

Technological Attraction of FDI in Services and Knowledge-Intensive Services: a Regional Innovation System Perspective for Spain

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BACKGROUND

- **Regional Innovation Systems (RIS)**
 - RIS may allow a better representation of economic events (Meliciani, 2002; Malerba, 2004; Asheim & Gertler, 2004).
 - RIS as sources of knowledge and capabilities

- **Foreign Direct Investment (FDI)**
 - FDI as an agent of interaction and integration between innovation systems.
 - Market seeking *versus* Asset seeking (Dunning, 2006)



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BACKGROUND (CONT)

- **Services sector and knowledge-intensive sector (KIS)**
 - Focus on Services and KIS due to the growing interest and importance of this sector in the developed nations in recent years (Van Welsum, 2007; Kolstad & Villanger, 2008; Ramasamy & Yeung, 2010; Roy, 2009; Head, Mayer & Ries, 2009).
 - KIS/KIBS as generators of innovation for them and for other
 - FDI allow internationalization *and* direct interaction with market



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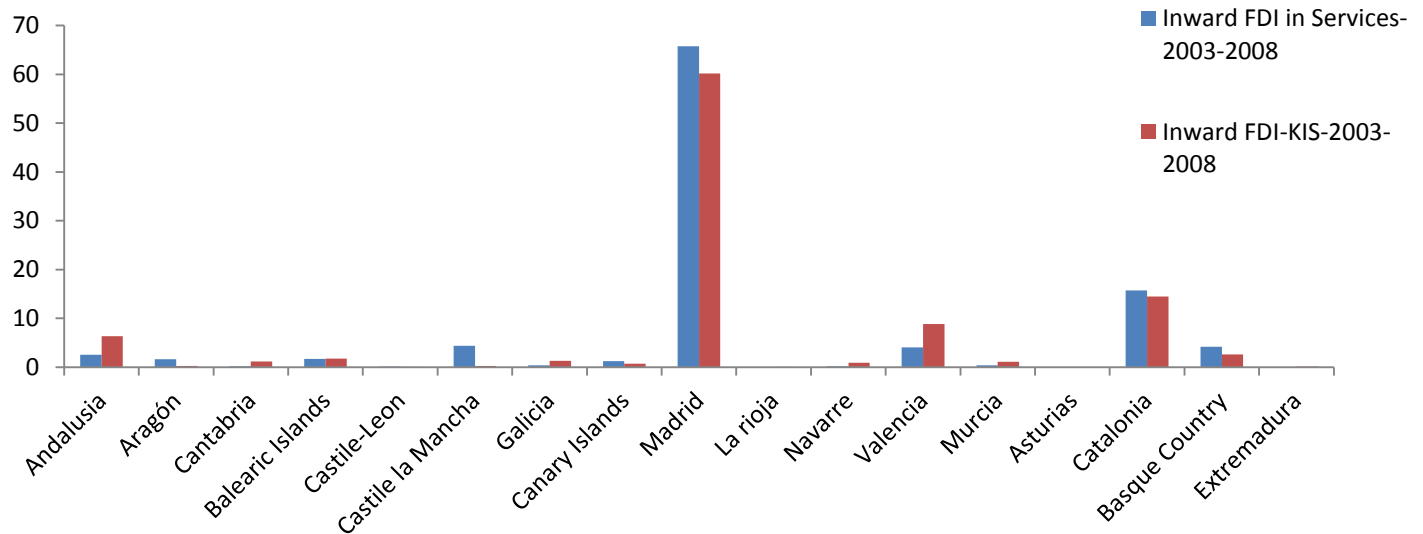
OUR GOAL

- To assess the importance that technological factors play in the FDI location decisions
 - *to what extent does the need to acquire technology, to have access to skilled labor and to a pool of established knowledge, influence the orientation of FDI in services and, specifically, Knowledge-Intensive Services (KIS)?*
 - *Inward and Outward flows for the case of Spain (Regions)*



