

The Economics of Open Source Software - Prospects, Pitfalls and Politics -

Microsoft Research Lecture
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Introduction

Economic Efficiency

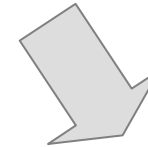
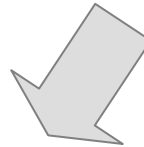
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Open Source:
An alternative to proprietary software development?

**Open Source:
No Market at the Core**

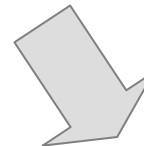


**Economic
efficiency**

Impact of nonpricing on
coordination capacity

**Potential to create
value-added**

Sustainability of
complementary strategies



Policy Implications

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- **GPL-based Open Source vs. Proprietary Software**

NOT:

- Open Source vs. Microsoft
- Linux vs. Windows
- Other OSS-licenses (BSD, MPL, ...)

“proprietary” in the
sense of “commercial”
(full cost pricing)

- **Strictly economic perspective**

- Driving forces, incentives, efficiency rules
- Coordination of decentralized economic activities based on division of labor

NOT:

- Technological comparison of single products
- Suspicion-based assumptions (conspiracy theories)
- Legal or sociological aspects

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*"When we speak of free software,
we are referring to freedom, not price."*

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- Permission vs. ability to price GPL-based software
- GPL-pricing: fees for physical act of transferring a copy or additional warranty protection
- Economic property of GPL:
No protection of intellectual property rights
- Economic pricing = ability to earn development costs
 - Customized software: possible
(selling development work = selling single license)
 - Packaged software: impossible
(free rider problem)

Customized OSS ⇒ No Problem

**OSS
core**

Packaged OSS ⇒ No Price

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What is the price mechanism good for?

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- **Valuation and reduction of complexity**
 - Single reference for evaluating economic activities
 - Economic thinking = comparing alternatives
- **Information**
 - Supply-side: Priority of demand (willingness to pay)
 - Demand-side: Consumption of resources (cost information)
- **Steering**
 - Real-world changes (demand/supply side) translate themselves into price changes
 - Price changes induce reactions both in the observed market as well as in any upstream and downstream markets
- **Motivation**
 - Prices determine income
 - Chance for income/profits = incentive to innovate

No Price ⇒ No Market

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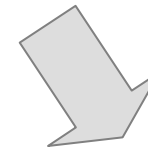
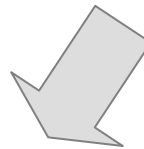
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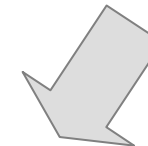
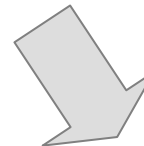


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Customer Sovereignty vs. “Happy Engineering”

or

Developer Orientation Is Not Customer Orientation

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Market System in Commercial Software Production

