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Alignment of innovation policy objectives, a demand side perspective

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Abstract

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1. Introduction

The amount of public support for innovation and restructuring available to firms is increasing in both scale and scope, i.e. in quantity on offer and the diversity of schemes. Firms can benefit from different types of support that provide a considerable variety of incentives and benefits, and assist various innovative processes. In most European countries, local and most national public support for innovation and restructuring is provided locally by regional departments or by local private business-to-business services. These forms of support for innovation coexist with other types that are centrally designed and implemented as well as with European innovation schemes. National policy-makers expect that national support for innovation and restructuring, locally or centrally designed and implemented, are complementary rather than substitutes, and equally with the European innovation support schemes. But how do firms respond to this profuse supply of incentives?

Bodas Freitas and von Tunzelmann (2008) have provided an analytical framework to compare the forms of alignment of policy innovation objectives in different economies. This study focused on the supply-side of the issue of the alignment/ integration of innovation objectives, i.e. on the characteristics of policy programmes implemented rather than on the behaviour of firms towards different types of public innovation support. Hence, it assessed the policy-makers rather than the firms' perspectives on the functioning of their innovation systems. Consequently, it did not provide insights into the firms' alignment decisions to respond to the existing panoply of public innovation incentives. Only by focusing on the demand for public

innovation support, one can hope to obtain additional insights on the factors that induce firms to respond to specific innovation objectives and to align their innovation strategies to benefit from incentives proposed by different actors and institutions. Moreover, it permits to assess convergence in innovation policy, identify levels of differentiation and specialisation, as well as inertia at different innovation policy-making levels.

This paper is an attempt to examine the alignment of policy innovation objectives from demand-side perspectives, i.e. firms that can benefit from public innovation support, in two economies. We develop a framework that proposes that firms' alignment of policy innovation objectives relates to the technological and market learning locus of the firm as well as with the firms' strategies concerning knowledge development paths and organization of interaction with external actors for innovation development. Moreover, we analyse how French and British firms align the variety of forms of local, central and European innovation support available to them. We end by speculating on the interaction of firms' demand-side decisions and policy-makers' supply-side decisions, in reference to the policies pursued.

Placing the demand aspects alongside the supply phenomena involves not just a more complete story but also one that is much more reliable; moreover one that looks likely to suffer more intensely from locally induced path-dependencies. All of these factors conspire to lead us to build a different type of encompassing model: one in which the two 'helices' of firms and policy-makers interact in real time through exercising their dynamic competencies and capabilities (von Tunzelmann and Wang, 2003, 2007; Iammarino et al., 2008; von Tunzelmann, 2009).

Empirically, we rely on firm-level data from the Community Innovation Survey (CIS), surveying the innovation process of firms in the period 1998-2000 (CIS3) and 2002-2004 (CIS4) in France and the UK. Using such data, we examine the characteristics of users of public support for innovation provided by different levels of policy-making, i.e. Local, Central and European public innovation support, as well as the firms' decision to engage in one form over others of alignment of public innovation support.

This paper is organized as follow. Section 2 reviews the literature on alignment of innovation policy objectives. In section 3 we propose a framework to examine alignment of innovation policy objectives from a demand-side perspective. Section 4 presents the data and the methodology used in this study. Section 5 examines empirically the forms of alignment of innovation policy objectives. Section 6 concludes this paper.

2. Alignment of innovation policy objectives

To a certain extent, alignment of innovation policy objectives, i.e. integration of incentives for systems that differ functionally (technology, production, finance, marketing, management), in resources (various types of labour, capital and natural resources), and spatially (local, regional. national and supranational levels) (McGowan et al., 2004: ch. 3), overlaps with the issue of coordination of multiple policy-making levels. The examination of innovation policy alignment and of coordination of policy-making levels however tend to involve different analytical lens and units of analysis. The examination of coordination of multiple policy-

making levels often concentrates on identifying the most adequate level of policy to implement certain types of policies. The analysis of alignment of innovation policy objectives tends to focus instead on the whether and how different types of innovation incentives are made available to firms and systems. Hence, in both cases, studies departure from the understanding of policy design as, the expression of the existing alignment process and of a specific form of coordination of different levels of policy-making.

An analytical focus on policy design, concentrating on the pattern of innovation policies across time or across economies, however limits the analysis to a supply-side perspective of innovation objectives (Foray and Llerena, 1996; Cantner and Pyka, 2001; Bodas Freitas and von Tunzelmann, 2008). This analytical focus on the supply-side of innovation objectives does not provide insights into how firms integrate in their innovation strategies the specific incentives proposed by different policy actors and institutions. To understand the interaction of firms' demand-side decisions and policy-makers' supply-side decisions, in reference to the policies pursued, an analysis of the demand side for public support is needed. The examination of the alignment of innovation policy objectives from the demand side would then require the examination of the firms' innovation objectives when applying and benefiting from the different innovation public support designed and implemented by different levels of policy making. In other words, only by focusing on the strategies of firms that use of public innovation support provided by different levels of policy-making one can understand whether or not incentives are available for different learning and innovation activities and models.

In most European countries, firms have access to a panoply of public support for technology, innovation and restructuring provided by Regional/local, National and European authorities. Given the underlying rationale for regional-local, national and European policy-making, it is expected that their respective support provide different incentives, and consequently address different types of firms. In particular, national policy-makers expect that support for innovation and restructuring, locally or centrally designed and implemented, are complementary rather than substitutes, and equally with the European innovation support schemes. However, within member states a variety of coordination problems exist across local and national level policy-making (Kaiser and Prange, 2005).[1] Moreover, national differences exist on the extent to which European, regional and national innovation policies complement/substitute each other. In other words, the degree and forms of

[1] Since the 1990s, several authors have discussed the issue of coordination of policy-making levels and of the erosion of the national policy-making capacity to improve national living standards. Coordination of policy across levels of policy-making in Europe has been limited due to the diversity of regional and national economies (Grande, 2001; Kaiser and Prange, 2004). After the Lisbon Agenda, European speech focused on strengthening efforts to spread best-practices and achieve greater convergence towards the main EU goals (Borras and Jacobsson, 2004). However, it is uncertain that 'best-practices' in one country may also be the 'best practice' in other country with different political social and cultural systems. Moreover, is it possible convergence of national countries' innovation objectives, when national firms compete furiously in the common and foreign markets? In any case, national authorities are named as the main mediators across different levels of policy (Kuhlmann, 2001; Kaiser and Prange, 2005).

multi-level governance in innovation policies across regional, national and European policy seem to differ across countries (Kaiser and Prange, 2004).

In the European context of multi-layered interconnected levels of policy-making, it becomes increasingly important to understand if these forms of public support for innovation that coexist, complement or substitute each other (Grande, 1996; Kuhlmann, 2001). How do firms respond to this profuse supply of incentives? To understand the interaction of firms' demand-side decisions and policy-makers' supply-side decisions, in reference to the policies pursued, an analysis of the demand side for public support is needed. Only by examining the demand for public innovation support, one can hope to obtain additional insights on the factors that induce firms to respond to specific innovation objectives and to align their innovation strategies to benefit from incentives proposed by different actors and institutions.

