



Inter-sectoral relations to accelerate technological innovation systems formation: determinants of actors' entry into marine renewable energy technologies

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OUTLINE

- **INTRODUCTION**
- **THEORY**
- **METHODOLOGY**
- **RESULTS**
- **DISCUSSION**

Actors' entry and influence in the direction of search

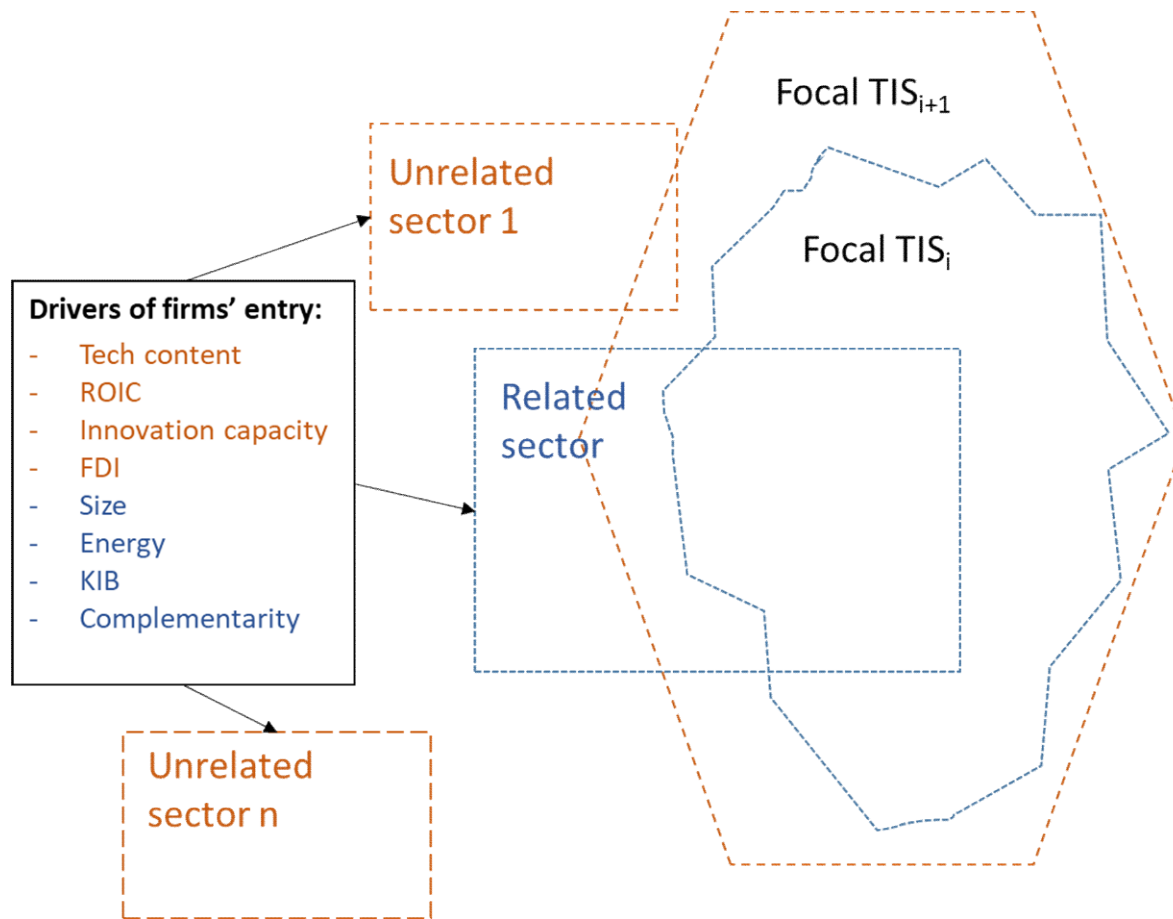
*“If a TIS is **to develop**, a whole range of firms and other **organizations** have to choose **to enter** it. There must then be sufficient **incentives** and/or pressures for the organizations to be induced to do so.” [Bergek et al., 2008: 415]*

