



Europe's corporate innovation landscape and access to finance

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Diagnosing EU's corporate innovation deficit

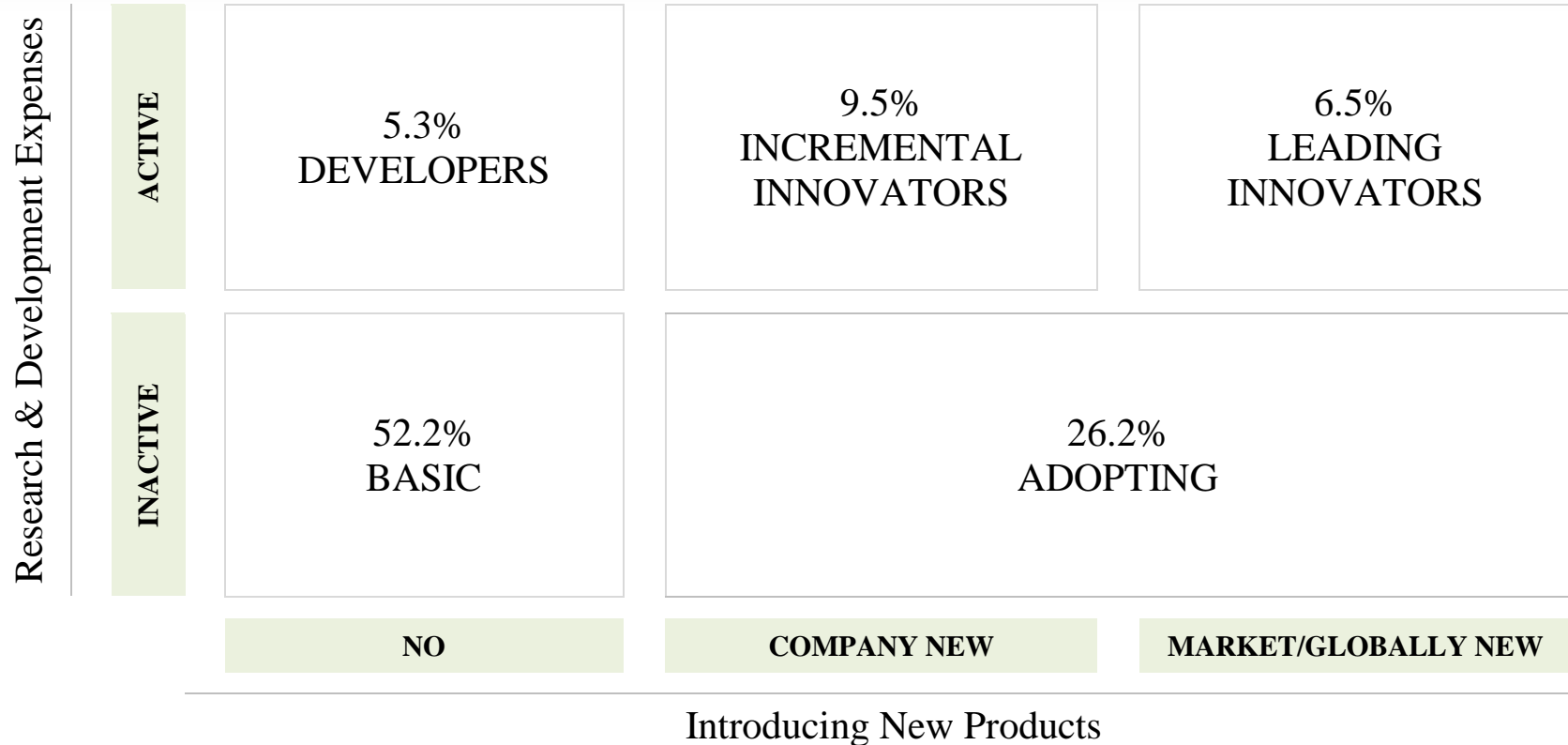
...the lack of young leading innovators especially in new innovative sectors in the EU may explain the gap in business R&D investment with respect to the US: missing Schumpeter's Mark I creative destruction capacity

	EU	US
R&D intensity (2015)	2,6%	5,6%
Share of Young in number of region's R&D leaders	23%	51%
Share of Young among top R&D leaders	19%	54%
R&D intensity of Young R&D leaders	4%	10%
R&D intensity of Old R&D leaders	3%	4%
Share of Innovation Based Growth Sectors in region's R&D	31%	52%
Share of the region's Young in Innovation Based Growth Sectors	62%	84%
R&D intensity of Young in Innovation Based Growth Sectors	13.9%	12.6%

Source: Bruegel calculations on the basis of EC-JRC-IPTS, EU Industrial R&D Investment Scoreboard

