

Hochschule Niederrhein
University of Applied Sciences



NIERS

Niederrhein Institut für
Regional- und Strukturforschung

Niederrhein Institute for
Regional and Structural Research

Offshoring vs. Outsourcing:

What is the better alternative for SMEs in Germany?

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Agenda

1. Introduction

2. Literature Review

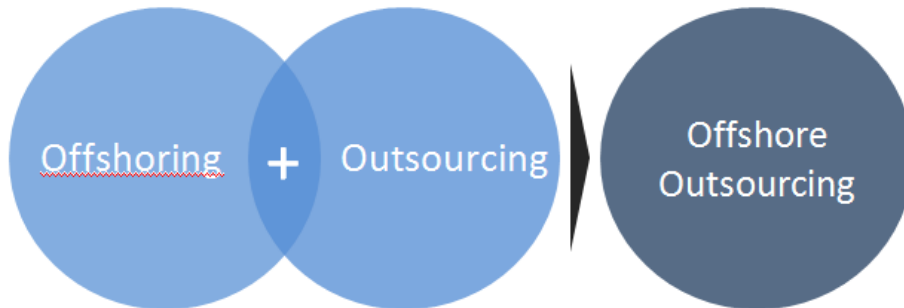
3. Empirical Results

4. Conclusion

1.Introduction

1.1 Definition Outsourcing/ Offshoring

- No official definition
- Chosen definition:



- **Outsourcing:** Relocation of production or services to a domestic supplier
- **Offshoring outsourcing:** Relocation of production or services to a foreign supplier
- Small and medium sized companies employ less than 250 employees

1. Introduction

1.2 SME vs. MNU

- **SME and MNU differ in several ways**
 - **They have to deal with various resource restrictions (financial, and human capital ones), these barriers could limit the competitiveness in a globalized environment**
 - **But Outsourcing and/or Offshoring can help to overcome some of these barriers**
 - **Costs can be reduced but also global talents (in the case of offshoring), and partner innovations could be used**
 - **External suppliers could offer specialists and profit from economies of scale**
 - **With the help of Outsourcing/Offshoring SMEs could focus on their strength: flexible and individual reaction to customer wishes.**

1. Introduction

1.3 Outsourcing/Offshoring as a reaction to globalisation

- **Eastern European expansion of the EU was a historical event, which influenced the competitiveness of many SMEs**
- **Numerous discounters entered the home markets and tightened the import competition**
- **Important industrial consumers of German SMEs relocated their production into foreign countries respectively changed to eastern European or Asian suppliers to reduce costs**
- **Other MNEs tried to impose drastically discounts from their German (SMEs)- Suppliers so that the business relation will be prolonged**

Agenda

1. Einleitung

2. Literature review

3. Empirical results

4. Conclusion

2. Literature review

2.1 Research and development

- **Innovation ability of enterprises is one of the main determinants for the competitiveness of a company**
- **Chosen measure to compare the performance of offshoring vs outsourcing firms**
- **Therefore the impact of offshoring on the R&D activities in the home country is of particular interest.**
- **Continuous innovation in many industries necessary to remain competitive in a globalized environment.**

2. Literature review

2.2 Offshoring vs Outsourcing

Görg and Hanley (2005) find a positive correlation between relocations and the R&D expenditure

- **These positive effects are stronger in the case of international than of domestic relocations.**
- **In Italy, however, opposite results has been determined**

In Lombardy, Italy's leading economic region, Cusmano et al. (2010) are studying the relocation activities

- **innovative companies do not frequently relocate parts of the company abroad than comparable companies respectively the relocating firms are not more innovative**

2. Literature review

2.3 Offshoring vs Outsourcing

- **Karpaty and Gustavsson-Tingvall (2011) find ambivalent effects for Swedish companies**
- **The authors find a positive correlation between offshoring (no results for outsourcing) and the domestic R&D activities. Only when shifting to certain regions such as North America, Oceania and Europe (excluding the former EU-15) the negative effects remain**

Agenda

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3. Empirical results

3.1 Source

- **IAB- Establishment Panel**
- **Representative survey in Germany, about 16.000 firms are interviewed every year**
- **Offshoring firms can be identified in the years 2007, 2008 and 2010**
- **Panel data from 1999-2013**

3. Empirical results

3.1 Data definition

- **All firms which hived off, spin-off or shut down parts before 2007 were excluded from the panel**
 - **Otherwise we could not guarantee that a firm in the treatment or the control group offshored in former years**
 - **We than have 218 Offshoring firms**
 - **And 184 Outsourcing firms**