Transitions & Actors' Entry

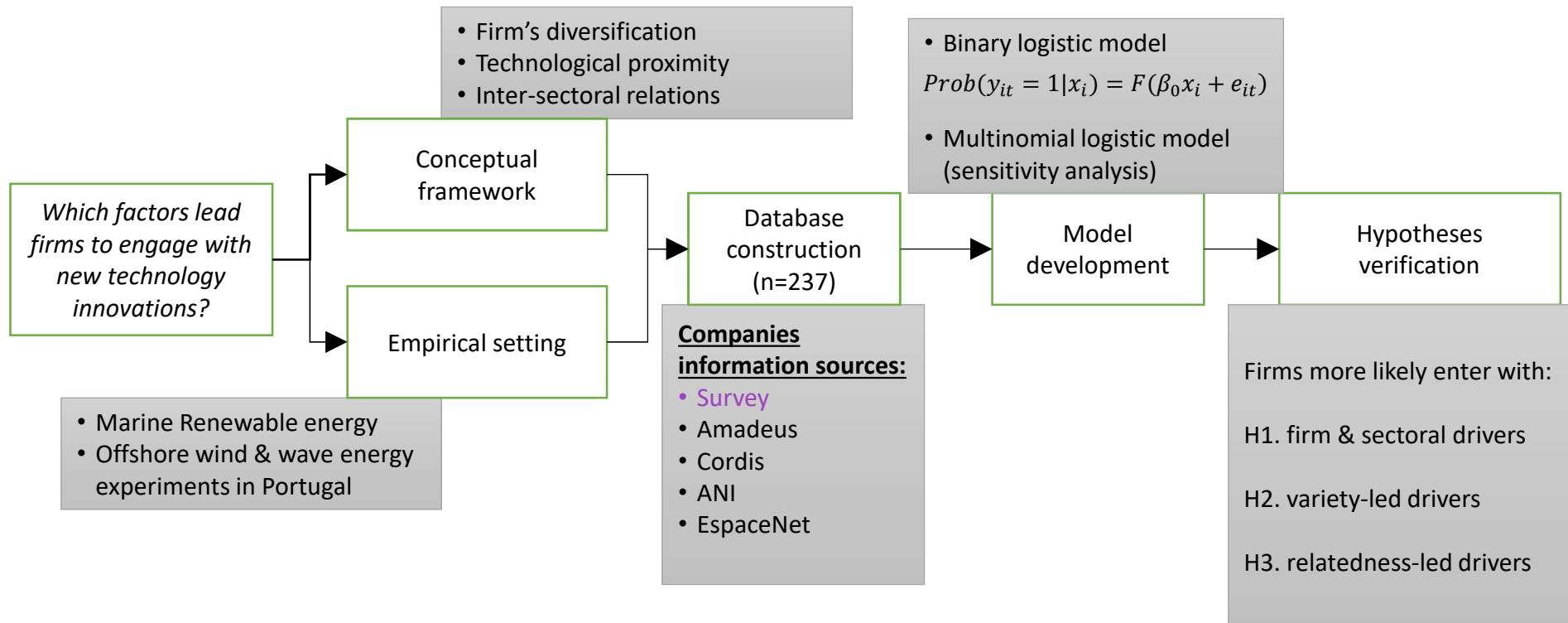
- Technological innovation systems & **sectoral interactions**
 - Complementarity (TIS-context relation) [Bergek et al., 2015; Markard & Hoffmann, 2016]
 - Sectoral configuration of value chain [Malhotra et al., 2019; Staphan et al., 2019]
 - Inter-sectoral **Variety & Relatedness** [Staphan et al., 2019; Trajtenberg et al., 1997]

- Sectoral interactions & **drivers of actors' entry**
 - Industry/Sector
 - proximity [Wu & Levinthal, 2013], energy [Laurens et al., 2018], sector's tech content & knowledge intensity [Grandstand, 1998; Shearmur & Doloreux, 2018]
 - Firm-specific
 - size [Cantwell, 2006], technological capacity [Todorova & Durisin, 2007], profitability [Schommer et al, 2019], % of FDI [Elekes et al., 2019]