This study is mainly concerned with the examination of the alignment of the innovation policy objectives from a demand side perspective. In particular, we aim to analyse the patterns of British and French firms' decision to align innovation public support provided by different levels of policy-making—local/regional, national and European.

3. From a supply-side to a demand-side framework to examine alignment of public innovation support

A framework to examine the interaction of firms' demand-side decisions and policy-makers' supply-side decisions needs to rely on firms' innovation behaviour and objectives rather than on policy-designs. Firms with different innovation development strategies and behaviours may have different motivations and interest in applying for public support providing certain innovation incentives. On their turn, policy-implementers will choose to grant firms and projects that better match the programme's objectives.

In Figure 1 we sketch the analytical framework that we will use to examine and compare forms of alignment of innovation objectives from a demand-side perspective, and their interaction with policy-makers decisions. This framework builds on the three-dimensional model of alignment of innovation policy design proposed by Bodas Freitas and von Tunzelmann (2008), according to which public support can be characterised in terms of types of knowledge and learning processes addressed, forms of implementation, and type of support (selectiveness of targeted firms).[2] Our framework proposes to account for the innovation activities and

[2] Concerning the types of knowledge and learning addressed, two extreme knowledge objectives were identified: Diffusion vs. Mission-oriented policies (Vertical vs. Horizontal). Horizontal programmes focus on the diffusion of innovations and blending of new technologies into old products and processes, and consequently on the increase the number of firms that use it and interact in specific ways in the business-to-business market. Vertical programmes procure the development of new technologies and products, and consequently on the increase the number of explicit interfaces in the business-to-business market.

strategies that are encouraged by each of the three policy design dimensions proposed by Bodas Freitas and von Tunzelmann (2008). In particular, we propose that the firms' use of specific innovation support depend on their strategies concerning the paths for innovation development, and the governance of interaction with external actors, as well as with the learning locus of firms. Next, we examine how these different business innovation strategies may interact with specific innovation policy objectives.

[Insert Figure 1 about here]

Not only firms' search and innovation development paths may be associated with the forms of relating for innovation development, and consequently their relational network (Jensen et al. 2007; Bercovtiz and Feldman, 2007), but also specific technological and market learning locus might provide a prominent environment for certain of innovation strategies (Pavitt, 1984; Dosi, 1988). Hence, similar as for policy design, the articulation of the different dimensions of policy design is not a random independent phenomenon. Therefore, in this paper, we examine alignment of policy innovation objectives from the demand-side taking into consideration the three-axes of the firms' innovation behaviour: the characteristics of their search and innovation development paths, the organization and governance of interaction with external actors for innovation development, and the characteristics of their learning locus.

Innovation development paths

Often in the literature we find the distinction between two distinct search paths for innovation development. One path for innovation development is based on cumulativeness and refinement of existing knowledge (exploitation). The other path is based on searching in the technology space for new and more productive techniques and products with unknown demand (exploration) (March, 1991; Gupta et al., 2006; Greve, 2007). Both search paths involve learning and innovation and they do not need to be incompatible (Greve, 2007; Jensen et al. 2007). Indeed, the intensity of exploration and exploitation activities seems to differ across firms' functions and subsystems (Grandstand et al., 1997; Gupta et al., 2006; Raisch et al., 2009).

A second dimension of the model refers the level of policy programme implementation. They considered both the Local and the Central levels of policy design and implementation.

The third and last node of the analytical the model refers to the selectiveness of the support provided, taking into account both the type of public support or incentive provided and the type of performance addressed. Public support may then be characterised as General if they provide general support for firms, privileging the diversity of the needs of firms, by making a general service or information capacity available to firms. Public support may then be characterised as Specific if they provide incentives aimed at supporting the development of specific capabilities or targeting specific technological and industrial environments.

This dichotomy in the innovation development paths, exploration vs. exploitation, somehow relates to dichotomy between Vertical vs Horizontal knowledge objectives of policy design (see footnote 2). Focusing on the innovation development paths of firms rather on the knowledge objectives of the policy programmes permit to account for the fact that exploration and exploitation activities can be coordinated and made compatible within a firm (Brown and Eisenhardt, 1997; Raisch et al., 2009).

Exploration and Exploitation innovation development paths involve the search for diverse types of information and knowledge sources (von Hippel, 1988). Firms may invest highly in developing and accessing technological knowledge advances; they can also rely on knowledge and information resulting from internal processes of learning-by-doing, using and interacting. Strong reliance on technological knowledge advances reveals firms' exploratory efforts to build new competencies and technologies. The development of internal organizational structures that encourage knowledge creation through learning-by-doing, using and interacting may allow firms to build on their existing knowledge to readapt and respond quickly to changes in their market and technological environments (Nonaka, 1994). Strong reliance in exploratory technology knowledge development may somehow dissuade firms' to apply for public support for adoption of technological or organizational best-practices, while reliance on exploitative learning through experience may somehow limit the incentives of firms to apply for support from a vertical programmed to develop new knowledge and technologies (Levinthal and March, 1993; Tripsas and Gavetti, 2000). Similarly, policy-makers may find firms with different innovation development strategies and objectives differently likely to reap the benefits from the public support and consequently, differently suitable to comply with the requirements of vertical or horizontal policy programmes.

Organization and governance of interaction with external actors for innovation development

The literature on transaction costs and on the organization of the firm have strongly documented on different forms of organizing innovation and knowledge development and flows. Depending on levels of coordination costs, technology uncertainty, appropriation concerns, and financial concerns, standardized markets, customized contracts and collaborations are particular relevant organizational arrangements for knowledge and technology flows (Artz and Brush 2000; Gulati, and Singh, 1998). Different types of capabilities are required to establish and maintain different forms of organization of interaction with external actors for accessing/developing technological inputs. Hence, experience with different modes of organization with external actors may influence firms' interest in applying for applying to different types of public support.

Engagement into collaboration reflects firms' understanding that knowledge is distributed across different actors, and consequently the firm alone may not cope with the development of new technologies. In particular in technological contexts characterized by high uncertainty and fast knowledge developments, collaboration for technology development allows firm to build on the different and complementary resources and competencies of external actors for accelerating and decreasing risks of internal technology development

process (Hagedoorn, et al., 2000; Caloghirou et al., 2003; Gulati, and Singh, 1998; Hoetker and Mellewigt, 2009). Experience in organizing innovation development in a collaborative manner with other partners seems associated with strong technological and organizational capabilities (Gulati and Nickerson, 2008). Hence, firms with experience in organizing innovation development through collaboration with external actors are more likely to be interested in Specific innovation public incentives provided under a Vertical policy programme, as well as more able to set up an original knowledge and technology development project to target those public incentives for innovation. In turn, policy-makers and implementers will evaluate highly these firms due to their greater potential to disseminate their innovative results more broadly through their collaborative behaviour (Feldman and Kelley, 2006).