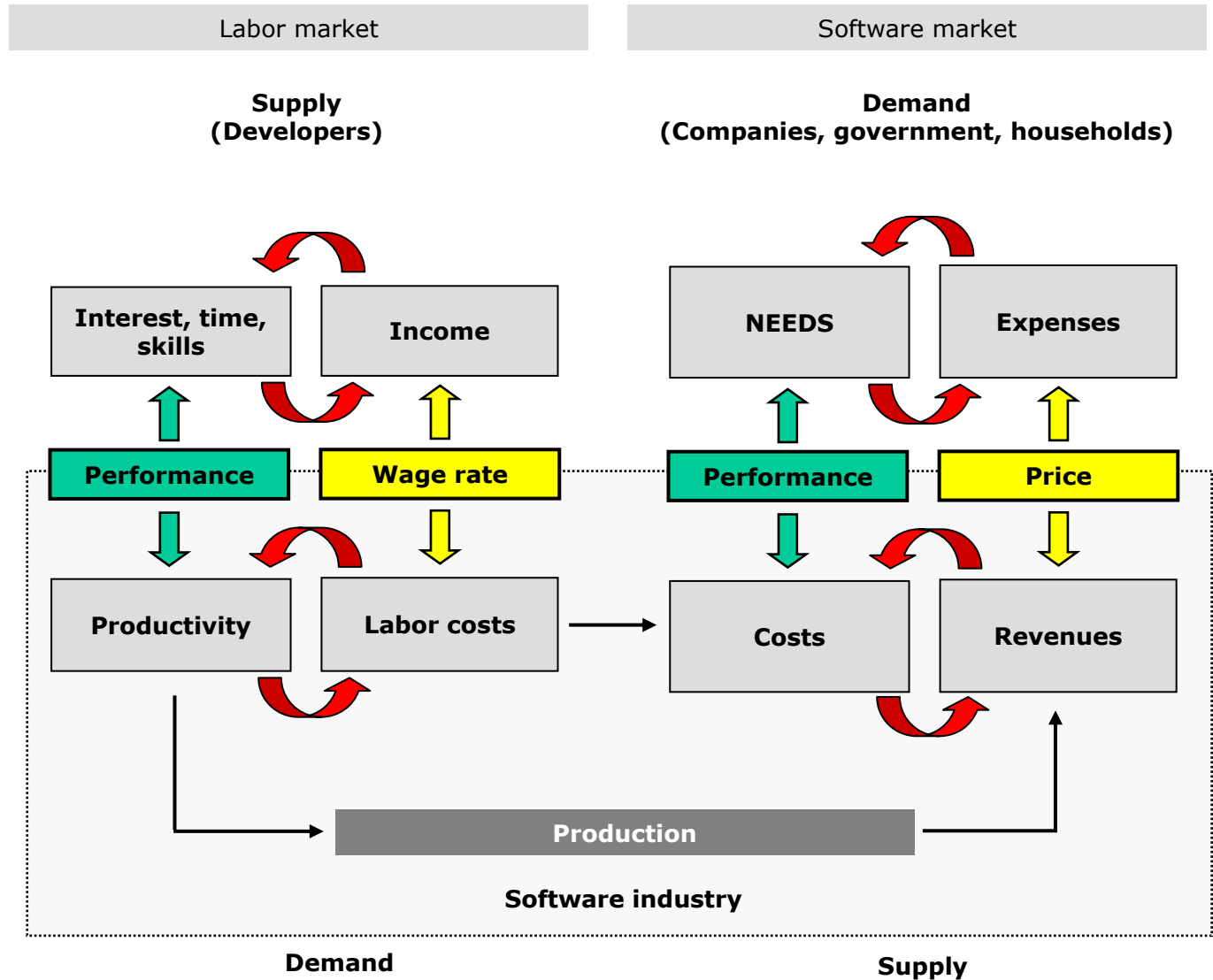
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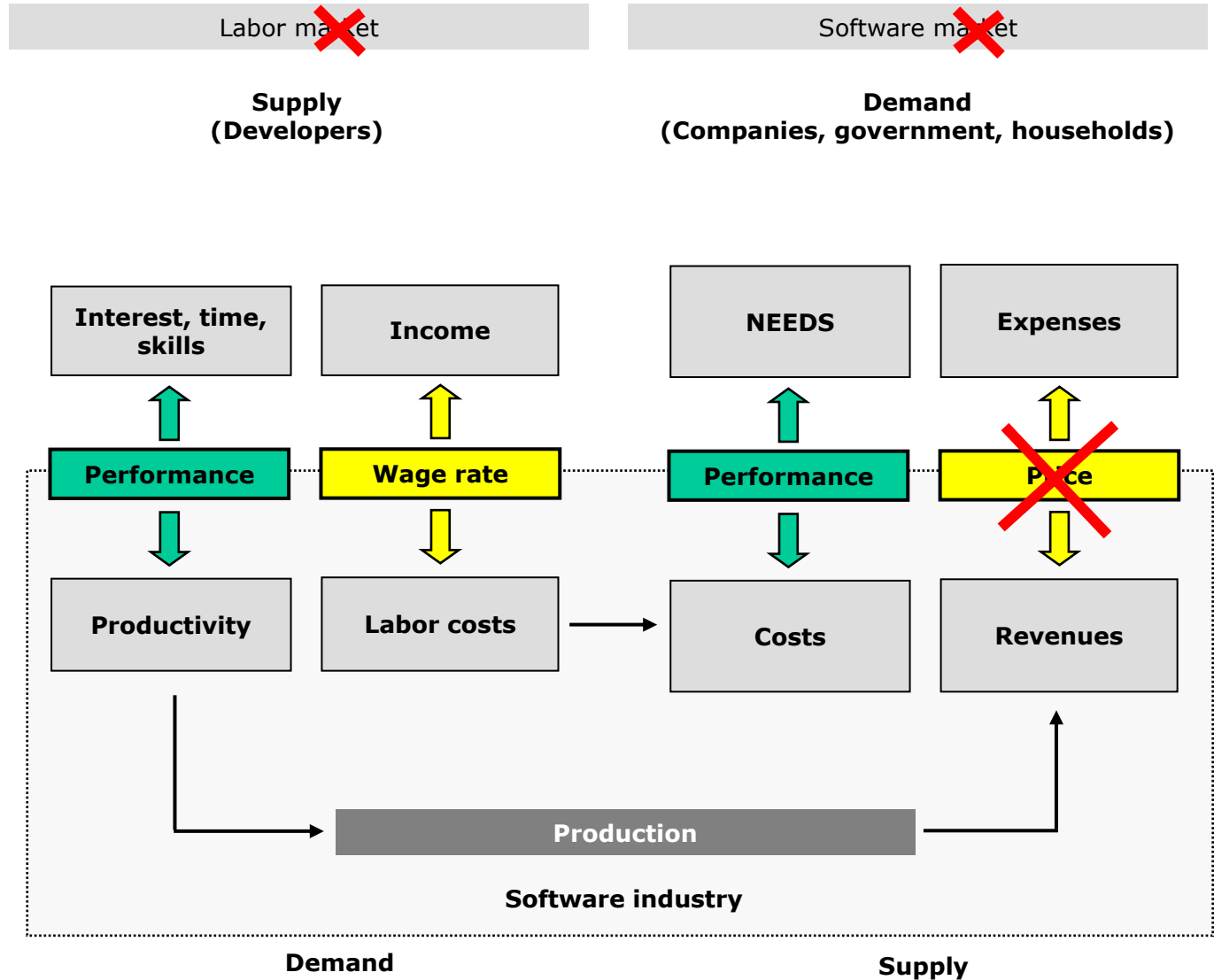
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No Price \Rightarrow No Market: The Open Source Model



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Open Source: Passive Consumption or Do-it-yourself

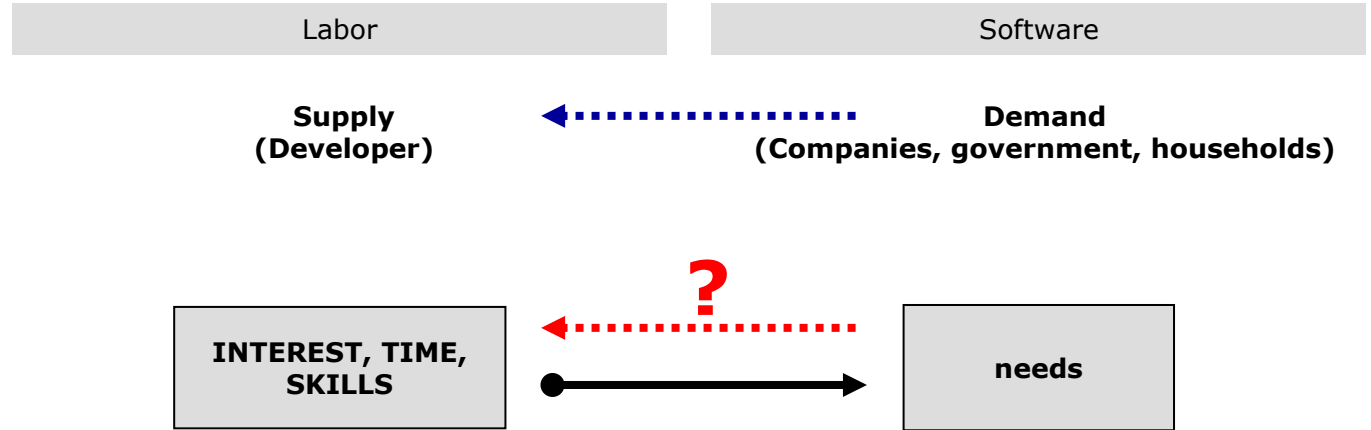
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**Passive consumption
(Lack of solid feedback)**