3. Empirical Results

3.2 Propensity Score Matching

Variable selection:

- **Treatment variable:**
 - **Offshoring**
 - **Outsourcing**

- **Outcome Variable:**
 - **Product innovationen**
 - **Process innovationen**
 - **Product improvement**

3. Empirical Results

3.3 Results

PSM Process innovation

Jahr	Prozessinnovationen	Offshoring	Keine Verlagerung	Differenz	T-Stat
2008	Unmatched	0,316	0,157	0,159	8,44
	Matched	0,316	0,219	0,097	4,04
2009	Unmatched	0,318	0,153	0,165	8,36
	Matched	0,318	0,206	0,112	4,38
2010	Unmatched	0,316	0,149	0,167	8,16
	Matched	0,316	0,201	0,115	4,30
2011	Unmatched	0,332	0,147	0,185	8,65
	Matched	0,332	0,199	0,133	4,68
2012	Unmatched	0,342	0,144	0,198	8,52
	Matched	0,342	0,197	0,145	4,63

3. Empirical Results

3.3 Results

- High matching quality.
- Significant differences
- Offshoring firms create more process and product innovations than the control group.
- This would be in line with the results of Dachs et al. (2015)

BUT...

3. Empirical Results

3.3 Results

- **Using only PSM can bias the results.**
 - **PSM focuses on the development *after* the relocation process**
 - **With the help of the kernel algorithm the DID estimator could be designed in way that it uses the results of the PSM as the basis for the weighting**
 - **So we could also have a look at the time period *before* the relocation process**

3. Empirical Results

3.3 Results

Results- Product innovation-OFFSHORING

Outcome Variable	keine Verlagerung	Offshoring	Differenz (vor2007)	keine Verlagerung	Offshoring	Differenz (2007-2012)	Diff-in-Diff
Produktinnovation	0,133	0,218	0,085	0,101	0,158	0,057	-0,029
Standardfehler	0,006	0,006	0,008	0,006	0,006	0,008	0,011
t	23,56	15,54	10,81	-5,49	-5,01	-3,53	-2,55
P> t	0,000	0,000	0,000***	0,000	0,000	0,000***	0,011**

3. Empirical Results

3.3 Results

Results- Product improvement-OFFSHORING

Outcome Variable	keine Verlagerung	Offshoring	Differenz (vor2007)	keine Verlagerung	Offshoring	Differenz (2007-2012)	Diff-in-Diff
Produktverbesserung	0,591	0,883	0,293	0,575	0,770	0,195	-0,097
Standardfehler	0,008	0,008	0,011	0,008	0,008	0,011	0,016
t	75,18	37,84	26,34	-1,43	-11,35	-8,37	-6,16
P> t	0,000	0,000	0,000***	0,000	0,000	0,000***	0,000***

3. Empirical Results

3.3 Results

Results- Process innovation-OFFSHORING

Outcome Variable	keine Verlagerung	Offshoring	Differenz (vor2007)	keine Verlagerung	Offshoring	Differenz (2007-2012)	Diff-in-Diff
Prozessinnovation	0,232	0,359	0,127	0,188	0,252	0,064	-0,063
Standardfehler	0,007	0,007	0,009	0,007	0,006	0,009	0,013
t	35,16	19,75	13,70	-6,44	-9,49	-6,69	-4,82
P> t	0,000	0,000	0,000***	0,000	0,000	0,000***	0,000***

3. Empirical Results

3.3 Results

Results- Product innovation-Outsourcing

Outcome Variable	Outsourcing	Offshoring	Difference (before2007)	Outsourcing	Offshoring	Difference (2007-2013)	Diff-in-Diff
Productinnovation	0,223	0,218	0,005	0,190	0,158	-0,032	-0,027
Standardfehler	0,006	0,006	0,008	0,006	0,006	0,008	0,011
t	23,56	15,54	10,81	-5,49	-5,01	-3,53	-2,55
P> t	0,000	0,000	0,784	0,000	0,000	0,049	0,006**

3. Empirical Results

3.3 Results

Results- Product improvement-Outsourcing

Outcome Variable	Outsourcing	Offshoring	Difference (before2007)	Outsourcing	Offshoring	Difference (2007-2013)	Diff-in-Diff
Product improvement	0,691	0,883	0,192	0,65,7	0,770	0,113	-0,079
Standardfehler	0,008	0,008	0,011	0,008	0,008	0,011	0,016
t	75,18	37,84	26,34	-1,43	-11,35	-8,37	-6,16
P> t	0,000	0,000	0,018*	0,000	0,000	0,584	0,008**

