Tight public budgets, high social expectations: factors influencing revenue structure of R&I foundations in Spain

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Abstract

Research and innovation (R&I) foundations have potential access to all different types of revenue sources, including contributed, earned and investment income. However, the new context derived from economic crisis has produced a drastic reduction of public support and constrained certain sources of private funding; while simultaneously increasing social expectations about the role philanthropic contributions and foundations themselves should play in the fulfilment of increasing societal needs and challenges in the field of R&I. This research aims at understanding identifying the organizational factors that influence the revenue structure of foundations devoted to R&I in Spain. Empirical research is based on a survey to a representative sample of 208 Spanish foundations that provided valid responses to the survey of the European Foundations for Research and Innovation (EUFORI) study. Results are discussed, conclussions drawn and further lines of research outlined.

1. Introduction

Research on issues of revenue choice and mix of funding streams by nonprofit organizations (NPO) has generated an extensive body of literature (Chang & Tuckman, 2010). On the one hand, the ability of NPOs to preserve the value of their assets, to raise funds and to attract non-monetary resources is crucial for their mission to be accomplished, or to simply sustain their mission-related activities over time (Palmer and Randall, 2002). On the other hand, resource dependence theory suggests NPO behavior reflects its dependence on external resources and demands of actors controlling them. Under this perspective, revenue structure –defined both in terms of types of sources in the mix and degree of diversification- is also relevant because the level of resource dependence determines organizational responses (Pfeffer and Salancik, 1978).

NPOs usually depend on four basic types of revenue to support their mission-related work: 1) philanthropic contributions (individual donations, corporate contributions, grants from foundations

and other NPOs); 2) funding from government (both through subsidies and through contracting out of mission related services); 3) fees from commercial activity, which might include selling goods and services in the market, to individuals or businesses, related or unrelated to the nonprofit's mission; and 4) investment income from endowments and other investments such as financial or fixed assets. Another traditional typology distinguishes between contributed income -private donations and public subsidies- and earned income -fees for services and goods to both private and public clients- (Andreasen, 2012; Fischer et al., 2011; Froelich 1999; Anheier et al., 1997).

A main stream of research holds that a balance between multiple revenue streams, avoiding excessive dependence on any single one, may boost the sustainability and financial strength of NPOs by stabilizing financial positions and reducing vulnerability to financial shocks such as financial crises or interruptions in funding (Yan, Denison, Butler, 2009). On the contrary, dependence on any single revenue source is seen as risky and undesirable. Thus revenue diversification has been traditionally endorsed as a key strategy for reducing revenue volatility and supporting organizational sustainability (Chang and Tuckman 1994; Frumkin and Keating 2002). Furthermore, revenue diversification has been seen as a necessary step to effectively support foundations' missions in a challenging resource environment like the one NPOs face nowadays (Carroll & Slater, 2009; Fischer et al., 2011).

However, revenue diversification may be achieved at the price of transaction costs and ethical hurdles. NPOs must dedicate substantial resources and attention to revenue acquisition, engaging in a wide variety of activities that are necessary to provide financial support to mission accomplishment, but peripheral to the mission itself, with the subsequent risk of goal displacement (Froelich 1999). In this context, a minority of recent empirical studies advocates for revenue concentration, arguing that the benefits of maintaining multiple streams of funding are outnumbered by the costs, either monetary or non-monetary. NPOs with highly concentrated and specialized forms of revenue benefit from lower administrative and fund-raising expenses, although these savings in overhead go in hand with greater exposure to swings in financial positions (Frumkin and Keating 2011). Diversification achieved through an increasing share of earned income from commercial activities exacerbates social and ethical conflicts with donors and other key constituencies (Khieng, 2013). The latest empirical evidence demonstrates that revenue concentration is positively associated with a growth in nonprofits' financial capacity, particularly when measured as total revenues, and that the necessary investments in administrative and fundraising support are not in the form of high executive salaries (Chikoto and Neely, 2014).

Despite contradictions and ambiguities in previous literature, this impressive body of research has served to throw light on the considerable complexities of both the decisions NPOs face when choosing the mix and degree of diversification of their funding sources, and the effects of those decisions on organizational behavior and stakeholder responses (Khieng, 2013; Kearns, Bell, Deem, McShane, 2014). Nonprofit leaders should therefore ground their resource mobilization strategies upon a careful balance of potential benefits and pitfalls of alternative revenue structures within the framework of specific contextual and organizational factors. Previous literature points out that nonprofits facing different exogenous shocks, operating in different types of subsectors, and with different types of organizational models face different challenges when it comes to deciding on the

mix and diversification of revenue sources. Against such theoretical and empirical background, the goal of this paper is precisely to gain insight into the differences in the organizational characteristics of foundations that explain or are related to their revenue structure.