Some large scale evidence from EIBIS on which type of firms are innovating

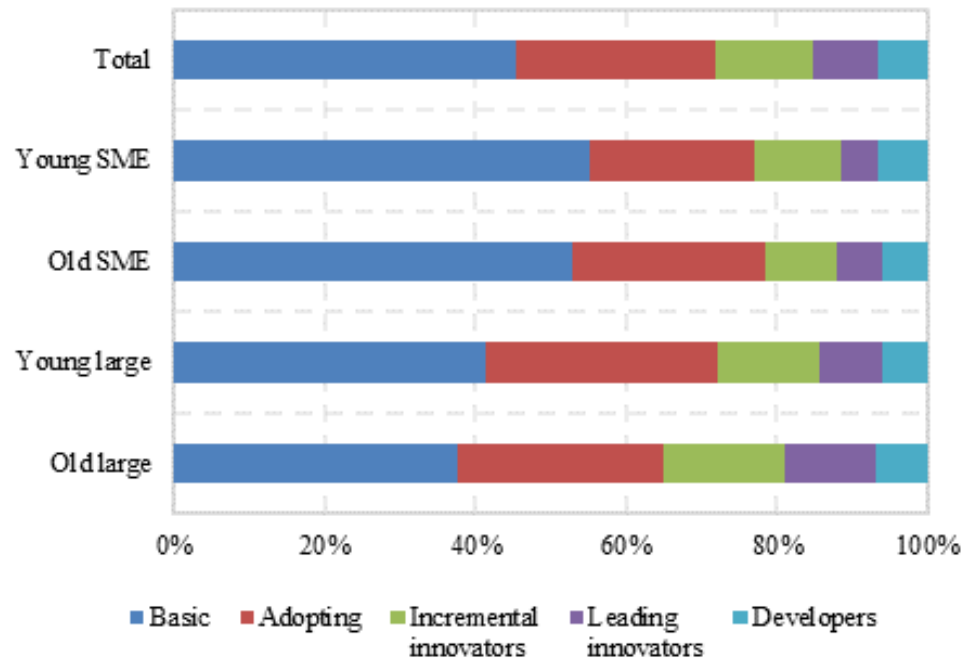
Figure 1: Innovation Profiles



Note: The introduction of new products is based on questions 18 and 19 of EIBIS, namely “Q18. What proportion of the total investment was for developing or introducing new products, processes or services?” and “Q19. Were the new products, process or services (A) new to the company, (B) new to the country, (C) new to the global market?” R&D activity is defined as firm reporting substantial R&D (i.e. at least 0.1% of firm turnover). Source: EIBIS16, referring to fiscal year 2015.

Europe's Young firms not Leading Innovators

Innovation Profiles and Size-Age Groups



	Adopting	Incremental Innovators	Leading Innovators	Developers
Young large	0.04 (0.05)	-0.03 (0.03)	-0.04 (0.02)	-0.02 (0.02)
Old SME	-0.03* (0.01)	-0.04*** (0.01)	-0.04*** (0.01)	-0.01 (0.01)
Young SME	-0.03 (0.02)	-0.03** (0.01)	-0.04*** (0.01)	-0.01 (0.01)
N	8,900	8,900	8,900	8,900

*** p<0.01, ** p<0.05, * p<0.1

Table reports marginal effects after multinomial logistic regression. Standard errors are reported in parenthesis. Base outcome is "basic". Reference category for size-age groups is old large (size-age groups are defined as in Figure 4). Country and sector fixed effects are included. The regression is based on non-weighted firm level data. Source: EIBIS16, referring to fiscal year 2015.

Young (old) firms are those less (more) than 10 years old. SME (large) firms are those with less (more) than 250 employees. The four size-age categories are formed by combining the age and size splits. Innovation Profiles are defined as in Figure 1. Source: EIBIS16, referring to fiscal year 2015.

What impedes young leading innovators ?

Obstacles to Investment and Innovation Profiles

	Demand for product or service	Availability of staff with the right skills	Energy costs	Access to digital infrastructure	Labour market regulations	Business regulations and taxation	Adequate transport infrastructure	Availability of finance	Uncertainty about the future
Young large	-0.03	0.02	-0.01	-0.03	0.07	0.09*	0.04	0.09*	-0.03
	(0.05)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Old SME	-0.02	-0.01	0.02	0.01	0.04***	0.05***	-0.01	0.07***	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Young SME	-0.08***	0.00	-0.02	-0.02	0.02	0.04**	-0.02	0.10***	-0.08***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Adopting	0.04***	0.06***	0.05***	0.05***	0.06***	0.04***	0.07***	0.04***	0.02**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Incremental innovators	0.08***	0.08***	0.08***	0.07***	0.09***	0.08***	0.07***	0.03*	0.05***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Leading innovators	0.05**	0.09***	0.02	0.06***	0.08***	0.09***	0.04*	0.08***	0.03*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Developers	-0.02	0.04	0.01	-0.01	0.02	0.04*	-0.01	0.00	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Observations	8,755	8,846	8,839	8,744	8,775	8,812	8,788	8,801	8,752
(Pseudo) R2	0.0531	0.0459	0.0796	0.0597	0.0536	0.0689	0.0629	0.0554	0.0822