**Do-it-yourself
(Specialization losses)**

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Not for Nothing but sometimes for Naught

or

Free of Charge Is Not Cost-Free

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Market System and Allocation of Resources

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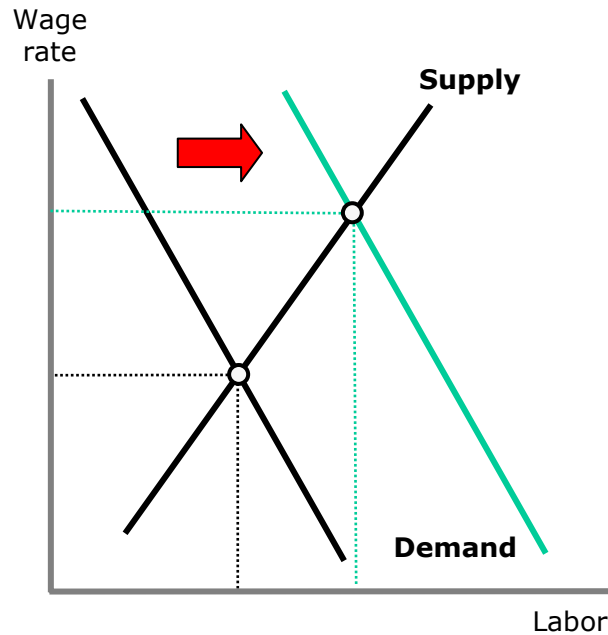
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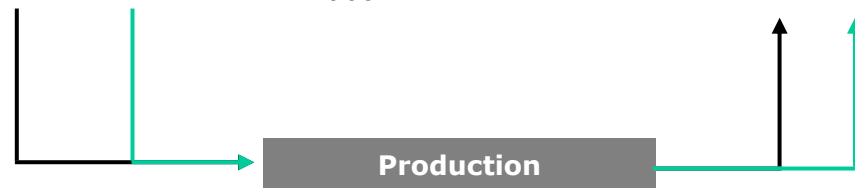
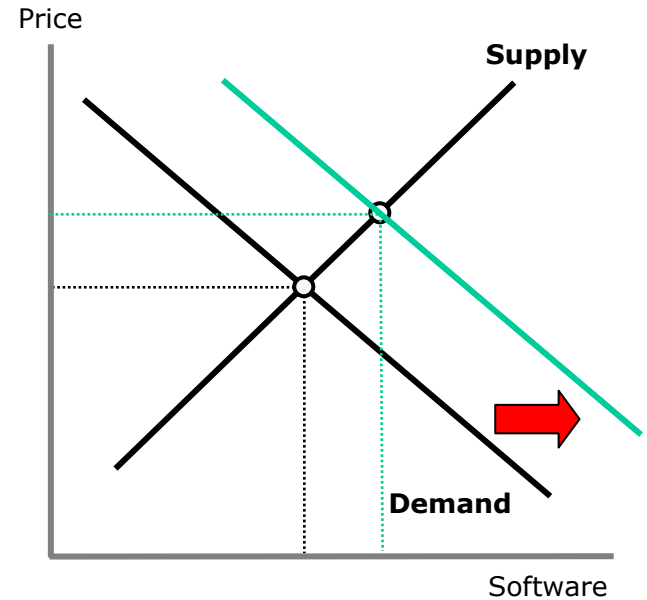
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Labor market



Software market



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- *Shouldn't the price of software be zero due to the lack of rivalry among the users?*
 - True for existing software (no ex-post rivalry)
 - False for new software (ex-ante rivalry)
 - Software = club commodity (club of users)
 - "Club solution" is emulated by software companies at their own risk
- *Aren't there good OSS products?*
 - Good = better than all relevant alternatives
 - Resources consumed for a product A could not have been used for an alternative product B
 - No prices \neq cost-free
 - No prices = invisible opportunity costs

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Innovation Is More Than Having Good Ideas