Contracting out parts of the technological development activities to other firms and organizations reflects the fact that the technologies and know-how exiting in the market do not match the specific needs of the firm, and that the firm assesses low transaction costs in sourcing the development of these technologies and know-how through specific contracts to technology providers. Experience in contracting out entails that the firm has developed capabilities to search for capable technology providers, to set contracts that specify the required outcomes, to monitor the involvement of providers in completing the agreed outcome, as well as to coordinate external and internal innovation development processes and outputs (Gulati and Nickerson, 2008; van de Vrande et al., 2009). The use of contracts to manage interaction for technology development reveals firms' concerns with appropriation of innovation development, which may deter firms to participate into public innovation support programmes (Luukkonen, 2002; Feldman and Kelley, 2006). Hence, firms, which engage in specific contractual arrangements for completion of parts of their innovation development process, signal policy-makers that they have capability to co-ordinate risky and challenging activities, as well as their inability to develop new unique competences and technologies, and most important their willingness to share knowledge (Veuglerers and Cassiman, 1999; 2006).

Reliance on best-practices and technologies existing in the market, developed by other organizations, for the internal development new products and processes seems associated with weak concerns about knowledge spillovers, with low technology uncertainty and low costs of coordination (Pavitt, 1984; Gulati, and Singh, 1998). Firms that rely on somehow standardized technological inputs may be the target of General public innovation aimed at raising awareness on best-practices, and support for restructuring and innovation adoption. On the other hand, firms that rely on existing markets for technology inputs may find General public innovation support a very useful form of getting support in scanning for technologies, best-practices and sources for innovation, as well as of accessing relevant resources for upgrading their innovative capabilities (Bodas Freitas and von Tunzelmann, 2008).

Locus of learning and innovation development: technological and market environment of firms

Firms active in different industries tend to develop specific innovative behaviours through the accumulation of different technological and organizational capabilities (Castellacci, 2008). In other words, in different industries, firms develop specific technological and learning trajectories, and rely on diverse technological and market knowledge bases and exploit specific learning processes (Malerba, 1992). In particular, Pavitt (1984) distinguishes four industrial sectors—*supplier-dominated, scale-intensive, specialized-supplier* and *science-intensive*—, based on differences in the sources of technology, user requirements, direction of technological change, and means of and possibilities for the appropriation of innovation. Hence, there is some evidence that the innovation strategies and behaviour of the firms is dependent on the technological learning locus of the firms. Firms' use of innovation support provided by different levels of policy-making may be uneven across the technological learning locus of the firm. On the one hand, different levels of policy-making may be specialized in providing support for specific industries. On the other hand, some public innovation incentives may be more compatible with the needs of certain industries. For example, public support for the development of new search paths in new technological fields or applications may not be equally interesting for firms active in supplier-dominated and for firms active in science-intensive activities.

Besides the technological environment, the market environment also influences firms' behaviour and strategies (Hitt et al., 1997; Simard and West, 2006, MacGarvie, 2006). In particular, focus on the local and on the international market is associated with the development of different competencies to produce and market. For example, the networks that firms has most interest in fostering are particularly different for firms which market focus is the local or the international market. Interaction with local actors seems particularly important for product customization and diversity for firms that concentrate on local market and technological learning (Maskell and Malmberg, 1999; Rantisis, 2002). Instead, firms that operate in international markets find particularly important to build reputation internationally and consequently privilege relationships that can best enhance their technological or market reputation (Hitt et al., 1997; Salomon and Shaver, 2005; Simard and West, 2006).

Hence, the firms' motivation and the likelihood of being granted support provided by different levels of policy-making also relate to the market in which firms operate. Local public support might be particularly interesting for firms whose learning locus is the local environment, not only because it has been conceived to match the technological and market competences of local economy, but also because it may give an extra opportunity for these firms to interact locally with old and new partners, and improve their local reputation (Morrison et al., 2000). Instead, use of transnational innovation support maybe associated with firms' participation into international markets, with their need to learn, interact, and build reputation internationally (Laredo, 1995, 1998).

4. Data and Methodology

Public innovation support provided by different levels of government may have specific objectives, and they may or may not be complementary in terms of design (i.e. type of innovation incentives provided). Our objective is to understand how firms align their innovation strategies with public innovation support provided by different levels of government (local, central and European). We concentrate on policy programmes that provide financial innovation support, i.e. we neglect programmes that provide firms with information and relational services or infrastructures or learning tools.

Firms that benefited from public support are those that were first self-selected to apply for the support, and second were selected by the policy-implementers. The criteria of firms to self-select and of policy-implementers to select reflect the policy design of support and the innovation strategies of firms. Independently of the importance of the pre-selection of firms, and final selection by policy-implementers, public innovation support benefit firms that by theirs characteristics managed to comply with the requirements to obtain support and/or by their capabilities managed to set up a winning application.

To examine the alignment of policy innovation objectives across firms' innovation behaviour and strategy, we rely on data from 2 waves of the CIS, surveying the innovation process of firms in the period 1998-2000 and 2002-2004 in France and the UK. In particular, we focused on manufacturing activities. For the first period, 1998-2000, the British survey consists of 3340 manufacturing firms and the French survey of 4081 manufacturing firms. In the second period, 2002-2004, the British dataset includes 4705 manufacturing firms and the French 6037 manufacturing firms. 405 British and 1387 French manufacturing firms answered to the survey in both periods. Given some missing observations, our sample is constituted of 393 British firms and 1353 French firms. The analysis of selection bias introduced by the panel suggests that both the French and the British manufacturing firms that answered the survey in both periods tend to be larger in size and more innovative than those that just answered the survey in one of the periods. There is however no significant difference on the level of benefit of public innovation support from EU institutions or national institutions, when considered local and national levels of government together.

To avoid problems of endogeneity common on cross-sectional analyses, we use the characteristics of firms in the first period as explanatory variables of the public support that they received in the second period.

Dependent variables

Our dependent variables are the use of public support provided by local government (LOCAL), central government or national agencies (CENTRAL), and by European organizations (EUROPEAN). In the CIS, firms are asked whether or not they have received public innovation support from different levels of government (Local, central including national agencies, and European organizations). Thus, these variables are taken directly from the firms' answers to the questionnaire.

Moreover, based on the information contained on these variables, we created the forth dependent variable (TYPE_SUPPORT), as a categorical variable that differentiates firms according to information on their choice of specific forms of alignment of public innovation support provided by different levels of decision-making. In particular, TYPE_SUPPORT differentiates firms that received no public support, firms that received *only* public innovation support provided by the local/regional government, firms that received only support granted by the central national government or national agencies, firms that received support from both local/regional and central national levels of government (but not from European organizations), firms that received *only* public innovation support provided by European organizations, and firms that were granted public support provided by both European and any national level, i.e. local and/or central support. In our regression analysis, dependent variables provide information on the public innovation support in the period 2002-2004.

Table 1 shows the share of firms in our sample that received public innovation support from different levels of government in France and in the UK.