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FDI DESCRIPTIVE ANALYSIS

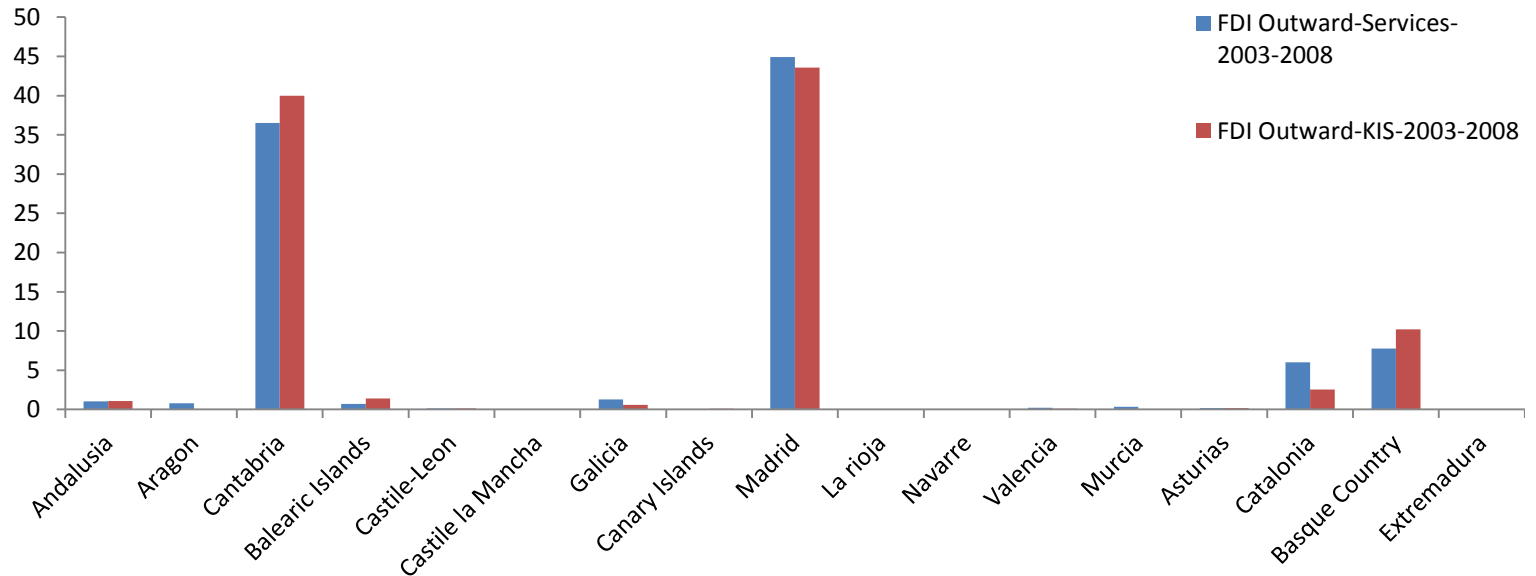


Regional participation from the total National Gross Inward FDI flows in Services and KIS 2003-2008 (mean).
Source: Datainvox



