Royalties and Fiscal Equalization - The Case of Swiss Hydropower

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The distribution of resource rents has been an issue of political economy for many centuries and in different resource industries. It is an issue of property rights and corporate governance/responsibility. It is a global issue with regional dimension. It is a distributional concern in many parts of the world …

Hydropower in Switzerland

Switzerland:
- The «water tower of Europe»
- Hydropower (HP):
  - Main pillar of Swiss energy system & the Energy Strategy 2050
  - ca. 60% of domestic electricity production
  - Historically: a driver of economic development
- Federalist country (principle of subsidiarity):
  - 26 cantons & 2212 municipalities (1.1.2019)
  - Fiscal equalization to mitigate disparities
- The cantons hold the property rights in the water resources (in some cantons → municipalities etc.)
  - They receive royalties (water fees) from HP companies
- Lowland cantons are the main shareholders in HP companies

Location of Swiss HP plants
Motivation → Research Design

Energy policy reform of federal level:
- Energy Strategy 2050 proposed the Federal Council (2011)
- reformed Energy Act (approved in a public referendum, May 2017)
  o reformed Water Rights Act (under review)
    ➢ Proposals for new water fee system under review, including:
      - Flexible fees adjusted to market prices
      - Integration in fiscal equalization
      - Inclusion in electricity prices

Some facts:
Current water fee maximum:
  110 CHF/kW (~ 14.5 CHF/MWh)
Market price:
  ~ 45 CHF/MWh (2014/15)
  ~ 75 – 115 CHF/MWh (2007/08)

Research questions:
- Impact of changing water fees on
  - Profitability of HP plants
  - Financial flows (dividends, water fees, taxes, etc.)
    between cantons and within the Canton of Grisons (GR)
    - Municipal finance and fiscal equalization in GR
    - Regional development in GR

Analysis of
a) Ownership in Swiss HP
   → «attributed» water fee payments
b) Distributional effects of water fees
   and mitigation of resulting disparities
   through fiscal equalization
Hydropower in Switzerland: Where does the money flow?

Water fee revenues (2016)

Ownership in Swiss HP (2016)
The flow of money (resource rents) from HP:
- Company profits
- Royalties
- Taxes

The importance of water fees for public finance:
- Cantons
- Municipalities

Mitigation of resulting disparities through fiscal / resource equalization:
- On national level (between cantons)
- Within the canton of Grisons (GR)

Who finally pays the water fees?
- Owners (shareholders)
- “attributed” water fee payments

Attribution of water fee payments to GR:

<table>
<thead>
<tr>
<th>Canton</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canton ZH</td>
<td>19.0%</td>
</tr>
<tr>
<td>City of Zurich</td>
<td>15.5%</td>
</tr>
<tr>
<td>Canton GR</td>
<td>10.4%</td>
</tr>
<tr>
<td>Canton AG</td>
<td>9.7%</td>
</tr>
<tr>
<td>Municipalities GR</td>
<td>6.9%</td>
</tr>
<tr>
<td>Rest</td>
<td>others</td>
</tr>
</tbody>
</table>

No comparable data on dividends and retained profits
Goals of fiscal equalization:

a) Mitigation of disparities

b) Compensation of cost differences in providing public goods

Water fees are the remuneration for the use of a natural resource paid to the holders of property rights (royalty).
Municipalities in Grisons:
water fees and resource potential

Importance of water fees in resource potential

What are the impacts of different water fee options on municipal finance and resource equalization in GR?

Resource potential
- Private + corporate taxes
- Share of real estate and land taxes
- Water fees

Relative resource strength

Share of Water Fee Revenues in Total Resource Potential of Municipalities in Grisons 2018

- < 10%
- 10% - 15%
- 20% - 30%
- 40% - 77%

Importance of water fees in resource potential

- Private + corporate taxes
- Share of real estate and land taxes
- Water fees

Relative Resource Strength of Municipalities in Grisons 2018

- Resource-strong municipality (WF > 110)
- Resource-weak municipality (WF < 110)

Canton of Grisons

Hydropower plants

Maximum output capacity [in MW]

- 200
- 75
- 50
- 30
- Run-of-river plant
- Storage plant
- Pumped-storage plant

Water Fee Revenues

Municipalities without Water Fee Revenues

Municipalities as of 01.01.2018 (n = 106)
## Impact of different water fee levels on municipal finance and resource equalization

<table>
<thead>
<tr>
<th>Typology</th>
<th>Effects of changes in water fee level on resource equalization (RE)</th>
<th>Number of municipalities (fiscal year 2018)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type A</strong></td>
<td>Resource-strong municipalities that pay more into RE in case of lower water fees, and less in case of higher water fees</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>with water fees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td><strong>Type B</strong></td>
<td>… pay less into RE in case of lower water fees, and more in case of higher water fees</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Type C</strong></td>
<td>Resource-weak municipalities that receive more from RE in case of lower water fees, and less in case of higher water fees</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Type D</strong></td>
<td>… receive less from RE in case of lower water fees, and more in case of higher water fees</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>not classified</td>
<td>(excluded from RE)</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>All municipalities are directly or indirectly affected from changes in water fee levels: lower water fees =&gt; lower revenues, higher water fees =&gt; higher revenues.</td>
<td>86</td>
</tr>
</tbody>
</table>

Some resource-weak municipalities might become resource-strong.
Impact of different water fee levels on resource equalization, 2018

Municipalities in GR would be differently affected by changes in water fees (directly / indirectly).

The most affected would be municipalities of Type A and Type D.
**Conclusion**

- Water fees and profits from HP are unevenly distributed among cantons and municipalities.
- On national level, they are not a cause of disparities.
- Within the canton of Grisons, this looks different, as the analysis of the cantonal fiscal equalization reveal:
  - Thanks to fiscal equalization (resource equalization), all municipalities directly or indirectly benefit from water fees (royalties).
  - As a consequence, all municipalities would be affected by declining water fees & benefit from rising water fees.
  - But, municipalities would be differently affected:
    - Tourist destinations and more industrialized municipalities would be more affected than municipalities that mainly rely on water fees.
    - The effects on the most resource-weak municipalities would be mitigated the most.

- These distributional effects and the importance of HP and water fees for local economies must be taken into account when designing new water fee schemes.
- Water fees are an issue of sharing resource rents – thus, an issue of ownership in HP plants.
- Altogether, this is key to the Energy Strategy 2050, as new and retrofitting investments are needed.
Thank you for your attention.

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