[Insert Table 1 about here]

In both countries, about 20% of firm received at least support from one level of government. However, the likelihood of accessing public innovation support across industrial sectors seems to be different, in France and in the UK. Comparing to the French counterparts, British firms active in specialized-suppliers and supplier-dominated industries seem more likely to benefit from public innovation support. Additionally, British science-based firms seem more likely to use mainly national provided public support (either only or both local and central support), while French science-based firms seem more to combine National and European supports.

Independent and control variables

According to our analytical framework, firms' motivation to apply and use of different types of public support is associated with the characteristics of their innovation development paths, the forms they organize and govern interaction with external actors for knowledge development, and the locus of their learning processes. On the policy-makers perspective, these characteristics and behaviour may provide an indication of the potential of firms to repeat benefits from different types of public innovation support. Hence, our independent variables characterize the innovative behaviour and experience of the firm in the period 1998-2000, while the dependent variables contain information on the use of public innovation support in the period 2002-2004.

To account for the innovation development paths and strategies of firms we include the following three variables, all measured in the period 1998-2000. The variable EXPLORATION is a proxy for the intensity of

firms involvement in widening the search space for innovation development, and consequently for their efforts to develop new knowledge and technologies. It is measured by the ratio of total firms' innovative investments on total firms' turnover. The variable EXPLOITATION provides information on the firms' organizational efforts to increase learning and innovative opportunities through learning-by-doing, through improvement of internal and external communication (learning-by-using and by-interacting). It contains information on whether the firm undertook changes in the marketing, work's organization, and knowledge management strategies. Additionally, to account for effectiveness of the exploration search paths in the development of new competences and products, we include the variable NEW-to-market product. This variable captures information on whether the firm has developed a new to the market product innovation.

To account for the forms in which firms organize and govern exchange and interaction with external actors for innovation development, we included three variables, measured in the period 1998-2000. The variable COLLABORATION provides information on whether or not the firm collaborated for innovation development. The variable CONTRACT provides information on firms' degree of outsourcing of innovation development activities. It is measured by the ratio of the investments made by firms to acquire external knowledge (extramural R &D activities and in the acquisition of other external knowledge) and the total amount that firm invested in both internal and external R&D activities (in intramural R&D activities, extramural R &D activities and in acquisition of other external knowledge). MARKET is a proxy for firms' reliance on market available technological inputs. It provides information on whether the firms' product and/or process innovation were developed by other firms and organizations or instead the product or process innovations undertaken by the firm were developed internally or in collaboration.

To account for the locus of firms' learning we include five variables, two variables capturing information on the locus of firms' market learning and three variables capturing information on the locus of firms' technological learning. INTERNATIONAL provides information on whether the most significant market of the firm is the international market.[3] LOCAL provides information on whether the most significant market of the firm is the local or regional market. The reference category is the variable National that provides information on whether the national market is the most significant market of the firm. To capture information on the technological locus of firms' learning, we include information of firms' industry activity. In particular, we control for the industrial activity of the firms using the Pavitt's taxonomy (1984): supplier-dominated, scale-intensive, specialized-suppliers and science-based.[4]

Control variables

[33] As a robusteness test, we rerun our models with the variable export intensity rather than with the variable International. Results are in all similar to those obtained with the variable International, shown in the paper. They are available upon request from the authors.

[4] As a robustness test, we rerun our models with the OECD taxonomy that distinguish industries in terms of the technology intensity of their processes and products: low-tech, medium-low tech, medium-high tech and high tech (Peneder, 2003). Results are equivalent to those shown on the paper. They are available upon request from the authors.

As the greatest users of public support are large firms and spin offs (Hetxner, 1989; Laredo, 1998), we include a control for on firms' size, start-ups and being part of a group. SIZE is measured by the logarithm of the number of employees. STARTUP is a dichotomous variable that provides information on whether or not the firm is a start-up. GROUP provides information on whether the firm is part of a group or instead an independent firm.

Table 2 reports the descriptive statistics of the dependent, independent and control variables. Table A in the Annex provides the correlation coefficients among the independent and control variables.

[Insert Table 2 about here]

4.2. Methodology

Relying on this data we proceed in two steps. First, we examine design of public support provided by different levels of policy-making using a demand side perspective, i.e. focusing on the innovation strategies and behaviours of firms that benefit from the support. Our dependent variables LOCAL, CENTRAL and EUROPEAN innovation support are dichotomous variables which are not mutually exclusive and may be correlated. For this purpose, we rely on the Multivariate Probit maximum likelihood estimation method that allows the simultaneous estimation of the use of public innovation support provided by different levels of government. The model estimates the probability for benefit of each public innovation support as a function of the other supports and a set of explanatory variables. In other words, this method allows the simultaneous estimation of more than one binary probit equation with correlated disturbances. By allowing disturbances across equations to be freely correlated, the method allows to test for the correlation between dependent variables conditional on a certain number of common explanatory variables (Galia and Legros, 2004, p. 1193), thus providing insights into the extent of complementary of substitution between them.

Second, we examine how firms align public innovation support provided by different levels of government. Our dependent variable is the categorical variable TYPE_SUPPORT. Each form of alignment is mutually exclusive, i.e. each category identifies firms that have chosen exclusively a specific form of alignment; categories do not overlap. We estimate the probability of each specific form of alignment relying on a Multinomial logit regression model. The multinomial logit estimates the probability of each form of alignment in comparison with a basis category, which in our case is the category of having benefit from no public support.

5. Alignment of innovation policy objectives, a demand side perspective

In this section, first we examine the innovation strategies of users of public support provided by different levels of policy-making. Second, we examine how firms align different innovation policy objectives with their innovation strategies.

5.1. Characteristics of users of public innovation support provided by different levels of decision-making

Table 3 shows the results of the Multivariate Probit estimation of firms' probability to be granted LOCAL, CENTRAL, EUROPEAN public support for innovation, for French and British observations pooled (first three columns) and separately.

[Insert Table 3 about here]

When considering French and British observations pooled, our results suggest that Local support is more likely to be granted to firms that focus on both exploitation and exploration search paths for innovation development (Table 3, column 1). Local support is also more likely to benefit start-ups and larger firms, as well as firms with experience in collaborating for innovation development.

When we consider the observations for the UK and France separately, results suggest some differences in the type of public innovation support provided by the British and the French local authorities. British local support is less likely to benefit large established firms active in supplier-dominated industries (Table 3, column 4). French local support is more likely to be used by firms that rely on exploration paths for innovation development, and that efficiently launch new-market products, as well as by firms with experience in collaborating for innovation development (Table 3, column 7).

When considering French and British observations pooled, our results suggest that Central support provided from central national government or agencies attract large firms, firms with experience in collaboration for innovation development, and firms that rely on exploitative search paths for innovation development (Table 3, column 2). This level of government seems to privilege science-based and specialized-suppliers industrial activities. The variable Exploitation is not significant when considering the British and the French observations separately (Table 3, column, 5 and 8). Instead, the variable International is significant for the French observations.