Our empirical exercise aims at identifying the organizational factors that influence the revenue structure of foundations devoted to Research and Innovation (R&I), in the specific context of recent cuts in public funding for a sector traditionally dependent on government funding, coupled with enhanced expectations about the role private foundations should play in the advancement of R&I. In order to fulfil that goal, the contextual and organizational features of Spanish R&I foundations are described in the first place. Secondly, an empirical exercise is performed, based on a survey to a representative sample of 208 Spanish foundations that provided valid responses to the survey of the European Foundations for Research and Innovation (EUFORI) study. A logistic regression is used to test which factors significantly influence that foundations resort to a particular revenue source. Furthermore, the factors related to the degree of diversification of revenue sources are explored. Conclusions and further lines of research are outlined.

2. Contextual factors affecting R&I foundations in Spain: tight public budgets, high social expectations

Until very recently, government grants and contracts have been an important funding source for some nonprofit subsectors, particularly for social service organizations and, in the case of Spain, also for organizations in the field of R&I. However, the new context derived from economic crisis has produced a drastic reduction of public support and limited certain sources of private funding; while simultaneously increasing social expectations about the role foundations should play in the fulfilment of public benefit goals and increasing societal needs (Never, 2011). Philanthropic institutions are increasingly expected to contribute filling the broadening gap between resources and needs, through mobilization of their own capabilities to earn income and to leverage private donations from individuals or corporations. Spanish foundations which main field of activity is research and innovation (R&I) provide a case in hand to explore the organizational factors influencing their revenue structure in the context of this growing gap between public resources available to directly or indirectly support their operations (through subsidies, contracts or cross-sector partnerships), and expectations by relevant stakeholders about their role of mobilizing new sources of revenue for R&I.

Public funding has been key for the recent advancement of research and innovation (R&I) in Spain, as the government has made a firm and irrevocable bet for excellence and internationalization in science during the last decade, resulting in increased relevance of Spanish researchers (particularly in the biomedical field) and growing participation in the EC Framework Programme. Although development of R&I in Spain still lags behind relative to the economic and demographic weight of the country and to comparable countries, important investments, mainly of public origin, have been made during the last two decades in research infrastructures and human resources; resulting in both quantitative (expenditures, employment) and qualitative (internationalization, active policies, involvement of business actors) advancements. By contrast, R&D effort by companies, both national and multinational, still ranks among the lowest within the EU, as it amounts to only around 50% of

total R&D expenditures. Public-private partnerships and triple helix schemes are scarce, and many fail or operate below potential (Rey & Alvarez, 2015).

Unfortunately, economic turmoil has challenged those achievements as public funding for R&I has been subject to the largest cuts in relative terms. Expenditures in R&D in Spain in 2012 amounted to 13,392 million euros (equivalent to 1.3% of GDP), after a 5.6% decrease relative to previous year. As far as sectors executing those expenditures are concerned, businesses contributed with the largest portion (53% of total), followed by higher education institutions (27.7%), public administrations (19.1%) and nonprofit organizations –mainly but not exclusively foundations- (0.2% of total) (Rey & Alvarez, 2015).

From a policy perspective, most relevant recent developments in the field of R&I have consisted in the passage of the Spanish Strategy for Science & Technology and Innovation (2013-2020) and the National Plan of Scientific & Technical Research and Innovation (2013-2016). The general purpose of the Strategy is to promote scientific, technological and business leadership in the country and to improve the capacity to innovate of Spanish society and economy. It aims at fostering the collaboration of all relevant actors, both public and private, in the context of a full alignment of the national system with the goals deployed by the European Union trough the "Union for Innovation" and "Horizon 2020" frameworks. The Strategy is open to all types of beneficiaries, including nonprofit organizations that are headquartered in Spain and undertake R&D as its main activity according to their charter, generating scientific or technological knowledge. The Plan establishes the purposes and priorities of the national policy of research, development and innovation in the medium term. Both the Strategy and the Plan emphasize employability, research excellence, business leadership of R&D&I, and orientation of R&D&I towards societal challenges. Consequently, nonprofit organizations in general and foundations in particular are expected to become relevant participants in the context of active R&D&I policies, mobilizing private resources towards such strategic goals, and actively participating in the implementation of planning in the field through cross-sector partnerships. In fact, State, regional and local public administrations have (co)founded or (co)funded many of the private R&I foundations created in Spain during the last decades (Rey & Alvarez, 2015).