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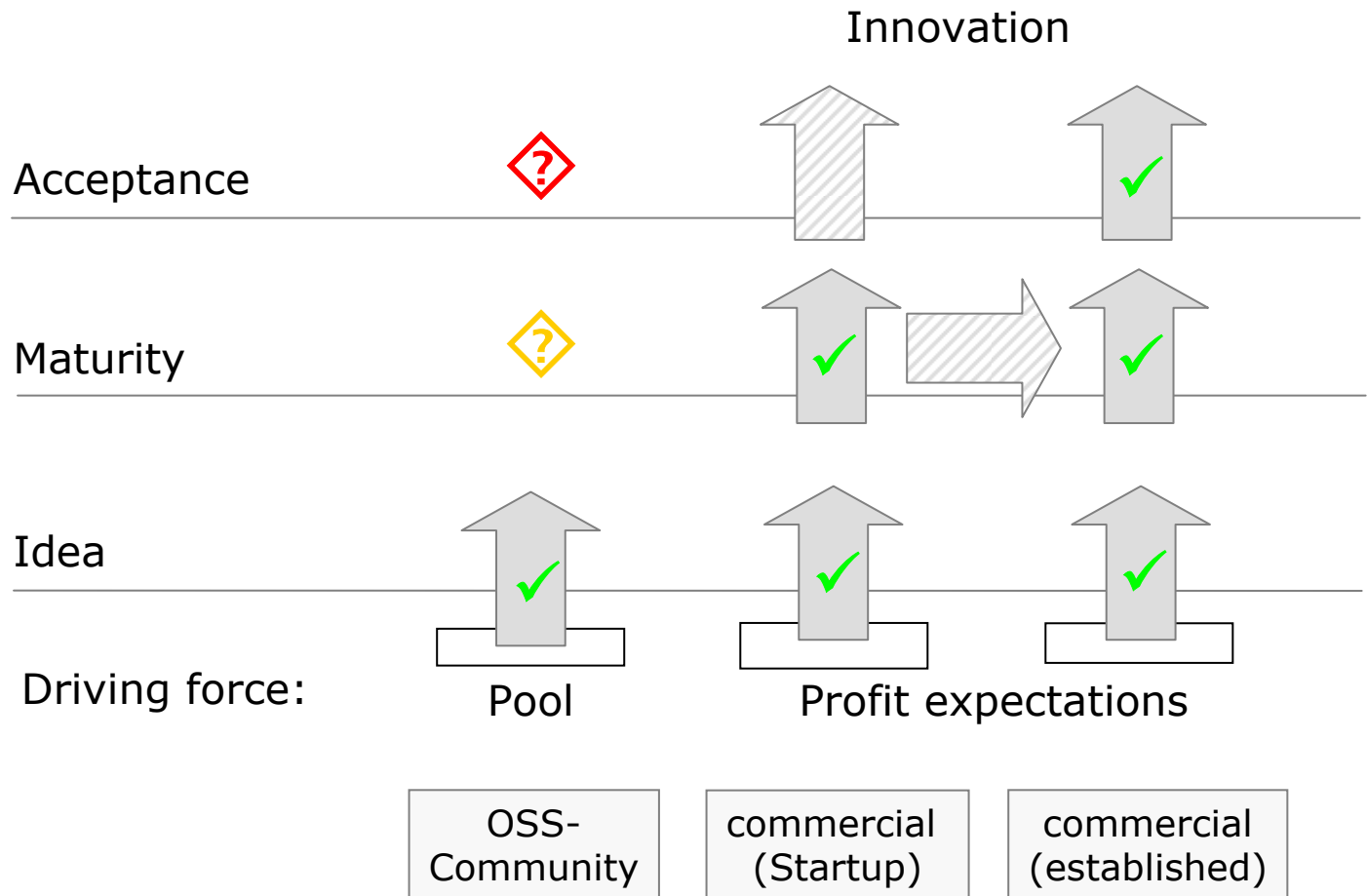
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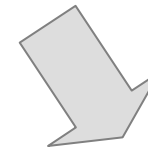
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**Open Source:
No Market at the Core**



Economic efficiency
Impact of nonpricing on coordination capacity

Potential to create value-added
Sustainability of complementary strategies



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- **Three ways to produce Open Source Software**
 - Voluntary programmers (cooperative model)
 - Public-sector programmers (software socialism)
 - Complementary business strategies (commercialization)
- **Two scenarios for OSS business models:**
 - (1) With cross-subsidizing the OSS-core
 - (2) Without cross-subsidizing the OSS-core

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Scenario 1

Cross-Subsidizing the OSS-Core

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Complementary Strategy with Cross-Subsidization 1

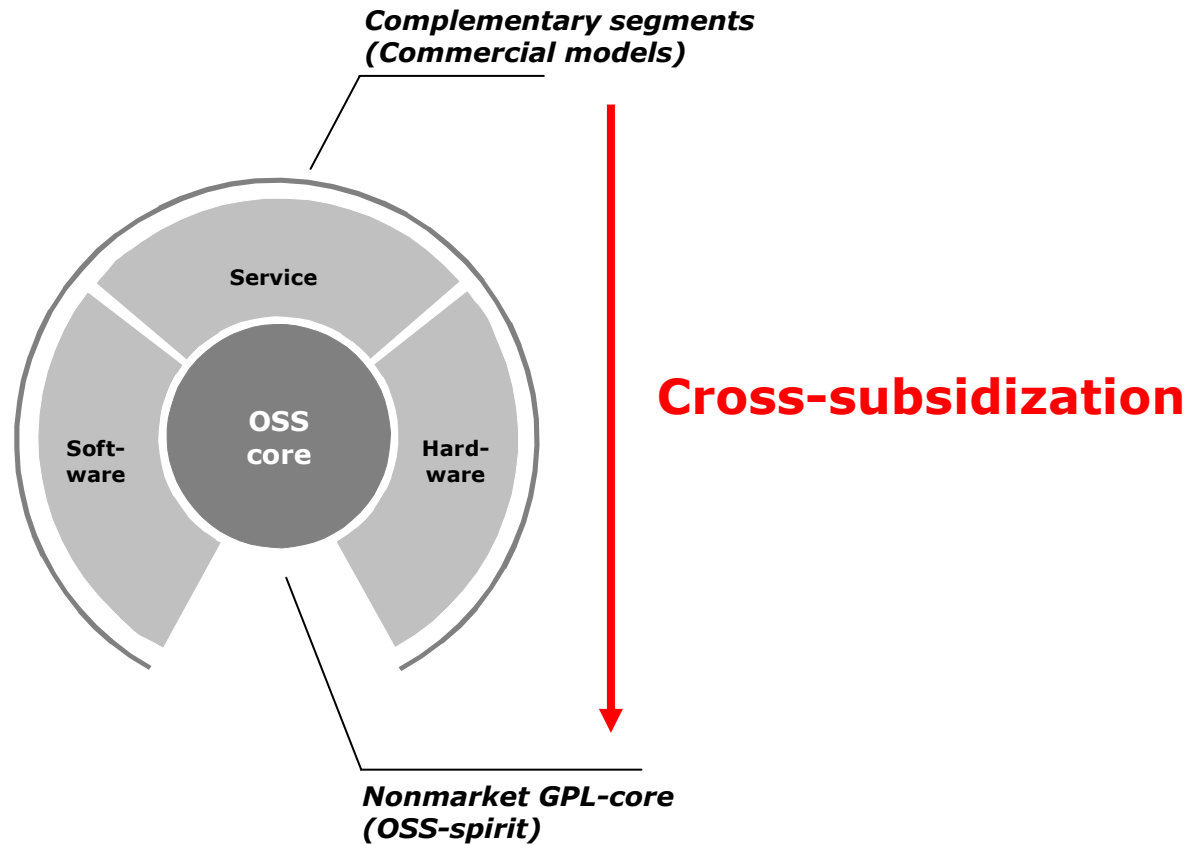
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Complementary Strategy with Cross-Subsidization 2

