INNOVATION OFFSHORING, **INSTITUTIONAL CONTEXT** AND **INNOVATION PERFORMANCE:** A META-ANALYSIS

Nina Rosenbusch Michael Gusenbauer Isabella Hatak **Matthias Fink** Klaus E. Meyer



WESTERN UNIVERSITY · CANADA

Research Question:

Under what conditions is offshoring of innovation activity enhancing innovation performance?



Baseline Relationship: Innovation offshoring → Innovation performance

Theoretical ambiguity



Positive effect:

- Potential for tapping into resources abroad
- Potential for cost reduction
- Potential for more locally responsive product/process development

Negative effect:

- Technology leakage
- Inefficiencies in internal knowledge sharing

How have the benefits of innovation offshoring changed over time?

Globalization

➔ more offshoring opportunities?



National Context Moderators? What home country characteristics enhance the benefits firms gain from innovation offshoring?

Institutional Arbitrage

Labor standards

Environmental standards

Definition: **institutional arbitrage** = the location of each activity where costs of **compliance with local institutions is lowest** (Jackson & Deeg, 2008; Li & Zhou, 2017; Surroca et al., 2013).

NB: "institutional escape" = the relocation from unattractive home environments (Boisot & M. Meyer, 2008; Weng & Peng, 2018; Witt & Lewin 2007)

National Context Moderators? What home country characteristics enhance the benefits firms gain from innovation offshoring?

Institutional Arbitrage

Extending the concept to National Innovation systems If your home country is comparatively weak in supporting innovation, then benefits of innovation offshoring are bigger

H5

If your home country has a comparatively weak law enforcement and IPR protection, then benefits from innovation offshoring are bigger

National Context Moderators? What home country characteristics enhance the benefits firms gain from innovation offshoring?

Learning Culture

Collaborative attitude to culture

Positive attitude to learning from abroad (\rightarrow weak 'NIH syndrome)

 \rightarrow Confucian Cultures



Methodology: Meta-Analysis

Data:

46 prior studies using 48 independent sample In a variety of different contexts.

Effect sizes captured by Pearson correlation coefficients

Innovation offshoring: foreign R&D, coordination of international R&D, R&D cooperation with foreign partners, or regional dispersion of R&D

Innovation performance: patent quantity and quality, technical strength, new product and process introductions, sales derived from new products, and aggregate measures of final innovation performance

Dummies in meta regression as controls

Innovation offshoring		Intermediate innovation performance	n	Final innovation performance			
Coding	Frequency	Coding	Frequency	Coding	Frequency		
Extent of foreign R&D	22	Patent quantity	14	Aggregated measures of innovation performance	10		
Coordination of international R&D	14	Patent quality	12	Sales derived from new products	9		
R&D cooperation with foreign partners	10	Aggregated measures of technical strength	2	New product introductions	7		
Geographic dispersion of R&D	6			Process innovation	2		

Moderators

H3: Confucian culture \rightarrow the *GLOBE* study of culture and leadership (House et al., 2004).

H4: National innovation Systems → innovation input index (III), one of two components of the *Global Innovation Index* by Cornell, INSEAD, and World Intellectual Property Organization.

Time varying!

H5: Rule of law \rightarrow World Bank indices

Time varying!

				<i>95%-confidence</i>						
Moderators / Subgroups	k	Ν	r	interval	Ζ	р	Q between	p (Q)		
H1: Overall effect	48	113,111	0.145	0.115 : 0.176	9.171	0.000			as e	expe
H2: Time frame										
Before 2000	22	48,463	0.190	0.141 : 0.238	7.531	0.000	5.935	0.015	Sur	pris
2000 and after	21	64,068	0.106	0.059 : 0.153	4.377	0.000				
H3: Culture										
Other cultures	30	97,767	0.112	0.077 : 0.147	6.229	0.000	6.181	0.013	as e	exp
Confucian Asian cultures	8	7,676	0.234	0.145 : 0.319	5.065	0.000				
H4: Institutional support for	or inno	ovation								
Weak	12	44,265	0.221	0.174 : 0.266	9.056	0.000	13.786	0.000	as e	expe
Strong	22	47,803	0.098	0.054 : 0.143	4.292	0.000				
H5: Rule of law										
Weak	10	39 <i>,</i> 878	0.226	0.170 : 0.280	7.730	0.000	10.941	0.001	as e	expe
Strong	23	52,025	0.105	0.061 : 0.149	4.617	0.000				-
				95%-confidence						
Controls	k	N	r	interval	Ζ	р	Q between	p (Q)		
Publication Bias										
Unpublished	8	1,821	0.273	0.127 : 0.407	3.597	0.000	3.661	0.056		
Published	40	111,290	0.127	0.095 : 0.158	7.834	0.000				
Innovation performance										
Intermediate outcomes	25	55 <i>,</i> 193	0.14	0.094 : 0.185	5.968	0.000	0.281	0.596		
Final outcomes	20	45,042	0.161	0.100 : 0.220	5.144	0.000				
Industry										
Low-tech	7	45 <i>,</i> 326	0.137	0.076 : 0.198	4.345	0.000	0.028	0.867		
High-tech	31	51,436	0.144	0.097 : 0.190	5.919	0.000				

Results of the Meta-Analytical Regression Analyses (MARA)

Moderator	Model 1		Model 2		Model 3		Model 4		Model 5	
	В	SE	В	SE	В	SE	В	SE	В	SE
Intercept	0.36 ***	0.11	21.59 **	8.43	0.26 **	0.12	1.24 ***	0.23	0.34 **	0.14
Published	-0.18 **	0.07	-0.16 **	0.06	-0.12	0.10	0.10	0.10	0.03	0.12
Output vs. intermediate output	-0.04	0.06	0.07	0.07	-0.08	0.06	-0.18 ***	0.05	-0.11 *	0.06
High tech	-0.06	0.08	-0.03	0.07	-0.03	0.07	0.08	0.06	0.01	0.07
Time of data collection			-0.01 **	0.00						
Confucian Asia					0.22 ***	0.08			_	
Institutional support for innovation				_			-0.22 ***	0.05		
Rule of law									-0.13 ***	0.05
0		6 1 2		14 72		10.07		25.01		11 60
Q df		0.13		14./3		10.97		25.81		11.08
aj		3		4		4		4		4 25
K		36		34		28		26		25
p		0.11		0.01		0.03		0.00		0.02
R² (analog)		0.16		0.37		0.34		0.63		0.41

Why are the benefits of innovation offshoring *diminishing* over time?

- Has innovation offshoring become a fad so "everyone" does it independent of whether they know how to actually use it well?
- Some studies suggest a non-linear (inverse-U) effect of IO on IP. Thus, have many firms offshored beyond the optimal point?

FUTURE RESEARCH

General Limitation: Meta-Analysis can only

- capture variables that vary across the underlying studies
- capture what is tested and reported (!) in the underlying studies

A meta-analysis is only as insightful as the state-of-the-art in the research field

→ There are plenty of project, industry or country variables that we would like to add.

Example:

Theory distinguishes **offshore outsourcing** from **in-House offshoring** We did not find differences between these types is supplementary analyses. But this could be a small sample problem.



"The concept of institutional arbitrage (or institutional escape) can be applied to many international business activities, including the offshoring of innovation activities".