When considering French and British observations pooled, our results suggest that European innovation support reaches mainly large firms active in international markets, and in science-intensive industries (Table 3, column 6). European innovation support benefits mostly firms that rely on explorative paths for the innovation development, as well as firms that engage in shared collaborative governance of interaction with other actors for innovation development. Firms that organize and manage interaction with external actors

through contracts seem less likely to benefit from European innovation support. When considering the French observations individually, we find very similar results, the only difference with the results from the pooled sample relates to the non-significance of the negative coefficient of Contract (Table 3, column 9). Instead, when considering the British observations individually, the only variables weakly associated with the use of only European support are exploitative development path and collaboration experience (at 6% one-tailed Table 3, column 6).

Examining the complementarities among the three types of support, we find some differences in France and the UK. In France, the local, central and European innovation support are correlated and complementary. The strongest correlation is found between central and European support (0.70), and the weakness between local and European support (0.49). In the UK, only the correlation between local and central is significant (0.45).

Overall, these results suggest that British and French public innovation (especially local support) target firms with different innovation strategies. French local and central support provides incentives for collaborative governance of interaction with external actors for innovation development. French local innovation support encourages mainly explorative technological developments, which is in line with results of Bodas Freitas and von Tunzelmann (2008), while central support provides an opportunity for firms with certain learning locus to align their innovation strategies. European support seems to reinforce the French national incentives. In other words, French public innovation support seems to be providing a learning ladder for firms to apply for European support.

British policy design shows instead less overlapping with the European innovation support. British central and local policy-levels focus more on providing support to specific learning locus rather than to specific innovation strategies for searching new innovation opportunities and for governing external interaction. British local innovation support seems to address mainly the needs of start-ups, while the central support seems to address instead the innovative objectives of firms active in science-based and specialized-suppliers industrial activities, especially those that can be best governed through collaborative arrangements. British firms' access to the European public support seems to be mostly independent from their innovation behaviour and strategies, which may be related to the design of national public innovation support, but also with the specificities of national industries.

5.2. Firms alignment of policy innovation objectives

Table 4 show the results of the Multinomial Probit estimations of the probability that British and French firms to undertake different forms of alignment of LOCAL, CENTRAL, EUROPEAN public support for innovation.

[Insert Table 4 about here]

Only local support does not seem to permit British firms active in specialized-suppliers and to a lesser extent supplier-dominated industrial activities to align their innovation objectives. To an extent *only local support* seems more likely to be chosen by British start-ups and firms active in the international markets (Table 4, column 1). *Only local support* is less likely to be the alignment chosen by French firms that rely on market for sourcing relevant technological inputs (Table 4, column 6).

Only central national support aligns the needs of the British specialized-suppliers and science-based industrial activities, but not those of the start-ups (Table 4, column 2). To certain extent, UK large firms with collaborative experience are more likely to use only central innovation support. In France, *only central national innovation support* aligns the needs of firms active in specialised-suppliers activities, with experience in collaborating for innovation development (Table 4, column 7). Instead, the use of *only central innovation support* does not permit to align the needs of French firms with strong focus on exploration strategies for innovation development (Table 4, column 7). There is weak evidence that *only central national support* aligns the innovation objectives of French large firms with international market focus, but not those that rely on contracts for knowledge development and transfer.

The *national support* (combined use of local and central support) allows French firms to align their objectives of collaborative/ shared governance of interaction with external actors for knowledge development and transfer (Table 4, column 8). In the UK, *national support* is an alignment choice of large firms (Table 4, column 3).

Only European support is more likely among British firms that rely on exploration path for innovation development, as well as on collaboration, and on the market as forms of governing development of technological inputs. European support alone is less likely among British start-ups and among firms with local learning focus and active on traditional supplier-dominated activities (Table 4, column 4). In France, *only European support* for innovation permits large firms to align their innovation objectives but not firms, whose learning locus is the local market or the traditional supplier-dominated activities (Table 4, column 9).

In the UK, the *combination of public innovation support provided by European organizations and any national policy-level* is an alignment strategy of firms that rely on exploitation strategies for innovation development that do not rely on markets for innovation development, and whose market learning locus is not the local (Table 4, column 5). To a certain extent, firms that engage in collaboration for knowledge development, and established firms rather than start-ups are more likely to be found on this group. In France, *the combination of European and any national public innovation support* is an alignment strategy of firms that rely on exploration paths for the development of new competences and technologies, on collaboration rather than on contracts to develop and exchange technological knowledge. Additionally, French firms, whose learning locus reside in international markets and in science-based industrial activities, are more likely to be found in this group, as well as large and start-ups firms (Table 4, column 10).

Overall, our results suggest that firms coordinate and align the innovation objectives of different policy-making levels, especially between national and European policy levels. Moreover, our results suggest that British local and central policy-makers seem to coordinate efficiently public support for specific learning locus, while in French policy-makers seem to be mainly coordinating support for different innovation development strategies. Therefore, EU support allows French firms, which do not use national support, to align their market and technological learning locus, while it provides British firms with the possibility to align their focus on explorative paths, and on market and collaboration governance modes of innovation development.

6. Discussion and Conclusions

With the aim of getting a better understanding of the interactions between the design of the public support by different levels of policy-making and the firms' motivations and willingness to use them to foster their innovation development processes, this study has focused on the examination, from a demand-side perspective, of the alignment of the innovation objectives of different levels of policy-making.

We started by conceptualizing an analytical framework to examine the alignment of policy innovation objectives from a demand side perspective. The framework proposes that firms' use of public support provided by different levels of policy-making relates to the firms' specific technological and market learning locus, as well as with their strategies concerning knowledge development paths and organization of interaction with external actors for innovation development. Using this framework and firm-level data from the Community Innovation Survey relative to the periods 1998-2000 and 2002-2004, we analyse how French and British firms align the variety of forms of local, central and European innovation support available to them.

Our results suggest that differences in the design and forms of coordination of the French and British central and local innovation support.

In the UK, only local innovation support is mainly the alignment form chosen by firms that have specific learning locus in certain markets (international) and technologies (scale intensive and science-based). In France, only local innovation support is used by firms that do not rely on market available technological inputs. In both countries, the use of only central support seem associated with technology learning locus in specialized-suppliers (in the UK also science-based) industrial activities, and the use of collaboration to organize interaction for innovation development. In France, firms that align their innovation objectives by using only central support seem less likely to be engaged in exploratory development paths. These results suggest that in the UK, local and central policy-makers seem to be mainly coordinating support for specific learning locus, while in France, they seem to be coordinating support for specific innovation development strategies. Hence, in the UK are the large firms (with more resources and more diverse learning locus) that

combine the use of local and central public support, while, in France both central and local support are mainly used by firms that rely on collaboration for knowledge and technology exchanges with their system.

Given the peculiarities of the national public innovation support, the use of only EU support is not associated with any innovation development strategies of the French firms, but instead with their market and technological learning locus, while in the UK, it is also associated with explorative development paths and reliance on market and collaboration for innovation development. The combination of European and national supports is mainly the decision of French firms that rely on more explorative innovation development paths, active in international markets and in industries where inputs from science are relatively more important. In the UK, the combination of any national and European innovation support seems to provide incentives for pursuing exploitative development paths for innovation development, especially for firms whose most important market is not the local one. In both the UK and France, this form of alignment is chosen by firms that used collaboration for innovation development rather than contracts or the market.

