“Failures in Urban Capital Markets and Consequences for Project Funding”

ERES Conference
Vienna 05 July 2013

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Research approach to analyse imperfections

General idea of our project:
Classify urban capital markets according to their sensitivity to different kinds of market failures for the respective investment needs.

Focus here:
Appropriate type of subsidy for urban development projects.

Analysed market failures:
- External effects
- Imperfect competition
- Incomplete information

Question to be answered:
➔ Which combination of market failures justifies the employment of revolving financial instruments (“JESSICA-type funding”) in contrast to grants?
➔ Thus: Which kind of subsidy intervention for which project types?
- **External effects:**
  Costs/benefits arising with the production of goods for uninvolved parties, such as the benefits for shop owners which gain new clients when there is a public car park constructed nearby.

- Including external effects in the net present value calculation (from an overall welfare point of view) helps to identify market failures and intervention possibilities for public authorities.

\[ NPV_{tot} = NPV_{proj} + NPV_{ext} \]

- Decision on project initialisation for positive externalities:

  - NPV\(_{proj}\) > 0
    - NPV\(_{tot}\) > 0 → Initialisation & optimum
    - NPV\(_{tot}\) < 0 → No initialisation & optimum

  - NPV\(_{proj}\) < 0
    - NPV\(_{tot}\) > 0 → No initialisation & market failure
    - NPV\(_{tot}\) < 0 → No initialisation & optimum

- Which **subsidy value** would be appropriate to overcome the problem?

\[ Value_{Subsidy} \in \left[ -\frac{NPV_{proj}}{<0}, NPV_{ext} \right] \]
- **Imperfect competition:**
  Only one or very few providers/sellers of a certain good or service exist e.g., the prevalent transport infrastructure monopoly in some member states.

- **Monopoly:** the project value would be influenced by investment costs which are higher than necessary due to the (positive) premium $\Delta I$ the price maker adds to the proper investment sum in a perfect competition environment:

  $$NPV_{tot} = -I + \frac{E(m)}{1+i} > -I - \Delta I + \frac{E(m)}{1+i} = NPV_{proj}$$

  Value in a perfect competition environment  
  Value with monopolistic power

- **Market failure** occurs if $NPV_{proj}$ is negative and $NPV_{tot}$ is positive:

  $$NPV_{tot} = \frac{NPV_{proj}}{<0} + \Delta I > 0$$

- The monopolist renders $NPV_{proj}$ negative only by his premium.

- **Why should the public sector support such behaviour through funding?**
Two cases:

- Monopolist adds the premium **deliberately**
  - He harms himself, because the project is not going to be initiated at all
  - He would be better off by setting the premium lower and leaving $\text{NPV}_{\text{proj}}$ positive
  - He would just siphon these profits
  - **No subsidy** necessary

- He adds it **without awareness** due to inefficiencies
  - Public intervention is reasonable to the degree of positive external effects coupled with the monopolistic position
  - E.g. infrastructure might not be provided at all without the natural monopolies arising in the respective context
  - Which **value of subsidies** is appropriate?

$$\text{Value}_{\text{Subsidy}} \in \left[ -\frac{\text{NPV}_{\text{proj}}}{\text{NPV}_{\text{ext}}} < 0, \text{NPV}_{\text{ext}} \right]$$

**Independent of the case:** It is not possible for the monopoly to exploit the public or private beyond the value of the positive externalities.
Incomplete information:
Misinformation of some project participants which might result in cost overruns or benefit shortfalls, e.g., when large infrastructure projects are much more expensive as previously planned.

Typical example: cost overruns and benefit shortfalls, because projects are promoted too favourably.

Investors are aware of this problem and they thus overcautiously estimate the project value:

\[
NPV_{tot} = NPV_{proj} + \Delta I + \frac{\Delta E(m)}{1 + i} > 0
\]

The promoter would harm himself if he does not credibly signal the project quality.

He can only exploit the investor to a degree where NPV_{proj} remains positive.

We do not see the necessity of intervention via subsidies here.

Possible interventions from the literature come to the same results on the suitability of subsidies.
It remains to be clarified: Which kind of subsidies is appropriate – loans or grants?

Corresponds to our results!

Dominique Schaeling
05 July 2013

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Which combination of market failures justifies the employment of revolving financial instruments in contrast to grants?