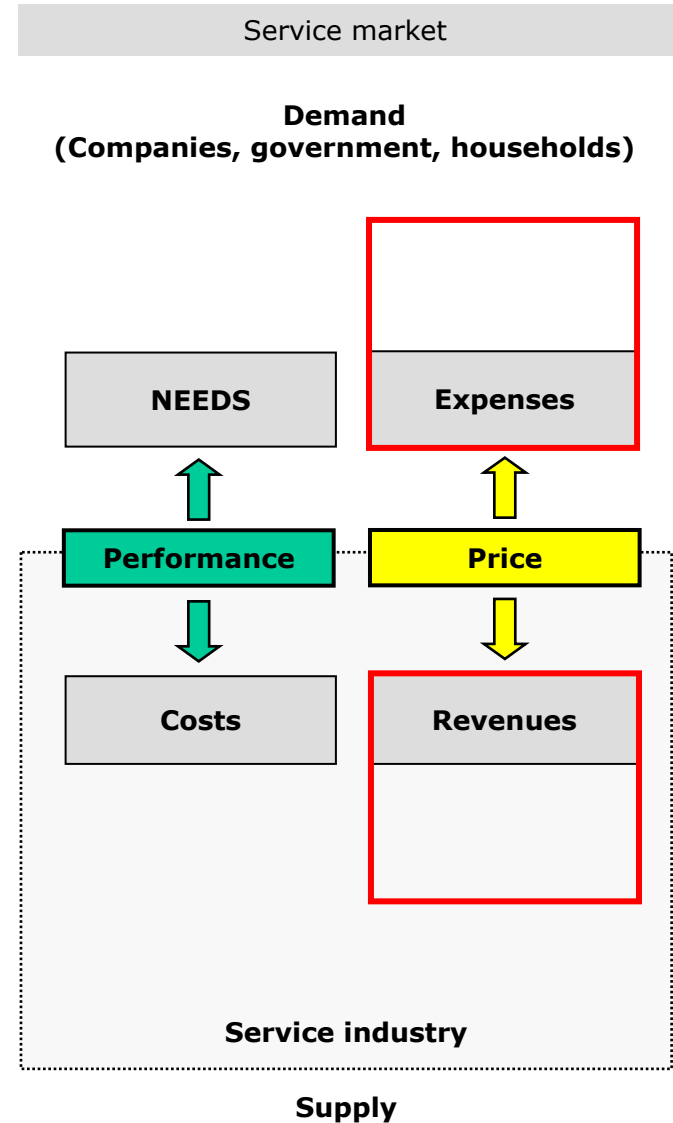
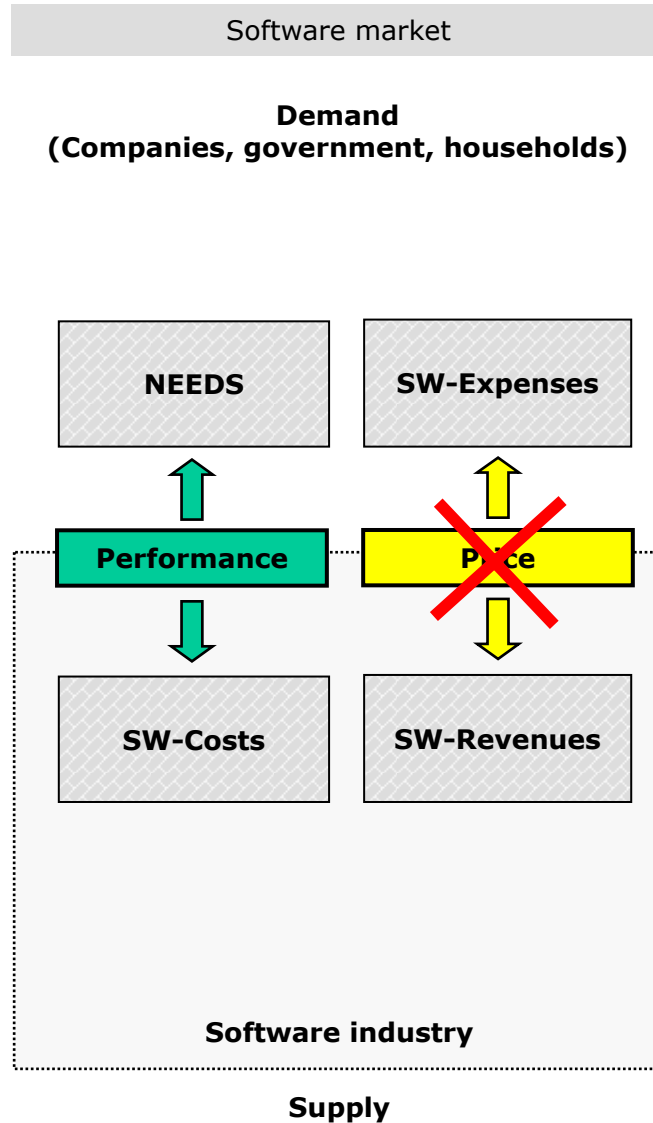
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Complementary Strategy with Cross-Subsidization 3