Drivers of actors' entry and inter-sectoral relations for system's growth

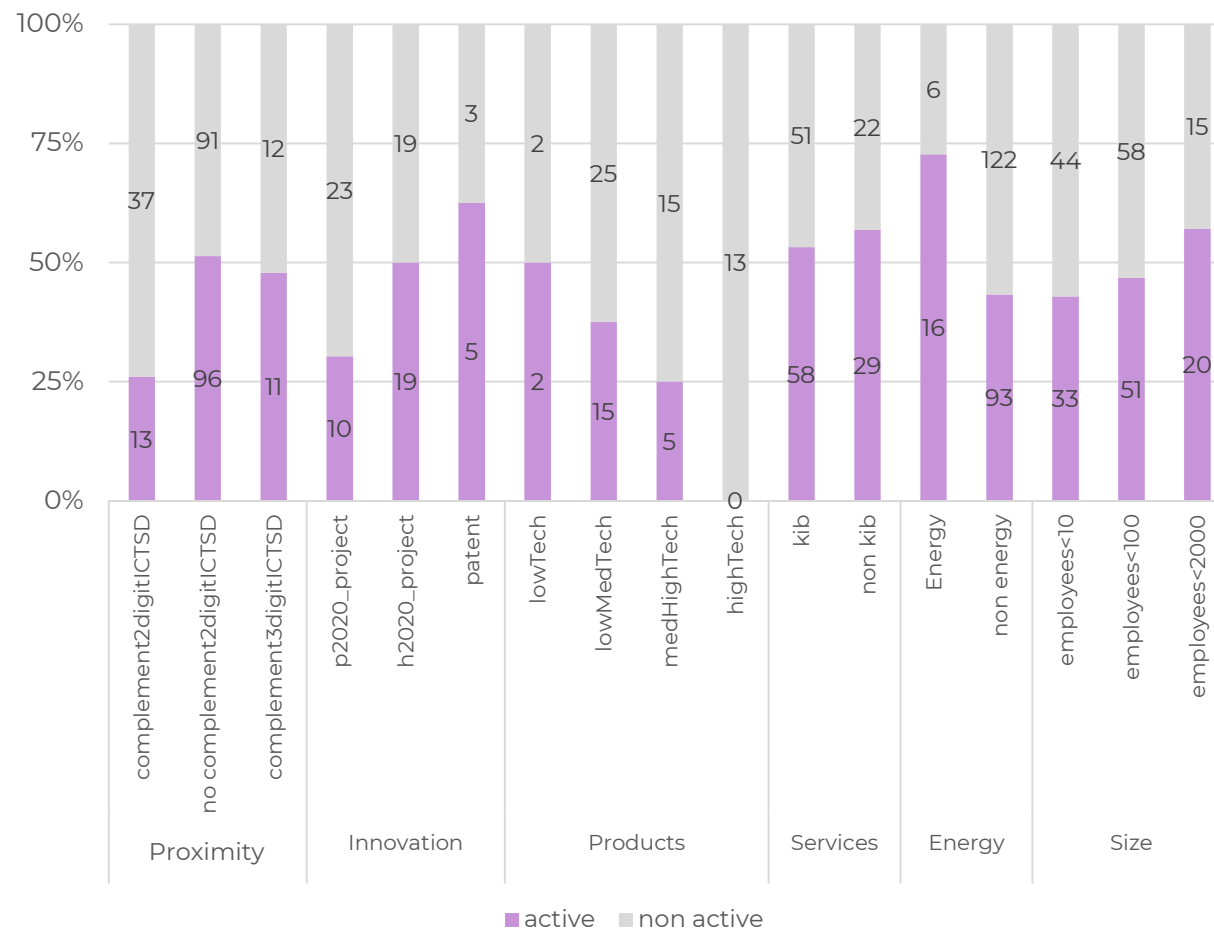


Structure of the research



Low requirements of sectoral proximity, innovation capacity, technological content or knowledge intensity

Number of companies by determinant of actors' entry and by activity in MRET



DETERMINANTS OF ACTORS' ENTRY (I)

Results of Binary Logit regression (OLS) of the decision of firms to enter in MRET

	<i>Dependent variable: Active</i>			
	Tech. Relatedness [H3]	Tech. Variety [H2]	All drivers [H1]	All drivers <i>without outliers</i> [H1]
Complementary (2-digit)	-1.100*** (.379)		.469 (.668)	.436 (.718)
National project	-.879** (.434)		-1.179** (.478)	-1.167** (.486)
European project	-.136 (.388)		-.034 (.465)	-.187 (.490)
Patents	.550 (.790)		1.620 (1.060)	1.570 (1.073)
Size (N° of employees)	.001 (.001)		.002* (.001)	-0.0001 (.001)
Energy	.699 (.524)		.532 (.615)	1.128 (.726)
% Foreign Capital		-.465 (.328)	-.452 (.360)	-.418 (.380)
Profitability (ROIC)		.014 (.217)	-.042 (.224)	.601 (.560)
Medium-High/High tech		-1.520** (.701)	-2.261** (1.176)	-2.814** (1.137)
Non-Knowledge-intensive		1.111** (.479)	1.354** (.643)	1.169* (.674)
Knowledge-intensive		.688* (.394)	1.061* (.559)	.776 (.596)
Constant	.066 (.190)	-.330 (.368)	-.634 * (.542)	-.436 (.594)
Observations	221	203	191	172
Pseudo R ²	.223	.373	.510	.516
Log pseudo likelihood	-142	-127	-111	-100

IMPLICATIONS

- **Low** technological and proximity **barriers** to entry
- Particularity: High-Tech firms under-represented
- **Pros & Cons** from an Industrial Policy Perspective: opportunities for attracting a greater variety of sectors vs. limits the technological path
- **Conceptual:**
Points to **microlevel** factors that **influence the direction of search** in TIS growth

but questions **functions' content** and the role of **inter-sectoral relations**, e.g. frontiers with materialization

CONCLUSION

- MRET opens opportunities to many sectors & relations
- Microfoundations analysis enables understanding of sectoral interactions beyond knowledge creation in new TISs
- Further validation & generalization needed
- **Limitations**
 - Uncovers processes in technology's value chain build up but MRET can have some particularities (e.g. harsh environment, re-orientation of assets from declining sectors, scope for complementarities)
- **Future research**
 - more conceptual and empirical work needed on the **processes** of TIS acceleration including sectoral interactions



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