3. Which organizational factors influence the revenue structure of foundations? The case of Spanish R&I foundations

Our empirical exercise has been developed within the framework of *European Foundations for Research and Innovation* (EUFORI) Study. The aim of the EUFORI study is threefold: 1) to quantify and assess foundations' financial support and policies for research and innovation in the EU; 2) to make a comparative analysis between all EU Member States (plus Norway and Switzerland); and 3) to identify trends and the potential for future developments in this sector. The study was based on extensive data collection on the characteristics and activities of research-funding foundations in each country (http://euforistudy.eu/).

It should be noted, however, that our operational definition for R&I foundation follows the guidelines of the EUFORI study (VU, 2012) as departure point for the sake of international

comparability, but is more restrictive. Thus, in order to be included in the census of R&I foundations that was ellaborated for this study, organizations had to fulfill four requirements: 1) To comply with the definition of foundation utilized by the authors to ellaborate the census of Spanish foundations under the INAEF Project (Rey & Alvarez, 2011a, 2011b); 2) to comply with the EUFORI definition for R&I foundations (VU, 2012); 3) to have funded/operated research and/or innovation activities between 2005 and 2012; and 4) to consider R&I among their main areas of activity. Accordingly, public foundations were excluded from the census, but private foundations promoted and controlled by public entities ("*de iniciativa pública*") and complied with all four requirements were included in our census.

Taking into account our literature review about nonprofit revenue structures and previous considerations about the context of Spanish R&I foundations, we use this subsector as a case study in order to identify the organizational factors that are related to the revenue structure of these organizations. By revenue structure we refer to both funding sources included in the revenue mix, and degree of diversification of the mix, and accordingly try to answer the following research questions:

1. *Which organizational factors explain the likelihood that a R&I foundation has a certain type of revenue source?*

2. *Which organizational factors are related to the degree of revenue diversification of R&I foundations?*

In the following paragraphs we describe data collection for the sample of Spanish R&I foundations, explain methodology used and results obtained, and use those results to generate and discuss a series of propositions regarding our research questions under the light of the previous typological proposal.

3.1. Methodology: data collection

The first task consisted of ellaborating the first census of Spanish foundations developing or supporting R&I activities according to the aforementioned operational definition. The first challenge had to to with the fact that no publicly accessible and updated census of Spanish foundations as of the reference period of this study (2005-2012) exists, thus building such database was essential. The second challenge consisted of distinguishing R&I foundations according to our operating definition from a broader universe of foundations that mention in their bylaws or activity reports either "research" or "innovation" among their purposes. It should be noted that most Spanish foundations include in their bylaws a broad range of public benefit goals, in order not to limit their future operations and fundraising opportunities. Furthermore, they frequently label as 'research' activities that do not fit with the EUFORI conceptualisation of R&I foundations (e.g. publishing and disseminating academic works).

In order to overcome this double-fold challenge, multiple secondary information sources were combined in order to identify a representative group of R&I foundations according to our operating

definition. Sources included directories of scientific, research and technological development organisations under the State Protectorate of the Ministry of Education, Culture and Sports; relevant sectorial groups of the Spanish Association of Foundations; listings of scientific and technological parks and innovation centres under the Ministry of Economy and Competitiveness and the Basque, Catalan, Andalusian and Galician governments; as well as foundations' annual reports and websites.

The result of this editing and systematization process consisted of an initial database of 528 Spanish R&I foundations. The person in charge of the daily activities and decisions of the foundation, mainly the director or, whenever not available, the chairman, received the EUFORI online questionnaire to European R&I foundations by email, together with the cover letter inviting to participate in the study. Through specific analysis and further follow-up over the phone, the census of foundations that is the object of analysis was reduced to a maximum of 458 Spanish R&I foundations highly representative of the R&I foundation sector, as they do not only fit with the EUFORI definition but also are mainly devoted to R&D&I as the main area of activity.

The online questionnaire was filled out, to a greater or lesser extent, by a total of 229 foundations. 63.9% of the questionnaires were filled out in the complete version between April and August, 2013, while the remaining 36.1% were filled out in the short version between September and early November, 2013. However, as anticipated, not all respondents can be considered R&I foundations as 21 of them (9.2%) declared they had not been funding or operating research and/or innovation activities. Consequently, the final sample was reduced to 208 valid surveys, implying a response rate over the final census that is the object of analysis (458 foundations) of 45.4%. This largely improves the usual response rate for online surveys undertaken with the methodology hereby described, and involves a sample error, for the worst possible case of p=q=0.5, of +/-5.03%, within commonly accepted limits.

