4th Interdisciplinary Symposium on Public Procurement

Calculating Costs and Savings of Public Procurement

Dr. Andreas H. Glas
Every year, **over 250,000 public authorities** in the EU spend **around 14% of GDP** on the purchase of services, works and supplies.

This amounts to around **EUR 1.9 to 2.3 trillion** (conservative estimate). ≈ 1,900,000,000,000 EUR

In many sectors such as defense /military armament, energy, transport, waste management, social protection and the provision of health or education services, public authorities are the **principal buyers**.

Source: European Commission: [european-semester_thematic-factsheet_public-procurement](#)
Savings have a huge impact on the overall performance of public organizations (public sector) and cost control is an important shared responsibility of both procurement and finance functions.

<table>
<thead>
<tr>
<th>Savings in %</th>
<th>In EUR billion</th>
<th>This is equivalent to….</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>7</td>
<td>Development and Foreign Aid: Doubling of the budget for Foreign Aid measures (in 2016, costs of 7.4 billion €)</td>
</tr>
<tr>
<td>3.5</td>
<td>12.25</td>
<td>Education: Increase of total budget for education of 10% (all education levels, federal, state, municipality level)</td>
</tr>
<tr>
<td>6.0</td>
<td>21</td>
<td>Refugee Crisis and Migration Challenges: Equivalent to the costs for refugee integration in 2016 (~22 billion €)</td>
</tr>
</tbody>
</table>
What often dominates the debate in public procurement: Cost overruns of major projects

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**Opera house in Hamburg:**

Planned expenses in 2005: **EUR 77 Mio.**  
Final expenses in 2016: **EUR 789 Mio.**

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**A400M transport aircraft:**

Planned expenses in 2003: **EUR 20 Bill.**  
Final expenses in 2018: ~**EUR 30 Bill.**

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But do not underestimate saving effects of “C-Part” (from office material to furniture etc. pp.)
Brief reference to ABC-classification

<table>
<thead>
<tr>
<th>Value</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>ABC-Analyse</td>
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<td>ABC-</td>
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<tr>
<td>Mengenanteil</td>
<td>Wertanteil</td>
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<tr>
<td>10%</td>
<td>35%</td>
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<tr>
<td>100%</td>
<td>70%</td>
</tr>
<tr>
<td>85%</td>
<td>0,1</td>
</tr>
<tr>
<td>100%</td>
<td>0,25</td>
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</table>

<table>
<thead>
<tr>
<th>XYZ-Analyse</th>
<th>Variationskoeffizient</th>
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<tr>
<td>Mengenanteil</td>
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<tr>
<td>20%</td>
<td>0,1</td>
</tr>
<tr>
<td>80%</td>
<td>0,25</td>
</tr>
<tr>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>
Savings as (only) one goal in public procurement

Efficiency
Effektiveness
Outcome-Input-Ratio

Legal conformity
Compliance

Management

Which “priority” is given to efficiency (cost and savings)?

What makes the topic so complex?
Focus on „input“ (=expenses, costs)

Q: Quality
P: Price

Source: Ferber (2015), S. 120-121
What makes the topic so complex?
Focus on „input“ (=expenses, costs)

Input goods or services

Price (e.g. buying contract)

Usage prices (e.g. after sales)

Process Costs

Cost effects (external effects)

Throughput and impact

“Life Cycle Cost / Savings”

“Total Cost” – “Total savings”
Process costs in public procurement – Measurement problems and „adequate process costs“

Average costs per award procedure

Share of process costs to procurement volume
Price information –
Are the really representative for the market price?

Between 2006 und 2016 the number of tenders to which only one offer had been submitted increased from 17 to 30%.

The average number of offers per tender has fallen from five to three.
What does it help to calculate costs of a single contract or to have savings in one contract?