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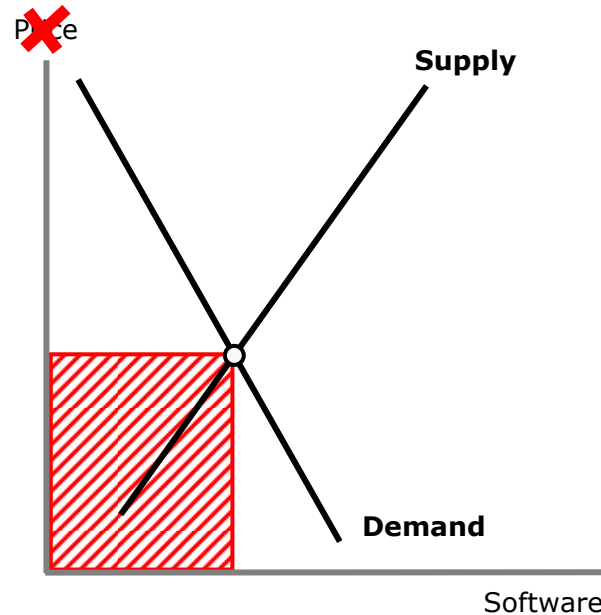
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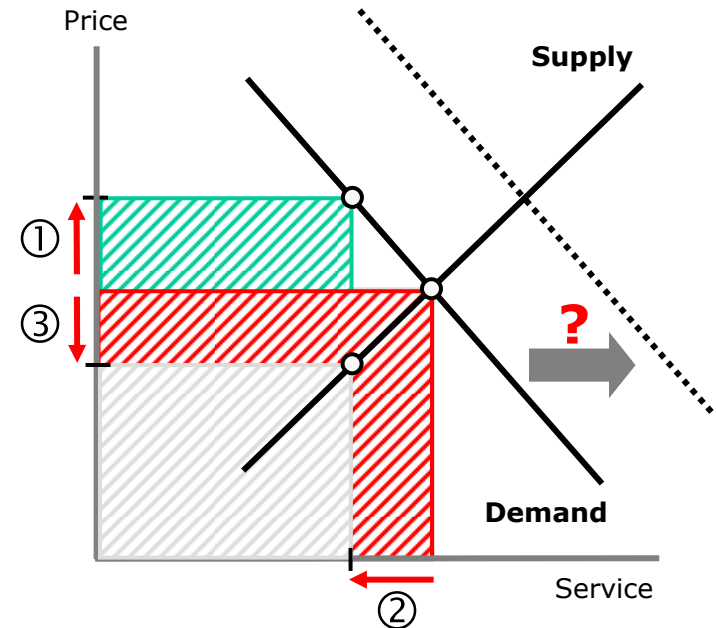
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Software market



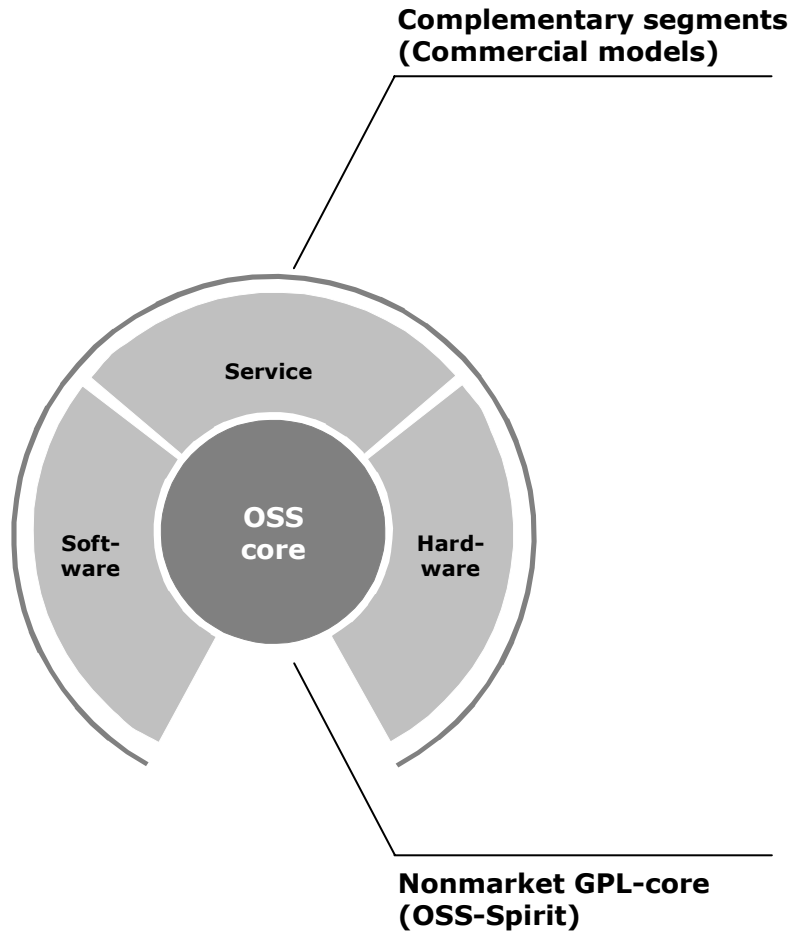
Service market



- ① Gross price increase in the service sector
- ② Drop in service demand
- ③ Net price decrease in the service sector
- ②+③ Decline of net service sales

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Without quality deficits:
Losses of value-added