These results suggest differences in the national coordination of with European policy-making. British local central supports for innovation seem designed and organized across specific technological and market learning locus rather than across specific knowledge objectives, as in France. The French local innovation support, in line with the European innovation support, seems to provide incentives for vertical technological developments and consequently motivate firms relying on exploration paths for innovation development. Local support in France seems to be somehow more vertical in its innovation objectives than the central innovation support, and that the British local one. British local support seems particularly concerned with providing support for start-ups. Both British and French central supports seem to support technological development in certain technological areas through collaboration. This is in line with Bodas and von Tunzelmann (2008) that show French local support for innovation tends to be more Vertical in its objectives when compared to the British one, and that in both countries central support became increasingly specific in its objectives supporting technological development through collaboration. Thus, the European support seems to provide more incentives for explorative development paths than the British local and central supports, but not than the French ones. In other words, French public innovation support seems to be providing a learning ladder for firms to apply for European support, while the British policy design shows instead less overlapping with the European innovation support.

In sum, British local and central policy-makers seem to focus on coordinating support for specific learning locus, while French policy-makers seem to be mainly coordinated to address different innovation development strategies. Moreover, our results suggest that firms coordinate and align the innovation objectives of different policy-making levels.

Our results provide some policy implications. Focus on the characteristics of policy design and on the innovation strategies of firms that use public innovation support provide complementary perspectives on how policy innovation objectives are aligned in an economy. Therefore, policy efforts to translate policy objectives into specific strategies that policies aim to foster at firm level might permit both an improvement in the design and in the coordination of policy-making. Additionally, a dialectical analysis between policy design characteristics and innovation strategies of firms (users/targets of a specific policy) might permit policy makers to explicit address whether the intention of policy design is to create specific incentives aimed at a change of firms' behaviour or to reinforce certain innovation strategies in firms. At the light of existing literature on the type of innovation support provided by European, British and French policies, our results seem to generally suggest that public financial incentives for innovation are aimed to foster reinforcement of certain strategies rather than a change in behaviour. However, further research is needed to examine this issue.

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Table 1. Share of manufacturing firms by industry activity that benefitted from public support provided by organizations at local, central-national and by European levels, in the UK and France, in 2002-2004.

	UK					France				
	Supplier-dominated	Scale-intensive	Specialised suppliers	Science intensive	Total	Supplier-dominated	Scale-intensive	Specialised suppliers	Science intensive	Total
NO support	89%	84%	66%	67%	325	91%	83%	71%	66%	1112
Only LOCAL	3%	6%	0%	7%	20	2%	1%	1%	2%	18
Only CENTRAL	5%	5%	21%	17%	36	5%	8%	17%	9%	125
Only NATIONAL (local & central)	2%	3%	5%	4%	12	0%	2%	3%	1%	24
Only EUROPEAN	0%	1%	3%	4%	6	0%	2%	2%	4%	25
European & any national	1%	1%	5%	1%	6	2%	4%	7%	18%	83
Any type of support	11%	16%	34%	33%	20%	9%	17%	29%	34%	20%
Total n. firms	116	176	38	75	405	240	736	192	219	1387

Table 2. Descriptive statistics of DEPDENDENT independent and control variables.

			Minimum	Maximum	Mean	Std. Deviation
Independent Variables						
Innovation development paths /strategies	Exploration	Ratio of total innovative expenditures on total turnover	0	83.57	4.01	9.45
	Exploitation	Proportion of changes undertook in three internal learning efforts: marketing, work organization and knowledge management strategies	0	2	0.30	0.48
	New-market prod	1 if the developed a product new to the market, 0 otherwise	0	1	0.33	0.47
Forms of interaction and organization of technology development	Market	1 if the innovation was developed by other organizations; 0 if the firm developed innovation alone or in collaboration	0	1	.040	.19
	Contract	Proportion of the investments in extramural R &D activities and in the acquisition of other external knowledge on the total R&D expenditure (i.e. intramural, extramural R &D activities and acquisition of other external knowledge)	0	1	0.09	0.23
	Collaboration	1 of the firm collaborate for innovation development, 0 otherwise	0	1	0.34	0.48
Learning Locus	International	1 if the most significant market of the firm is the international one, 0 otherwise	0	1	0.47	0.50
	National	1 if the most significant market of the firm is the national one, 0 otherwise	0	1	0.44	0.50
	Local	Dichotomous variable, takes value 1 if the most significant market of the firm is the local one, 0 otherwise	0	1	0.09	0.29
	Supplier-dominated	1 if the firm is active in supplier-dominated industries, 0 otherwise	0	1	0.20	0.40
	Scale-intensive	1 if the firm is active in scale-intensive industries, 0 otherwise	0	1	0.51	0.50
	Specialized-suppliers	1 if the firm is active in specialized-suppliers industries, 0 otherwise	0	1	0.13	0.33
	Science-based	1 if the firm is active in science-based industries, 0 otherwise	0	1	0.16	0.37
Controls	Size	Logarithm of number of employees	1.61	11.47	5.65	1.34
	Start up	1 if the firm is a start up, 0 otherwise	0	1	0.04	0.19
	Group	1 if the firm is part of a group, 0 otherwise	0	1	0.84	0.37
Dependent variables	Type support	Categorical variable, takes 1 if firm only benefitted from local support, 2 if benefitted only from central national support, 3 if benefitted from local and central national supports, 4 if benefited only from EU support, 5 if benefitted from EU and any national support	0	5	0.58	1.32
	Local	1 if the firm benefited in the second period of Local public support for innovation; 0 otherwise	0	1	0.07	0.25
	Central	1 if the firm benefited in the second period of Central public support for innovation provided by national government or agencies; 0 otherwise	0	1	0.16	0.365
	European	1 if the firm benefited in the second period of European public support for innovation; 0 otherwise	0	1	0.07	0.25

1746 Observations

Table 3. Multivariate Probit estimates of LOCAL, CENTRAL and EUROPEAN public innovation support provided by different decision-making levels.