<table>
<thead>
<tr>
<th>EUROFIGHTER</th>
<th>NH90</th>
<th>TIGER</th>
</tr>
</thead>
</table>
| • > 2,000 contracts with more than 400 supplier companies | • 23 change contracts with supply integrator  
• > 140 national contracts in Germany plus numerous contracts on multinational level | 809 contracts on national level. Of these 441 are R&D, 356 procurement and 12 other (consultant etc.) contracts. |
Method competence / implementation maturity in public procurement

About 80% of the participants are convinced, that the importance of will increase in the future. Only 32% have a clue what LCC really is.

**Distribution of values**

- **LCC supports the decision making process**
  - 0% 14% 27% 38% 21% 63
  - **Average**: 3.65

- **LCC calculations are performed regularly**
  - 16% 40% 19% 17% 8% 63
  - **Average**: 2.62

- **The purpose of LCC calculations is clear**
  - 23% 27% 18% 24% 8% 62
  - **Average**: 2.68

- **The importance of LCC will increase in the future**
  - 3% 16% 40% 39% 62
  - **Average**: 4.11

1- I disagree  2- I rather do not agree  3-indifferent  4- I rather agree  5- I agree
All major projects have to do a LCCM-Analysis. There is a “Zentrale Dienstvorschrift” for it.

Mix of measurement of internal costs, external prices and external effects (Disposal, ecology ….)

→ Lot of assumptions, often static.
What makes the topic so complex? Focus on „input“ (=expenses, costs)

TC: Total Cost
I: Investment
AS: After sales
Q: Quality

Source: Ferber (2015), S. 120-121
Some measurement procedures: What is the price benchmark?

Periodic comparison
(past price vs. actual price)

Price offer procedure
(e.g. mean price of offers vs. Lowest price)

Target costing
(e.g. estimated price vs. achieved price)

Market index price
(e.g. “market/catalogue prices vs. actual price”)

Budget price
(e.g. planned price vs. achieved price)

Weighted, corrected, combined approaches
(e.g. correction of past prices with % of raw material price development)
Propositions to improve CSMM

- Use of multi-dimensional cost data (Digitalization)
- Multiple measurement (Calculation in several phases of project)
- Bias check: Formulation of realistic cost and savings estim.
- Improve execution („Hot to proceed in CSMM?“)
- Quality control: Audits of results by independent party
- Cost savings measurement and management CSMM
Cost and savings measurement and management

What we are talking about: A management task

<table>
<thead>
<tr>
<th>Calculation method</th>
<th>Price savings</th>
<th>Life-cycle/Usage cost savings</th>
<th>Process cost savings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>How to measure costs and savings? Use of instruments (forecast, benchmark)?</td>
<td></td>
</tr>
<tr>
<td>Implementation</td>
<td></td>
<td>How to reduce controlling/ monitoring effort? How to increase awareness and validity?</td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td></td>
<td>How to influence costs /savings? How to use procurement levers?</td>
<td></td>
</tr>
</tbody>
</table>
What makes the topic so complex? Focus on „output“ (=value, performance, quality)

Apple with apples or apples with pears

\[
\text{Value} = \frac{\text{Performance}}{\text{Costs}}
\]

Methods of cost and savings measurement and management
Do we really have in integrated and balanced view on price and performance?

Tender announcements in 2016:

<table>
<thead>
<tr>
<th>Country</th>
<th>MEAT</th>
<th>Lowest Price</th>
<th>Sonstige</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>97%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>85%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>85%</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Norway</td>
<td>83%</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>83%</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>76%</td>
<td>11%</td>
<td>13%</td>
</tr>
<tr>
<td>Austria</td>
<td>72%</td>
<td>26%</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>72%</td>
<td>24%</td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>71%</td>
<td>23%</td>
<td>6%</td>
</tr>
<tr>
<td>Denmark</td>
<td>70%</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>49%</td>
<td>47%</td>
<td></td>
</tr>
<tr>
<td>Bulgaria</td>
<td>42%</td>
<td>57%</td>
<td></td>
</tr>
</tbody>
</table>

Entwicklung der Bezuschlagung nach dem Wirts-Prinzip:

- Frankreich
- Niederlande
- Vereinigtes Königreich
- Polen
- Österreich
- Italien
- Deutschland
- Bulgarien
Management gap?
How to influence costs and savings?