- Private parties do simply not include external effects in their investment decision.
- As long as public authorities close the financial gap they will be willing to invest as well.
- But there is no need for a signal of the quality of external effects to the private.
- Grants (which do not have signalling properties) are sufficient and do not bear a risk of volatile refloows.
Which combination of market failures justifies the employment of revolving financial instruments in contrast to grants?

- Monopolies should be supported if some kind of external effects arise.
- The same argumentation as for external effects holds true.
- Grants are appropriate and bear no risk of volatile reflows.
Which combination of market failures justifies the employment of revolving financial instruments in contrast to grants?

- For incomplete information we could not identify subsidies as a suitable means of intervention.
- Within the framework of JESSICA no intervention is appropriate for this type of market imperfection.
- However: other regulations etc. might be the right way to overcome this situation.
Imperfections and subsidy intervention

Which combination of market failures justifies the employment of revolving financial instruments in contrast to grants?

1. Research approach
2. Market failures
3. Intervention possibilities
4. Consequences for projects
5. Conclusion

→ The combination of one of the other market imperfections with incomplete information renders loans suitable.

→ By assessing the externalities, the public sector obtains information on the project and can signal it to the private investors.

→ As the public sector wants the projects to be initiated, the private needs some credible commitment – through loans.

→ Grants are not appropriate, because the public sector does not depend on the project quality.
The JESSICA Evaluation Studies name potential projects for urban development.

We identified 108 potential projects from 18 regional studies (from Germany, Italy and Poland) covering 15 categories:

- Projects were selected for the studies by organisational, legal and financial criteria. A distinction between the appropriate funding means is generally missing.

→ We connect the categories to their sensitivity regarding the three kinds of market failure!
### Classification of project categories and imperfections

<table>
<thead>
<tr>
<th>Project category</th>
<th>Externalities</th>
<th>Imperfect competition</th>
<th>Incomplete information</th>
<th>Funding type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture</td>
<td>+</td>
<td>−</td>
<td>−</td>
<td>Grants</td>
</tr>
<tr>
<td>Retail buildings</td>
<td>+</td>
<td>−</td>
<td>−</td>
<td>Grants</td>
</tr>
<tr>
<td>Public buildings/spaces</td>
<td>+</td>
<td>−</td>
<td>−</td>
<td>Grants</td>
</tr>
<tr>
<td>Tourism</td>
<td>+</td>
<td>−</td>
<td>−</td>
<td>Grants</td>
</tr>
<tr>
<td>Transport infrastructure</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>JESSICA</td>
</tr>
<tr>
<td>Energy infrastructure</td>
<td>o</td>
<td>+</td>
<td>+</td>
<td>JESSICA</td>
</tr>
<tr>
<td>Education</td>
<td>+</td>
<td>−</td>
<td>+</td>
<td>JESSICA</td>
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<tr>
<td>Research</td>
<td>+</td>
<td>−</td>
<td>+</td>
<td>JESSICA</td>
</tr>
<tr>
<td>Industry/business</td>
<td>+</td>
<td>−</td>
<td>+</td>
<td>JESSICA</td>
</tr>
<tr>
<td>Business start-up</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>JESSICA</td>
</tr>
<tr>
<td>Communication infrastructure</td>
<td>o</td>
<td>+</td>
<td>+</td>
<td>JESSICA</td>
</tr>
<tr>
<td>Office buildings</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>No</td>
</tr>
<tr>
<td>Residential buildings</td>
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<td>−</td>
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<td>Agriculture</td>
<td>o</td>
<td>−</td>
<td>−</td>
<td>No</td>
</tr>
<tr>
<td>Health</td>
<td>−</td>
<td>o</td>
<td>+</td>
<td>No</td>
</tr>
</tbody>
</table>

In contrast to the results from the studies: For these categories traditional grants are more appropriate.

For these categories JESSICA-type instruments are indeed a suitable means of funding.

No direct connection to market failure based subsidies.
We identified combinations of market failures which render the establishment of JESSICA-type instruments in the form of loans positive.

Similar argumentations hold true for equity and guarantees.

We analysed potential urban development projects and their connection to market failures to determine whether they should be supported through UDFs or traditional grants.

Final remarks:

- Important: Such a general analysis helps to conduct a screening to structure the decision process on the establishment of UDFs for some cities/regions.

- But: Sometimes deviations might be appropriate. In this cases, the decision not to stay in line with the scheme needs to be well explained!
Thank you very much for your attention!

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