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FDI DESCRIPTIVE ANALYSIS



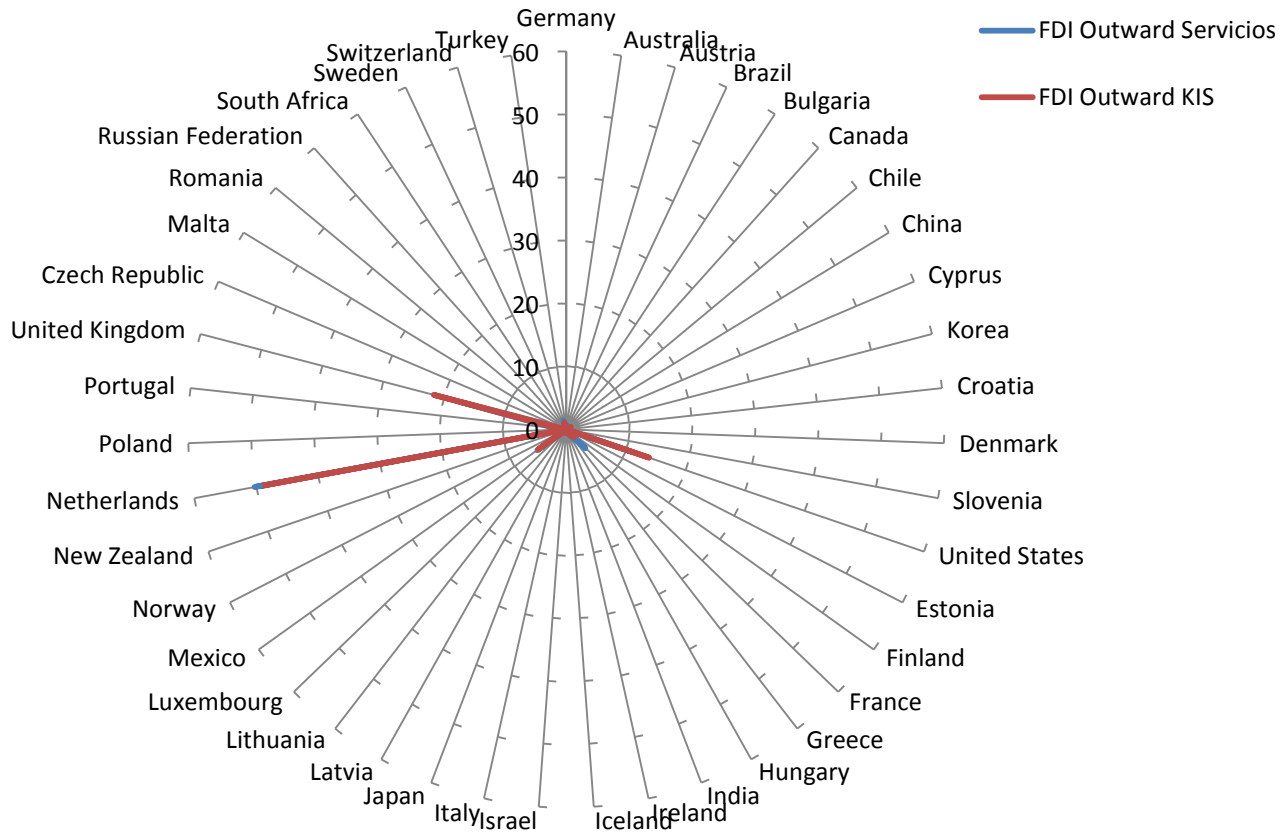
Regional participation from the total National Gross Outward FDI flows in Services and KIS 2003-2008 (mean).

Source: Datainvex



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FDI DESCRIPTIVE ANALYSIS



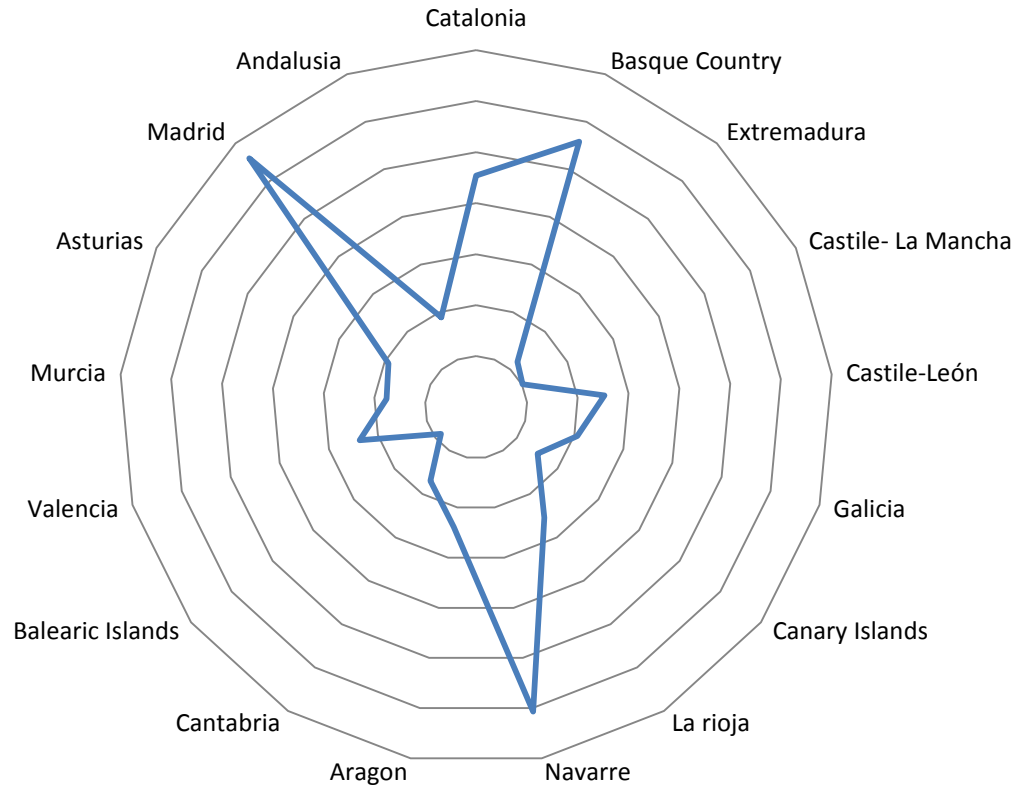
Destination of Gross Outward FDI flows from Spain – Participation in Services and KIS - 2003-2008 (mean).