However, despite the high response rate, it should be noted that the considerable length of the initial (complete) version generated a significant increase in the number of missing values as the questionnaire advanced, preventing the conclusion of statistically significant results for some of the variables. Consequently, for this paper we have complemented data from the EUFORI online questionnaire through secondary sources -mainly the annual reports and websites- for the 208 foundations in our sample and for the following selection of key descriptor variables (Table 1):

Table 1. Key descriptors

Variables	**Options**
Age	• Year of establishment
Founders	• Private individual(s)/family • For profit-corporation • University • Research Institute • Hospital • Other non-profit organisations • Public sector (government, national or local)
Board members	• Number of board members
Model of operations	• Grant-making

	• Operating
Total income	• Amount in euros
Sources of total income	• Income from an endowment (interest, dividends and capital gains) • Donations from individuals (i.e. gifts, bequests) • Donations from for-profit corporations • Donations from other non-profit organizations (e.g. other foundations) • Income from government (EU, national and regional) • Service fees, sales, etc.
Total assets	• Amount in euros
Total expenditure	• Amount in euros
Research areas	• Basic research • Applied research
Thematic fields of Support	• Natural sciences (NS) • Engineering and technology (E&T) • Medical sciences (MS) • Agricultural sciences (AS) • Social and behavioral sciences (S&BS) • Humanities (H)

Source: http://euforistudy.eu/wp-content/uploads/2014/01/Questionnaire-English.pdf

3.2. Methodology: measuring the model variables

In order to answer our first research question - *Which organizational factors explain the likelihood that a R&I foundation has a certain type of revenue source?* -, a model to asses the influence of organizational factors on the sources of revenue employed by Spanish R&I foundations has been designed. Regarding our dependent variable, the following sources of total income have been considered: (1) income from an endowment, (2) income from government (EU, national, regional, local), (3) private donations (from individuals, for-profit corporations or other non-profit organizations), and (4) service fees, sales etc. We have accordingly included these four different types of income sources in our model.

As for the five independent variables considered, they can be classified in three distinct categories:

1. *Origin of the foundation.*
   1.1. *Age*. This variable refers to the number of years passed since the creation of each foundation. Atipic cases have been elimiated and its natural logarthm has been calculated, as the interaction effect of this variable with both income and assets will be calculated.
   1.2. *Financial Founder*.
      1.2.1. Private founders: individuals, for-profit corporations or other non-profit organizations.

1.2.2. Public founders: Public sector, University, Research institutes or Hospitals. This category is based on the relevant role of the public sector in Spain, either directly or indirectly, in the promotion of new foundations.

2. *Economic resources of the foundation.*
   2.1. *Total Income*. In million Euros. As with the variable *age*, atipicals have been eliminated and the natural logarithm calculated in order to estimate interaction effects.
   2.2. *Total Assets*. In million Euros. As with previous variables, atipicals have been eliminated and the natural logarithm calculated in order to estimate interaction effects.
3. Areas of activity
   3.1. *Research area*. Basic or applied.
   3.2. *Thematic fields of support*. 6 fields have been identified.

In order to answer our second research question - *Which organizational factors are related to the degree of revenue diversification of R&I foundations?-*, three additional variables have been selected from the EUFORI database in order to characterize Spanish R&I Foundations: number of board members, model of operations and total expenditure. Regarding the sources of revenue, the first two categories (income from an endowment and from government) have been merged into a single category of "traditional sources", as they have been the two most prevalent sources of revenue in the Spanish foundation sector from a historical perspective, and in order to facilitate the comparison with relatively new but fast-growing types of sources such as private donations and commercial revenues.

4. Results and discussion

4.1. Types of sources in the revenue mix

Results of a logistic regression are summarized in Table 2. The percentage of foundations that have each income source is specified in brackets. Nagelkerke's R^2 is a variability indicator (from 0 to 1) that explains to which extent the existence of each revenue source is determined by the set of independent variables in the model. Those explanatory variables that determine in a statistically significant way that the foundation has one of the revenue sources are marked in red.

Table 2. Types of sources in the revenue mix

	Income from government (68,9%)		Private Donations (65,2%)		Service Fees and Sales (71,3%)		Endowment (39%)	
	B	**Sig.**	**B**	**Sig.**	**B**	**Sig.**	**B**	**Sig.**
Financial Founder								
Private	-17,400	,998	-.033	,968	-1,510	,238	,440	,533
Public	3,514	,034	-1,745	,036	,255	,779	,530	,407
Age								
Log_Age (years since creation)	,504	,650	3,105	,046	-,272	,787	-,313	,702
Income								
Log_Income	7,432	,193	4,609	,278	7,047	,127	1,933	,542