Example

- **Investment**
  - Planning
  - Design
  - Approval
  - Construction

- **LCC**
  - End of operation
    - Disposal/recycling
  - Beginning of operation
    - Training
    - Trial run

- **Usage**
  - Normal use
  - Malfunction
  - Spare parts
  - Maintenance
  - Overhaul
  - Inspection

Source: Workshop, Forschungsprojekt „UI²P InfraIntegrity“, Prof. Dr. Norbert Ostermann, TU Wien, Institut für Verkehrswissenschaften.
Funkende Matratze

**Elite** Das Waadtländer Unternehmen vermietet Matratzen an Hotels. Die Herbergen zahlen nur, wenn ein Gast im Bett übernachtet.

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Tesla schaltet Kunden aus Florida mehr Akku frei


Kevin Krietscheidt

11.09.2017 - 13:14 Uhr • 4 Kommentare • 9 x geteilt
Is it important to have a saving or insights into cost structures?

HMS John de Witt, Navy Landing Platform Dock (LPD)

30 years of lifetime (1998-2028); Estimated LCC: 1.5 Billion EUR

One example to contract long-term performance

Performance development in terms of MTBUR of the radar system (flight hours)

<table>
<thead>
<tr>
<th>Periode (Jahr)</th>
<th>Jahr 1</th>
<th>Jahr 2</th>
<th>Jahr 3</th>
<th>Jahr 4</th>
<th>Jahr 5</th>
<th>Jahr 6</th>
<th>Jahr 7</th>
<th>Jahr 8</th>
<th>Jahr 9</th>
<th>Jahr 10</th>
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<td>140</td>
<td>145</td>
<td>165</td>
<td>180</td>
<td>225</td>
<td>260</td>
<td>275</td>
<td>277</td>
<td>280</td>
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<tr>
<td>Intern.</td>
<td>135</td>
<td>175</td>
<td>220</td>
<td>235</td>
<td>245</td>
<td>260</td>
<td>275</td>
<td>285</td>
<td>290</td>
<td>300</td>
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<td>Ist-Wert</td>
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Performance Based Contracting
(=Long-term, incentivized outcome contracts)

Prices and their incentive effects

Repetitive buying of goods or service quantities

„PB“-Pricing → Alignment of interests

- Malus
- Max. Penalty
- Bonus
- 95%
- % operational availability of a training helicopter

Total price /sum

e.g. number of police helicopter training hours

Price

Max. Bonus

www.unibw.de/beschaffung
Calculation of „MEA-LC-P/O“
Most economic advantageous – LC – project / offer

Ability targets:
- Single target
- Multiple skills
- Duration of the capacity gaps
- Operationalize in KPI

Ability proof:
- Performance measuring
- Performance development

Modification/modernization:
- Upgrade
- Redesign
- Reengineering
- ...

Modification/modernization:
- Upgrade
- Redesign
- Reengineering
- ...

LCP
= Initial ability at start of use + Potential skill enhancement

LCC
= Acquisition cost + User costs

Planning:
- Idea
- Design
- Prototype
- Quality, qualification
- Mission

Execution:
- Education
- Infrastructure
- Process of implementation

Adoption:
- Approval
- Test run

Use:
- Spare parts
- Maintenance
- Auxiliary supplies
- Staff
- Licenses
- Environment
- Services

Liquidation:
- Disassembly
- Disposition
- Scrap disposal
Contact me if you have any questions or ideas

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Procurement Department

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“Contracts should be awarded on the basis of objective criteria […]. It should be set out explicitly that the most economically advantageous tender should be assessed on the basis of the best price-quality ratio, which should always include a price or cost element. It should equally be clarified that such assessment of the most economically advantageous tender could also be carried out on the basis of either price or cost effectiveness only.”