Source: Datainvox.



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FDI DESCRIPTIVE ANALYSIS



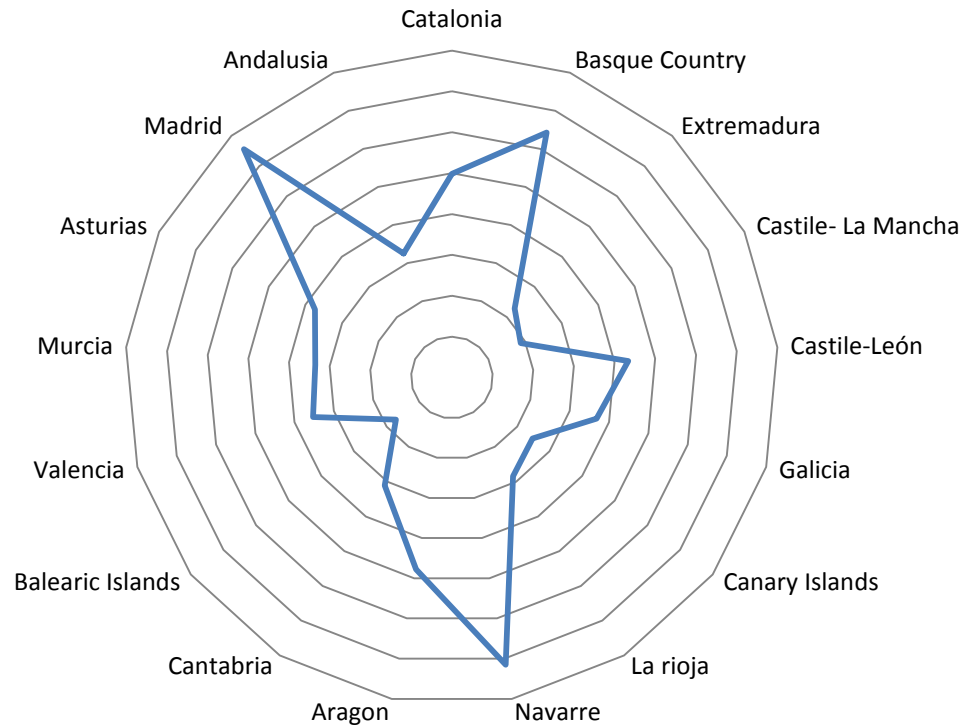
Gross Expenditures on R&D as % of GDP, 2003-2008 (mean).