		France and UK			UK			France		
		LOCAL	**CENTRAL**	**EUROPEAN**	**LOCAL**	**CENTRAL**	**EUROPEAN**	**LOCAL**	**CENTRAL**	**EUROPEAN**
Innovation development paths	Exploration	**0.0092****	0.00336	**0.0150*****	0.00879	0.0127	0.0211	**0.00961****	0.00336	**0.0140*****
		(0.00459)	(0.00406)	(0.00428)	(0.0196)	(0.0158)	(0.0197)	(0.00485)	(0.00424)	(0.00438)
	Exploitation	**0.227****	**0.197****	0.172	0.0938	0.163	0.362	-0.165	0.188	0.284
		(0.0953)	(0.0784)	(0.110)	(0.146)	(0.130)	(0.228)	(0.273)	(0.194)	(0.241)
	New-market prod	0.0296	0.0504	0.0407	-0.390	-0.0806	-0.145	**0.223***	0.0637	0.0243
		(0.114)	(0.0878)	(0.118)	(0.299)	(0.223)	(0.367)	(0.132)	(0.0974)	(0.126)
Forms of interaction and organization of technology development	Market	0.254	-0.114	0.234	0.322	0.154	0.448	-0.133	-0.377	0.157
		(0.221)	(0.200)	(0.238)	(0.344)	(0.329)	(0.497)	(0.354)	(0.277)	(0.300)
	Contract	-0.243	-0.214	**-0.459***	-0.259	-0.0170	-0.993	-0.171	-0.312	-0.276
		(0.228)	(0.176)	(0.265)	(0.400)	(0.295)	(0.744)	(0.305)	(0.222)	(0.298)
	Collaboration	**0.195***	**0.428*****	**0.485*****	0.0412	**0.418****	0.572	**0.357****	**0.431*****	**0.432*****
		(0.118)	(0.0901)	(0.126)	(0.264)	(0.209)	(0.356)	(0.144)	(0.103)	(0.139)
Learning Locus	International	0.123	0.117	**0.282****	0.315	-0.160	0.150	0.138	**0.179***	**0.276***
		(0.116)	(0.0891)	(0.132)	(0.244)	(0.212)	(0.338)	(0.142)	(0.101)	(0.146)
	Local	0.0924	-0.236	-0.433	0.0653	-0.0656	-3.359	0.0828	-0.235	-0.242
		(0.197)	(0.184)	(0.409)	(0.310)	(0.292)	(179.0)	(0.277)	(0.231)	(0.428)
	Supplier-dominated	-0.0769	-0.152	-0.265	**-0.502***	-0.114	-0.500	0.134	-0.111	-0.156
		(0.146)	(0.122)	(0.208)	(0.267)	(0.235)	(0.507)	(0.186)	(0.147)	(0.238)
	Specialized-suppliers	-0.131	**0.463*****	0.0511	-0.452	**0.773*****	0.359	-0.0961	**0.340*****	-0.0115
		(0.161)	(0.109)	(0.157)	(0.381)	(0.268)	(0.417)	(0.186)	(0.122)	(0.170)
	Science-based	0.187	**0.340*****	**0.426*****	0.000579	**0.521****	0.0657	0.204	**0.280****	**0.498*****
		(0.131)	(0.105)	(0.131)	(0.262)	(0.230)	(0.401)	(0.158)	(0.122)	(0.142)
Controls	Size	**0.110****	**0.189*****	**0.266*****	**0.203****	**0.204****	0.201	**0.0901***	**0.162*****	**0.230*****
		(0.0442)	(0.0368)	(0.0494)	(0.0993)	(0.0901)	(0.162)	(0.0518)	(0.0412)	(0.0529)
	Start up	**0.520****	-0.0209	0.273	**0.909*****	-0.311	-3.741	0.233	0.139	0.431
		(0.205)	(0.212)	(0.260)	(0.342)	(0.476)	(266.0)	(0.289)	(0.241)	(0.288)
	Group	-0.247	-0.134	-0.221	-0.395	-0.394	-0.264	-0.221	0.0795	-0.0480
		(0.152)	(0.131)	(0.200)	(0.280)	(0.242)	(0.457)	(0.195)	(0.167)	(0.247)
	Constant	-2.282***	-2.418***	-3.579***	-2.243***	-2.332***	-3.334***	-2.385***	-2.451***	-3.499***
		(0.246)	(0.210)	(0.313)	(0.493)	(0.455)	(0.880)	(0.307)	(0.248)	(0.358)
	atrho21	0.501***			0.456***			0.560***		

		(0.0599)	(0.131)	(0.0741)
	atrho31	0.437***	0.304	0.490***
		(0.0696)	(0.186)	(0.0860)
	atrho32	0.634***	0.355*	0.702***
		(0.0729)	(0.208)	(0.0794)
	Observations	1746	393	1353
	Wald Test	314.9***	69.6***	241.7***
	df	42	42	42
	log Likelihood	-1280.2	-273.1	-982

Note: Robust standard errors in brackets. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1

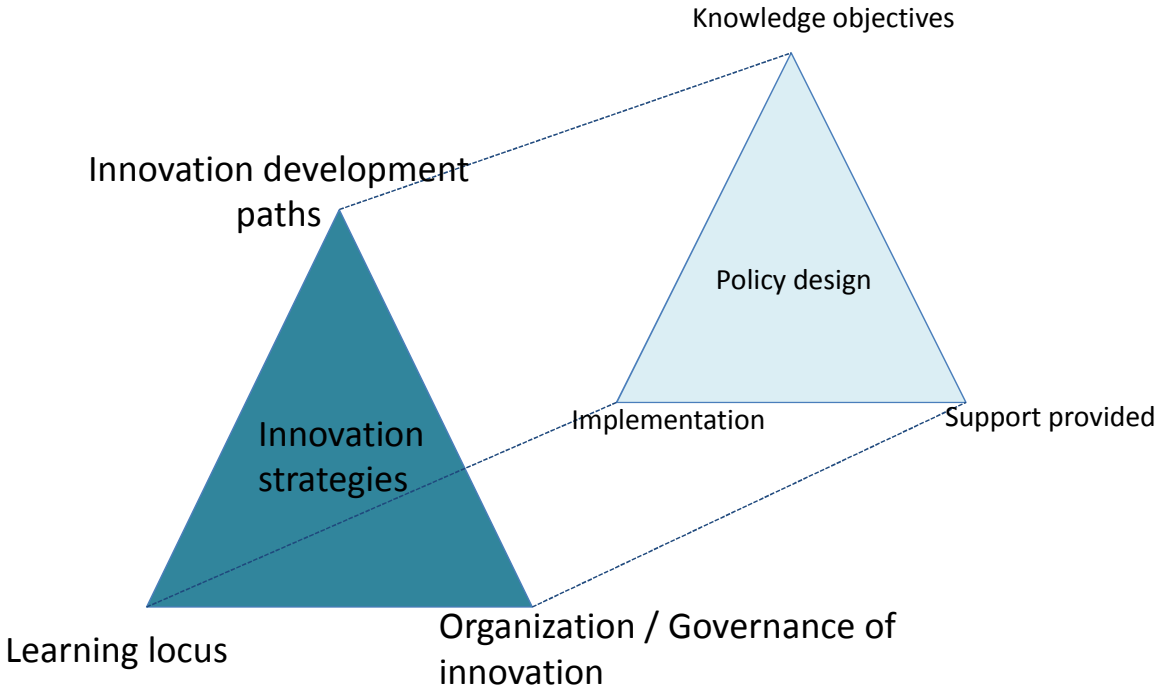
Table 4. Multinomial Logit estimates of different forms of alignment of public innovation support provided by different decision-making levels.

