<td>7.29</td>
<td>0.01</td>
<td>12.85</td>
</tr>
<tr>
<td>Samoa</td>
<td>1.62</td>
<td>3.62</td>
<td>-0.95</td>
<td>7.87</td>
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<td>Solomon Islands</td>
<td>3.29</td>
<td>7.70</td>
<td>-1.53</td>
<td>11.40</td>
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<td>Tonga</td>
<td>4.28</td>
<td>7.07</td>
<td>-1.07</td>
<td>11.05</td>
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<tr>
<td>Tuvalu</td>
<td>3.05</td>
<td>8.81</td>
<td>1.24</td>
<td>8.70</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>3.88</td>
<td>7.70</td>
<td>-2.24</td>
<td>13.18</td>
</tr>
</tbody>
</table>
Time-series results for Pacific states

- Aid causes significant RER appreciation and a short-run reduction in GDP in the **Cook Islands** and **Tuvalu** (both with fixed exch. rates).
- Aid causes a significant increase in inflation (not the RER) and a short-run reduction in GDP in **Vanuatu** (with a flexible exch. rate).
- Aid causes significant RER depreciation and a short-run increase in GDP in **Tonga**.
- *In other states standard errors are quite high.*
Impulse responses for the Cook Islands

- Cook Islands GDP
- Cook Islands Real Exchange Rate
Impulse responses for Tuvalu

Tuvalu GDP

Tuvalu Real Exchange Rate
Impulse responses for Vanuatu

Vanuatu GDP

Vanuatu Inflation
Explanation

• Look at the area under the real exchange rate impulse response curve (up to $t = 3$, or $t = 4$, or $t = 5$) for all 26 island states, conditional on:
  • The average capital-labour ratio
  • Macroeconomic policy
  • Trade policy
  • The quality of public services
  • Political stability
  • *The nominal exchange rate regime appears not to matter.*
Explanation

• The average capital-labour ratio
  average per capita GDP
• Macroeconomic policy
  government spending / GDP; average inflation
• Trade policy
  Sachs-Warner index of openness
• The quality of public services
  Kaufmann-Kraay government effectiveness index
• Political stability
  Kaufmann-Kraay political stability index
Kaufmann-Kraay indices

- **Government effectiveness**: ‘The quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies.’

- **Political stability**: ‘Perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including domestic violence and terrorism.’
Scatter plot of government effectiveness against openness
Scatter plot of government effectiveness against political stability
Cumulative Impulse Responses at $t = 5$
## Coefficients for $t = 5$

<table>
<thead>
<tr>
<th></th>
<th>coeff.</th>
<th>$t$ ratio</th>
<th>coeff.</th>
<th>$t$ ratio</th>
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</thead>
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<tr>
<td>intercept</td>
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<td>-3.71</td>
<td>-7.10</td>
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<td>p.c. GDP</td>
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<td>4.44</td>
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<td>2.18</td>
<td>4.90</td>
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<td>Pacific dummy</td>
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<td></td>
<td>-0.77</td>
<td>-2.27</td>
</tr>
</tbody>
</table>
Conclusions

• Time-series analysis reveals a wide range of RER responses to aid in Pacific and other islands.
• Aid can cause the RER to appreciate or depreciate.
• There can also be significant responses in GDP.
• The size and sign of the RER response is correlated with a several different policy characteristics.