3. Empirical Results

3.3 Results

Results- Process innovation-Outsourcing

Outcome Variable	Outsourcing	Offshoring	Difference (before2007)	Outsourcing	Offshoring	Difference (2007-2013)	Diff-in-Diff
Process innovation	0,394	0,762	0,368	0,381	0,556	0,175	-0,193
Standardfehler	0,028	0,026	0,038	0,029	0,024	0,038	0,053
t	25,58	2,79	1,42	-5,42	-0,66	-0,75	-0,560
P> t	0,000	0,000	0,000***	0,000	0,000	0,000***	0,000***

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4. Conclusion

Results:

- **Scarce empirical evidence concerning SMEs.**

Innovation indicators (short to mid run)

- **Offshoring firms are –ex ante- very innovative**
- **Outsourcing reduces slightly the innovation performance**
- **Offshoring has severe negative effects**

4. Conclusion

Explanation:

- **Loss of creative potential as a consequence of reduced communication: less spill-over effects.**
- **As Offshoring destinations are in most cases far away this problem is even more severe (plus: different language)**
- **Offshoring is cost-intensive, (human-)capital is used to manage the offshoring process and can not be allocated towards R&D**
- **Substitution of capital-intensive work by labor-intensive work (less learning by doing)**

Thank you for your attention

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Outcome Variable	Control	Outsourcing	Difference (before 2007)	Control	Outsourcing	Difference (2007-2013)	Diff-in-Diff
Product innovation	0,145	0,223	0,079	0,137	0,190	0,053	-0,025
Standardfehler	0,004	0,043	0,043	0,004	0,037	0,037	0,055
t	35,58	1,98	1,82	-1,80	-0,47	-0,61	-0,46
P> t	0,000	0,000	0,069*	0,000	0,000	0,147	0,646

Outcome Variable	Control	Outsourcing	Difference (before 2007)	Control	Outsourcing	Difference (2007-2013)	Diff-in-Diff
Process innovation	0,223	0,394	0,171	0,251	0,381	0,130	-0,041
Standardfehler	0,005	0,050	0,050	0,005	0,045	0,045	0,068
t	45,55	3,63	3,41	6,01	-0,50	-0,74	-0,61
P> t	0,000	0,000	0,001***	0,000	0,000	0,004***	0,543

Outcome Variable	Control	Outsourcing	Difference (before 2007)	Control	Outsourcing	Difference (2007-2013)	Diff-in-Diff
Product improvement	0,505	0,691	0,186	0,500	0,657	0,157	0,029
Standardfehler	0,005	0,047	0,048	0,006	0,047	0,047	0,066
t	93,65	4,44	3,91	-0,38	0,06	-0,44	-0,44
P> t	0,000	0,000	0,000***	0,000	0,000	0,001	0,657

3. Empirische Analyse

3.2 Quasi experimenteller Ansatz

Variablenauswahl

Treatment Variable:	Coefficient	Standard	%Reduction	<i>t</i> -test	<i>t</i> -test
Offshoring (0/1)	Probit Eq.	Error	in Bias	(unmatched)	(matched)
Firm Age	0.00014*	(0.00008)	53.6	-1.69*	-0.55
Legal Status	-0.0081	(0.07090)	64.4	3.90***	0.84
Turnover (in €)	-0.00001	(0.00001)	97.5	7.84***	-0.30
Turnover West Germany (in %)	0.0029**	(0.00116)	29.6	-1.25	-0.78
Intermediate Inputs (in %)	0.0035*	(0.00188)	74.4	3.31***	0.63
Investment (in €)	0.00001	(0.00001)	99.3	9.13***	-0.10
Employees (total)	0.0003	(0.00024)	93.4	10.04***	0.67
Foreign Turnover (in €)	0.0177***	(0.00161)	68.7	17.71***	2.33*
Skill-level of Employees	-0.0003	(0.00031)	93.1	9.21***	0.68
Pseudo R ² (unmatched)	0.142	LR-test	(<i>p</i> -val.)	χ ² =203.49	(0.00)
Pseudo R ² (matched)	0.033	LR-test	(<i>p</i> -val.)	χ ² =13.32	(0.21)