		UK					France				
		ONLY LOCAL	ONLY CENTRAL	NATIONAL (local &central)	ONLY EUROPEAN	NATIONAL AND EUROPEAN	ONLY LOCAL	ONLY CENTRAL	NATIONAL (local &central)	ONLY EUROPEAN	NATIONAL AND EUROPEAN
Innovation development paths	Exploration	0.039	0.039	0.045	**0.106****	-0.080	0.011	**-0.022***	0.004	0.016	**0.024****
		[0.253]	[0.177]	[0.323]	[0.008]	[0.334]	[0.031]	[0.011]	[0.017]	[0.018]	[0.009]
	Exploitation	0.148	0.306	0.112	0.724	**1.177***	-1.483	0.359	-0.868	0.614	0.813
		[0.708]	[0.231]	[0.846]	[0.368]	[0.019]	[1.383]	[0.408]	[0.802]	[0.928]	[0.526]
	New-market prod	-1.599	-0.124	-0.493	-0.389	-0.112	0.843	0.051	0.730	-0.343	0.147
		[0.152]	[0.787]	[0.563]	[0.631]	[0.871]	[0.656]	[0.218]	[0.602]	[0.476]	[0.292]
Forms of interaction and organization of technology development	Market	0.609	0.420	1.180	**2.301****	**-15.386*****	**-14.789*****	-1.463	-0.158	0.080	0.296
		[0.524]	[0.550]	[0.207]	[0.008]	[0.000]	[0.425]	[1.030]	[1.073]	[1.137]	[0.640]
	Contract	-1.276	-0.100	0.106	-3.158	-1.628	-0.301	**-0.854+**	0.259	0.133	**-1.477***
		[0.327]	[0.867]	[0.932]	[0.123]	[0.441]	[1.000]	[0.507]	[0.704]	[0.729]	[0.677]
	Collaboration	-0.215	**0.740+**	0.616	**1.216***	**1.305+**	-0.193	**0.562***	**1.494***	0.572	**1.294*****
		[0.743]	[0.098]	[0.419]	[0.030]	[0.076]	[0.683]	[0.237]	[0.615]	[0.458]	[0.358]
Learning Locus	International	**1.153+**	-0.297	0.021	0.741	-0.048	0.394	**0.453+**	-0.199	0.598	**0.970***
		[0.064]	[0.504]	[0.981]	[0.443]	[0.964]	[0.549]	[0.232]	[0.497]	[0.460]	[0.413]
	Local	0.577	-0.037	-0.243	**-14.568*****	**-14.923*****	-0.126	-1.087	0.704	**-13.738*****	0.560
		[0.481]	[0.956]	[0.844]	[0.000]	[0.000]	[1.136]	[0.737]	[0.839]	[0.575]	[1.150]
	Supplier-dominated	**-1.183+**	-0.012	-0.689	**-15.487*****	-0.612	0.577	-0.334	-1.071	**-14.209*****	0.347
		[0.070]	[0.983]	[0.477]	[0.000]	[0.597]	[0.623]	[0.339]	[1.081]	[0.378]	[0.574]
	Specialized-suppliers	**-15.99*****	**1.652****	0.816	0.682	1.650	-0.758	**0.735****	0.548	-0.272	0.473
		[0.000]	[0.006]	[0.389]	[0.661]	[0.173]	[1.037]	[0.247]	[0.512]	[0.626]	[0.380]
	Science-based	0.014	**1.331***	0.228	0.240	0.130	0.580	0.090	-0.285	0.324	**1.344*****
		[0.985]	[0.012]	[0.783]	[0.788]	[0.922]	[0.635]	[0.288]	[0.690]	[0.539]	[0.305]
Controls	Size	**0.420+**	**0.274+**	**0.519***	0.311	0.784	0.100	**0.184+**	0.143	**0.492***	**0.641*****
		[0.100]	[0.082]	[0.035]	[0.316]	[0.378]	[0.180]	[0.096]	[0.179]	[0.219]	[0.147]
	Start up	**2.082****	**-15.371*****	1.060	**-14.580*****	**-14.893*****	0.435	-0.033	0.514	0.295	**1.099***
		[0.003]	[0.000]	[0.416]	[0.000]	[0.000]	[1.006]	[0.643]	[1.006]	[1.029]	[0.553]
	Group	-0.877	-0.646	-1.077	-0.745	-1.467	-0.528	0.447	-0.011	-0.604	0.453
		[0.180]	[0.232]	[0.277]	[0.545]	[0.391]	[0.767]	[0.419]	[0.740]	[0.794]	[0.710]
	Constant	-4.643**	-4.190***	-5.728***	-6.751***	-8.617*	-4.741***	-4.121***	-5.670***	-6.872***	-9.501***

		[0.003]	[0.000]	[0.000]	[0.000]	[0.049]	[0.992]	[0.562]	[1.140]	[1.593]	[1.211]
	Observations	393					1353				
	Wald Test	10770***					7742***				
	df	70					70				
	log Likelihood	-253.9					-873.0				
	Pseudo R Squared	0.165					0.153				

Note: Robust standard errors in brackets. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1

Figure 1. From a supply-side to a demand-side approach to examine alignment of innovation policy objectives



Note: Elaborated by the authors

ANNEX

Table A. Correlation coefficients among independent and control variables

	Size	Start	Group	Exploration	Exploitation.	New-market prod	Market	Contract	Collab.	Intern	National	Local	Sup_dom	Scale	Specialized	Science
Size	1															
Start	-0.04	1														
Group	0.45**	-0.03	1													
Exploration	0.21**	0.01	0.08**	1												
Exploitation.	0.06*	0.04	0.03	0.02	1											
New-market prod	0.31**	0.01	0.15**	0.27**	0.04	1										
Market	0.02	-0.01	-0.01	0.02	0.01	-0.13	1									
Contract	0.12**	0	0.06*	0.18**	0.14**	0.14**	0.10**	1								
Collab.	0.38**	-0.03	0.2**	0.29**	.078**	0.42**	0.06*	0.20**	1							
Intern	0.35**	-0.02	0.19**	0.24**	-0.04	0.28**	-0.05*	0.11**	0.3**	1						
National	-0.25**	0.02	-0.13**	-0.18**	0.06**	-0.19**	0.03	-0.08**	-0.21**	-0.83**	1					
Local	-0.18**	-0.01	-0.1**	-0.12**	-0.04	-0.17**	0.04	-0.06*	-0.15**	-0.30**	-0.28**	1				
Sup_dom	-0.20**	0.05*	-0.16**	-0.13**	-0.01	-0.17**	-0.04	-0.12**	-0.21**	-0.18**	0.17**	0.03	1			
Scale	0.03	0	0.05*	-0.12**	-0.08**	-0.03	-0.01	0.07**	-0.02	-0.09**	0.04	0.09**	-0.51**	1		
Specialized	0.05*	-0.02	0.05*	0.1**	0.02	0.13**	0	0.03	0.09**	0.15**	-0.11**	-0.07**	-0.19**	-0.39**	1	
Science	0.13**	-0.03	0.05*	0.22**	0.1**	0.11**	0.05*	0.01	0.17**	0.18**	-0.13**	-0.09**	-0.22**	-0.45**	-0.17**	1