Source: OECD Stat



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FDI DESCRIPTIVE ANALYSIS



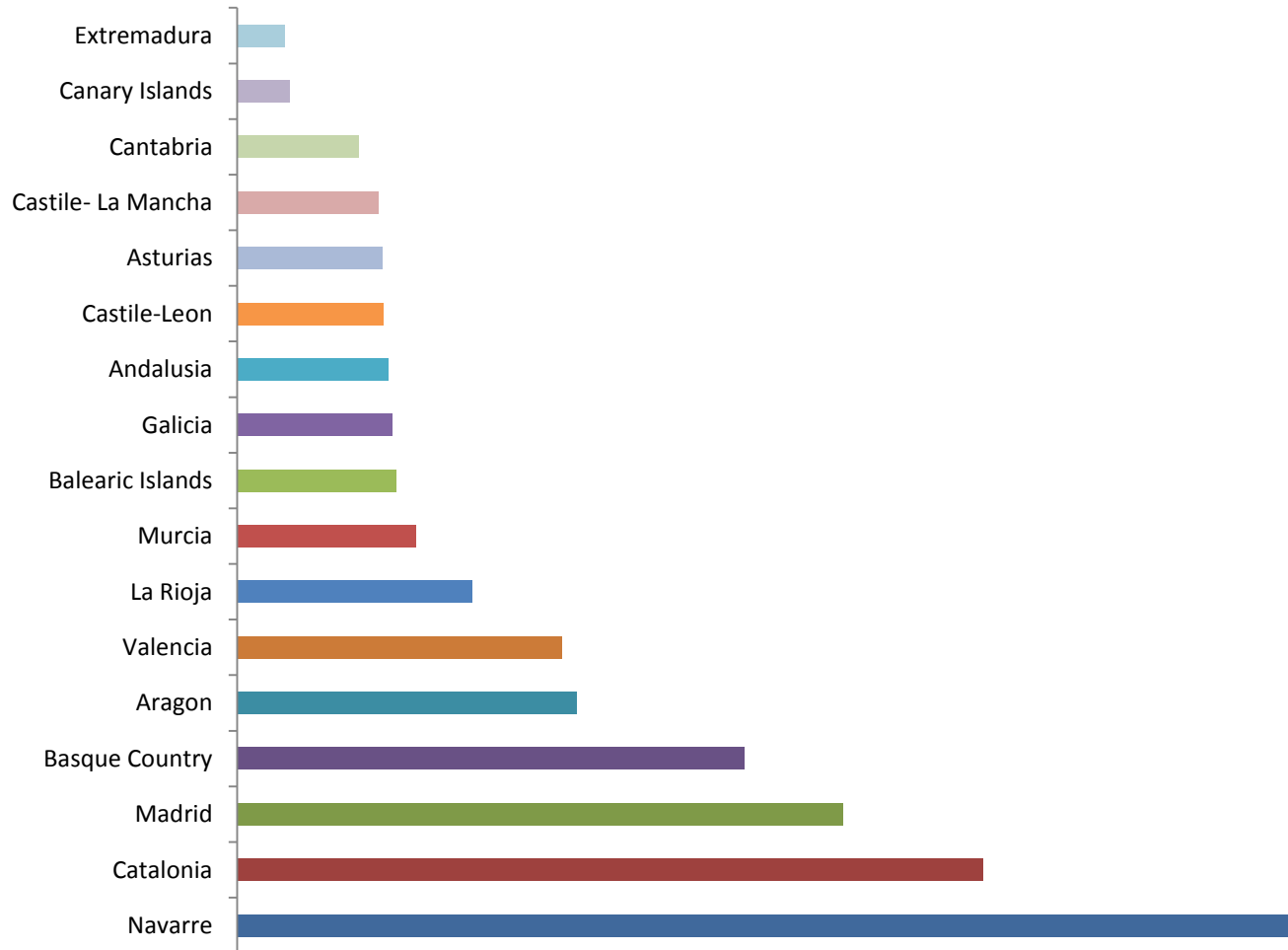
Number of Researchers per million inhabitants, 2003-2007 (mean).

Source: EUROSTAT



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FDI DESCRIPTIVE ANALYSIS



Patent Index by Spanish Region based on PCT applications – 2003-2008 (mean).

Source: OECD Stat



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METHODOLOGY

- 17 Spanish Regions
- 42 Countries
- Pooled Estimation (mean 2003-2008)
- Models Estimated for Services (Total) and KIS



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METHODOLOGY

Model 1

$$IFDI_{ij} = GDPGERD_j + HR_j + TECHDIST_{ij} + \text{Dummy Member of the UE27} + \text{Dummy level of Development}$$

Model 2

$$OFDI_{ij} = GDPGERD_j + HR_j + TECHDIST_{ij} + \text{Dummy Member of the UE27} + \text{Dummy level of Development}$$



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METHODOLOGY

Model 3

$$IFDI_{ij} = GDPGERD_j + HR_j + TECHDIST_{ij} + IFDI\ Manufacturing_{ij} + Dummy\ Member\ of\ the\ UE27 + Dummy\ level\ of\ Development$$

Model 4

$$OFDI_{ij} = GDPGERD_j + HR_j + TECHDIST_{ij} + OFDI\ Manufacturing_{ij} + Dummy\ Member\ of\ the\ UE27 + Dummy\ level\ of\ Development$$