With quality deficits:
identical or even higher, but then undesired value-added

⇒ **OSS < PS**



Aggregate result:
OSS < PS



identical value-added at best

possibly efficiency deficits due to indirectness of price control

⇒ **at best, OSS = PS**

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Scenario 2

Not Cross-Subsidizing the OSS-Core

Complementary Strategy without Cross-Subsidization 1

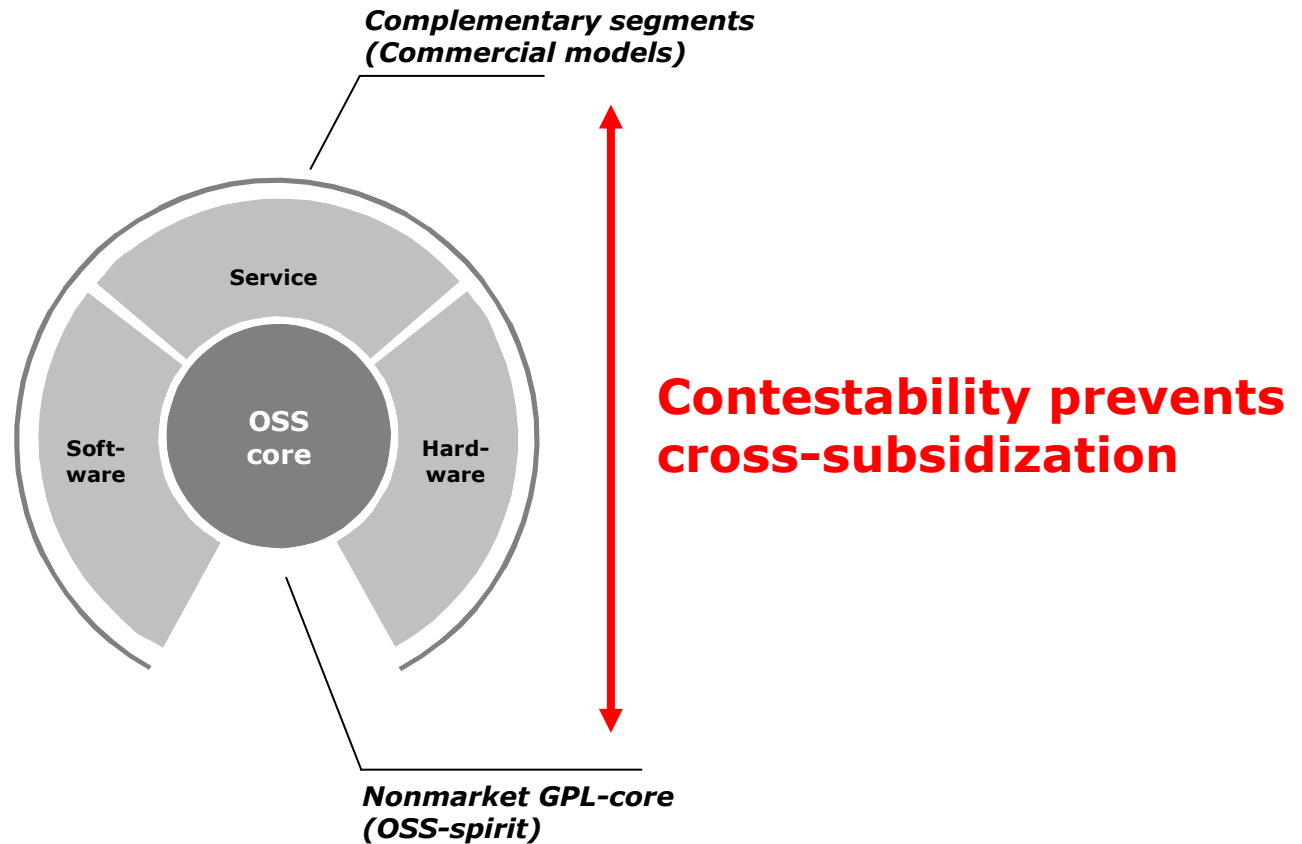
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Complementary Strategy without Cross-Subsidization 2