*** p<0.01, ** p<0.05, * p<0.1

Table reports marginal effects after logistic regression. Standard errors are reported in parenthesis. Dependent variables are dummy variables equal to 1 if firm considers a category to be a minor/major obstacle to investment (“Q38: Thinking about your investment activities, to what extent is each of the following an obstacle? Is a major obstacle, a minor obstacle or not an obstacle at all?”), and zero otherwise. Reference category for size-age groups is old large (size-age groups are defined as in Figure 4). Reference category for innovation profiles is basic. Innovation Profiles are defined as in Figure 1. Country and sector fixed effects are included. The regression is based on non-weighted firm level data. Source: EIBIS16, referring to fiscal year 2015.

External finance for innovation

	External Finance (Yes/No) Logit	External Finance (% share) OLS	Grants (Yes/No) Logit
Young large	0.03 (0.06)	1.68 (4.39)	0.01 (0.03)
Old SME	-0.08*** (0.02)	-3.04** (1.26)	-0.01 (0.01)
Young SME	-0.07*** (0.02)	-3.06* (1.58)	-0.01 (0.01)
Adopting	0.07*** (0.01)	0.97 (0.99)	0.03*** (0.01)
Leading innovators	0.10*** (0.02)	-1.06 (1.75)	0.07*** (0.01)
Incremental innovators	0.07*** (0.02)	-1.58 (1.49)	0.04*** (0.01)
Developers	0.08*** (0.03)	3.07 (1.91)	0.04*** (0.01)
Observations	7,602	7,602	7,502
(Pseudo) R2	0.0399	0.0738	0.103

*** p<0.01, ** p<0.05, * p<0.1

Table reports marginal effects after logistic regression (coefficient after OLS estimation in column 2). Standard errors are reported in parenthesis. Dependent variable is a dummy variable equal to 1 if firm uses external finance, and zero otherwise (column 1); variable showing the share of investment financed by external sources (column 2); dummy variable equal to 1 if firm uses grants, and zero otherwise (column 3). Reference category for size-age groups is old large (size-age groups are defined as in Figure 4). Reference category for innovation profiles is basic. Innovation Profiles are defined as in Figure 1. Country and sector fixed effects are included. The regression is based on non-weighted firm level data. Source: EIBIS16, referring to fiscal year 2015.

On average, firms finance 31% of their investment activities using external sources

SMEs (old and young) are less likely to use external finance than large firms.

Firms with innovative projects (incremental & leading) are more likely to rely on external financing.

On average, grants account for 5% of external financing;

Leading innovators are more likely to receive grants.

Young and leading innovators more credit constrained

	Credit constraint		Rejected	
	(1)	(2)	(3)	(4)
Young large	0.01	0.01	-0.01	-0.01
	(0.03)	(0.03)	(0.02)	(0.02)
Old SME	0.03***	0.03***	0.02***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)
Young SME	0.08***	0.08***	0.05***	0.05***
	(0.01)	(0.01)	(0.01)	(0.01)
Adopting	-0.00	-0.00	-0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Leading innovators	0.06***	0.07***	0.03***	0.03***
	(0.01)	(0.01)	(0.01)	(0.01)
Incremental innovators	0.03***	0.03***	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Developers	0.02	0.02	0.02	0.02
	(0.01)	(0.01)	(0.01)	(0.01)
Leading innovators*Young SME		-0.04		-0.02
		(0.03)		(0.03)
Observations	8,900	8,900	8,900	8,900
Pseudo R-squared	0.0530	0.0533	0.0527	0.0529

*** p<0.01, ** p<0.05, * p<0.1

Table reports marginal effects after logistic regression. Standard errors are reported in parenthesis. Dependent variable is a dummy variable equal to 1 if a firm is credit constrained and zero otherwise (columns 1 & 2); dummy variable equal to 1 if a firm was rejected when seeking for external finance (columns 3 & 4). Reference category for size-age groups is old large (size-age groups are defined as in Figure 4). Reference category for innovation profiles is basic. Innovation Profiles are defined as in Figure 1. Country and sector fixed effects are included. The regression is based on non-weighted firm level data. Source: EIBIS16, referring to fiscal year 2015.

Some policy implications

To address the deficit in business R&D in Europe, innovation policy by providing a more favourable investment environment should encourage firms to take more risk and develop new projects.

Supporting the development of private capital markets, especially the high-risk, early stage segments, and/or public funding can be warranted to solve the market failures faced by young small firms with radical innovative projects.

Evaluating the effectiveness of the policies is essential to learn from best-practices.