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RESULTS

	Services (1)	KIS (1)		Services(1)	KIS (1)
<i>LnGDPGERD</i>	(-).019	.029	<i>Ln HR</i>	(-).016	.047
<i>Ln TechDist</i>	.260***	.203***	<i>Ln TechDist</i>	.260***	.203***
	(.000)	(.000)		(.000)	(.000)
<i>Dummy Level of Development</i>	.368***	.227**	<i>Dummy Level of Development</i>	3.64***	2.16**
	(.000)	(.032)		(.000)	(0.14)
<i>Dummy EU</i>	.170***	.218***	<i>Dummy EU</i>	.170***	.216***
	(.000)	(.000)		(.000)	(.000)
<i>Rsq</i>	.232	.138	<i>Rsq</i>	.232	.138

*** Sig 1%

**Sig 5%

*Sig 10%

*** Sig 1%

**Sig 5%

*Sig 10%

Results for Inward FDI – Model 1



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RESULTS

	Services(2)	KIS(2)
<i>Ln GDPGERD</i>	.783***	.761***
	(.000)	(.000)
<i>Ln HR</i>	(-).580***	(-).532**
	(.000)	(.004)
<i>Ln Tech Distance</i>	(-).087	(-).167*
		(.094)
<i>Dummy level of Development</i>	.429***	.345***
	(.000)	(.000)
<i>Dummy EU member</i>	.032	.108
<i>Rsq</i>	.250	.160

*** Sig 1%

**Sig 5%

*Sig 10%

Results for Outward FDI – Model 2



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RESULTS

	Services(3)	KIS(3)		Services(3)	KIS(3)
<i>Ln HR</i>	(-).185**	(-).113	<i>GDPGERD</i>	(-).193**	(-).068
	.019			(.037)	
<i>Ln TechDist</i>	.135**	.067	<i>Ln TechDist</i>	.137**	.068
	(.016)			(.016)	
<i>Ln FDI Manufacturing</i>	.372***	.452***	<i>Ln FDI Manufacturing</i>	.367***	.448***
	(.000)	(.000)		(.000)	(.000)
<i>Dummy Level of Development</i>	.411***	.237**	<i>Dummy Level of Development</i>	.436***	.195**
	.000	(0.37)		(.000)	(.041)
<i>Dummy EU Member</i>	.156***	.189**	<i>Dummy EU Member</i>	.155**	.199***
	(.005)	(.003)		(.006)	(.003)
<i>Rsq</i>	.332	.327	<i>Rsq</i>	.328	.325

*** Sig 1%

**Sig 5%

*Sig 10%

*** Sig 1%

**Sig 5%

*Sig 10%

Results for Inward FDI with manufacturing – Model 3



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RESULTS

	Services(4)	KIS(4)
<i>Ln GDPGERD</i>	.606***	.735***
	(.000)	(.002)
<i>Ln HR</i>	(-).344**	(-).313
	(0.28)	
<i>Ln Tech Distance</i>	(-).138*	(-).297***
	(0.78)	(.009)
<i>Ln FDI Manufacturing</i>	.172**	(-).016
	(.012)	
<i>Dummy level of Development</i>	.410***	.449***
	(.000)	(.000)
<i>Dummy EU member</i>	.001	.011
<i>Rsq</i>	.312	.257

*** Sig 1%

**Sig 5%

*Sig 10%

Results for Outward FDI with manufacturing – Model 4



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CONCLUDING REMARKS

- The development of a strong innovative environment acts in favor of a given region's development and growth.
- Results suggest that technological variables do participate in the process of FDI attraction but not as main determinants.
- This situation unfolds more relevantly in the case of Outward investment
- *Spanish investment (regional) abroad seems to be more oriented towards asset and knowledge seeking than the inflow of investments*



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CONCLUDING REMARKS

- Indirect effects of RIS on FDI (simultaneous equations)
- Feedback loop regarding the presence of asset and knowledge-seeking FDI
 - *if MNEs locate their operations in geographical areas that have more developed Innovation Systems, and if they contribute positively to this system, they will foster the attraction of new FDI and so on*
- Simplistic approach to RIS
- Patents as innovative output for services



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