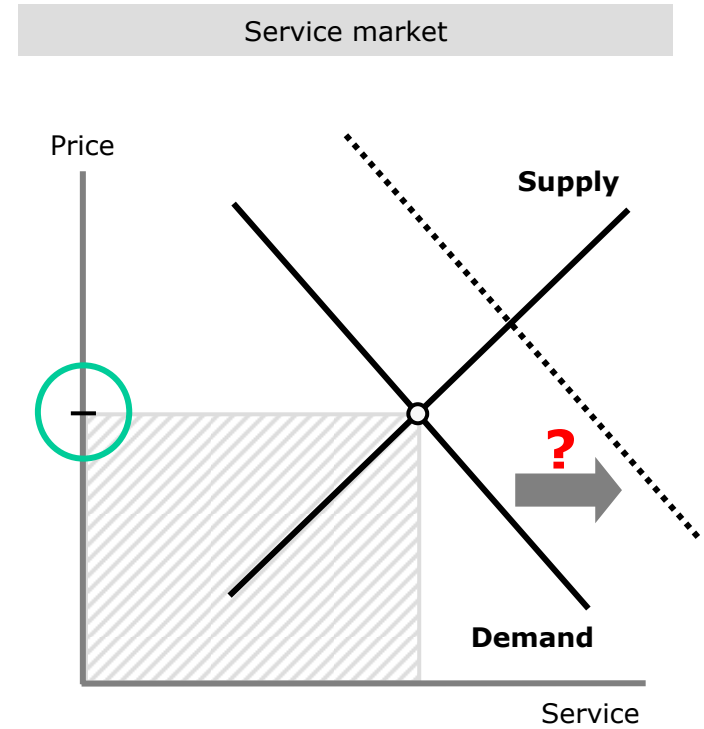
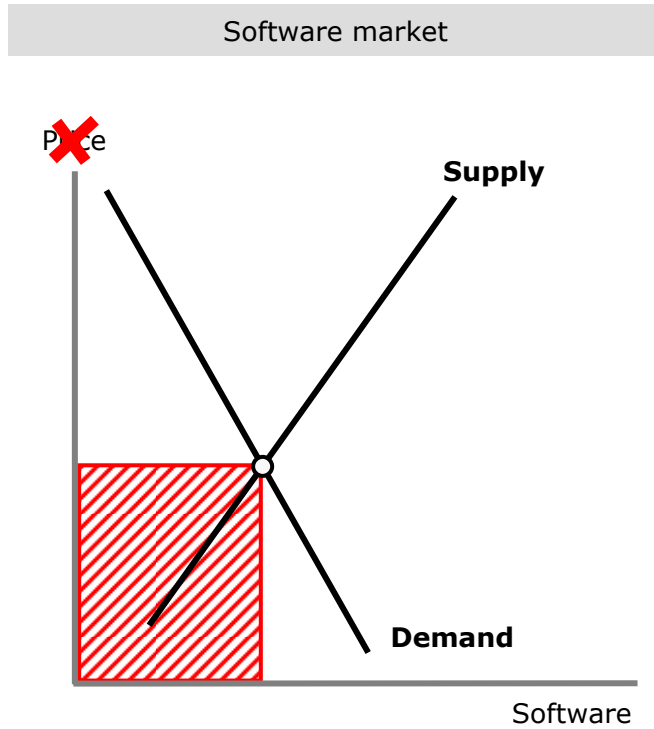
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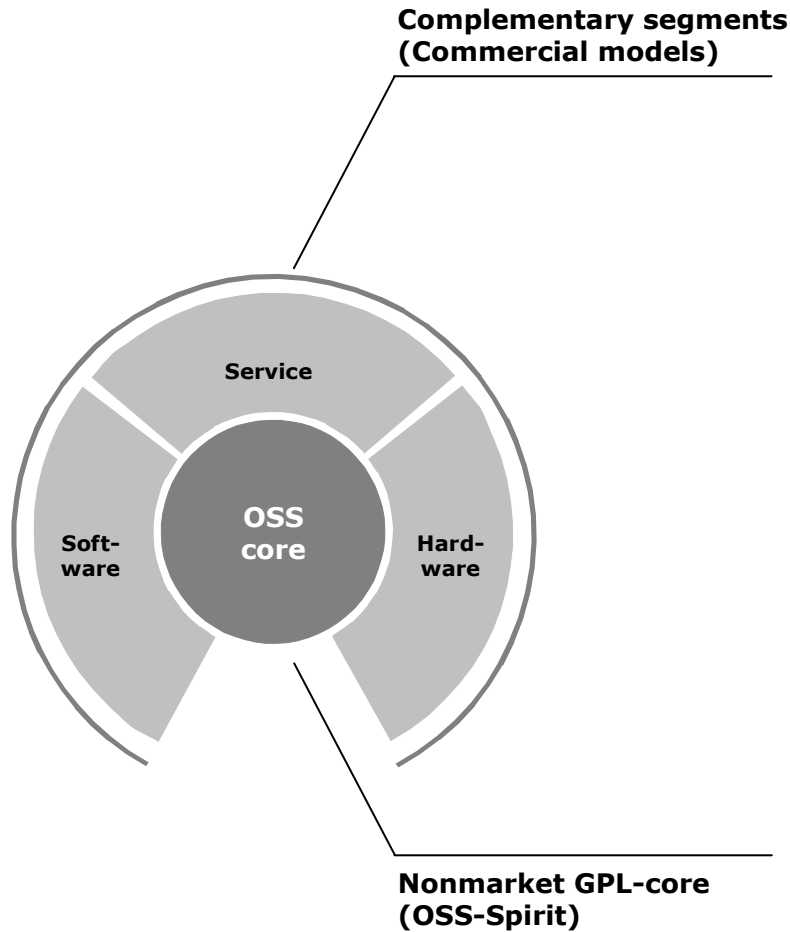
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Without quality deficits:
identical value-added

With quality deficits:
higher albeit undesired value-added

⇒ **at best, OSS = PS**



**Aggregate result:
OSS < PS**



complete loss of value-added

efficiency deficits due lack of price control

⇒ **OSS < PS**

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Cross-subsidization of the OSS-core?

- If successful:
Decline of sales in the complementary market
- If not successful:
Decline of sales in the software market
- ⇒ **Packaged software: Loss of value-added and employment in the IT-sector as a whole**
- ⇒ **Customized software: No differences between open-source and proprietary software**

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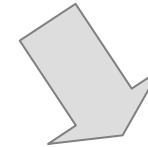
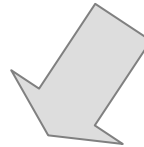
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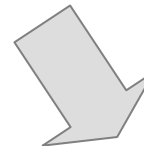
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- **Support for SMEs in the IT-sector?**
 - No additional value-added, but loss of income in the packaged software sector
 - **Support for other SMEs by lowering IT-costs?**
 - OSS does not reduce the IT-costs for the economy as a whole
 - Companies that can't earn their input costs (valued at market prices) should leave the market
 - **OSS as a competition policy tool?**
 - Distinction between protecting "competition" and protecting "competitors"
 - Competition agencies should refrain from industrial policy (as provided for in competition laws)
- ⇒ **Neutrality when it comes to government procurements**

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Overview of the main results

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- **No Market at the Core**

Efficiency deficits: Without prices no workable coordination of production based on division of labor

- Imperfect satisfaction of customer needs
- Misallocation of scarce resources
- Reduced incentives to innovate

- **Decline of value-added**

Complementary strategies cannot compensate for the reduction of value-added in the IT-sector due to the nonmarket OSS-core

- **Policy implications**

- Stimulation of OSS is economically not justifiable
- Public neutrality: TCO should rule government procurements

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