Log_Income *Log_Age	-7,634	,215	20,357	,041	1,641	,789	-4,680	,288
Assets								
Log_Assets	-1,390	,881	-5,532	,383	-19,043	,027	8,360	,161
Log_Assets * Log Income	12,403	,223	-11,302	,228	-,874	,933	,183	,982
Areas of Research								
Basic research	-,371	,651	1,839	,015	-,243	-736	-,366	,499
Applied research	-21,830	,999	2,669	,173	-19,896	,999	19,848	,999
Thematic research fields								
Natural Sciences	-1,109	,302	,778	,292	,667	,408	,593	,280
Engineering and technology	2,817	,007	-1,282	,066	,372	,686	,512	,366
Medical Sciences	,021	,982	1,846	,016	-894	,289	,732	,212
Agricultural Sciences	-,185	,917	,549	,553	21,624	,998	,121	,867
Social and behavioral Sciences	,763	,358	1,119	,156	-,525	,504	-,964	,131
Humanities	-,854	,561	-438	,631	1,718	,258	,156	,832
R^2 of Nagelkerke	,662		,510		,395		,281	

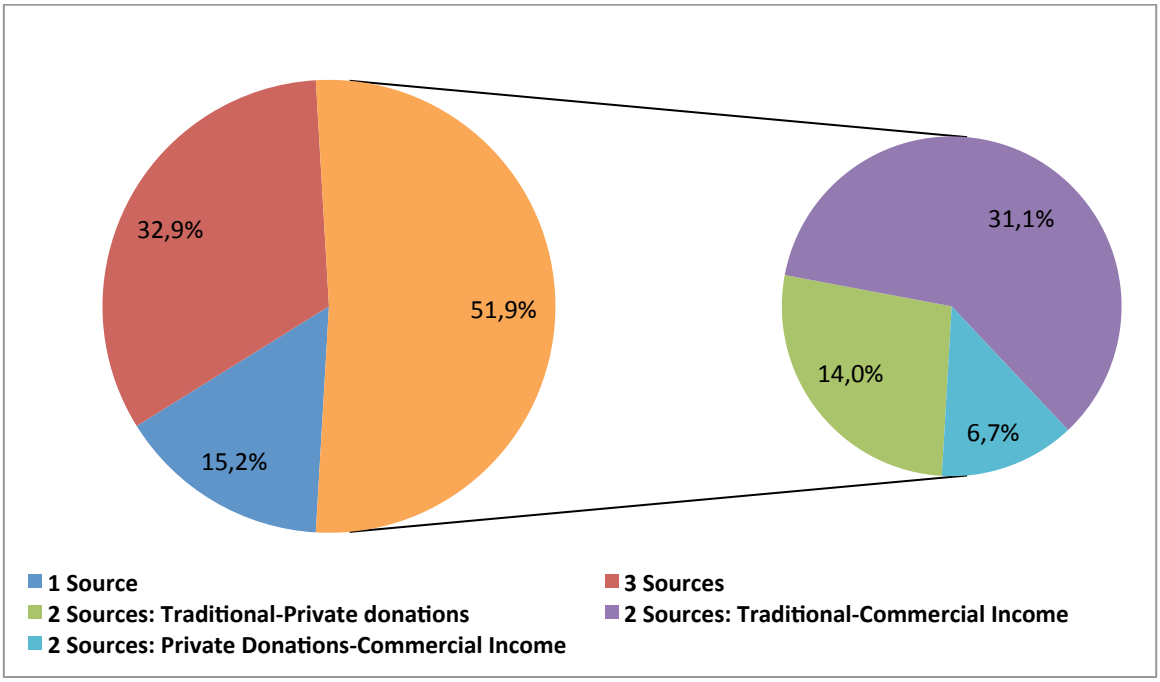
1. *Income from government*. Only 2 variables explain that R&I foundations have public funding: that they have been promoted by public founders and that their activities support Engineering and technology as their main thematic field. It should be noted that the R^2 of the model reaches a relevant value, 66,2%, which leads us to asume that it is unlikely that other factors have a relevant effect on the probability that foundations resort to this revenue source.
2. *Private Donations*. This is the source of income for which more determinant factors are identified. First of all, to the extent that foundations have not been promoted by public founders, it is more likely that they count on private donations. Secondly, the older the foudation, the more likely it resorts to private donations; although this relationship is conditioned by income volume. Third, basic research tends to incentive access to private donations. Fourth, the thematic field of support is also relevant, as it is more likely that foundations active in the fields of Medical sciences count on private donations, but less likely for those active in the field of Engineering and technology. Once again it should be noted that the high value of the R^2 (51%), suggest that a relevant portion of the variability of this revenue source is explained by variables included in the model
3. *Service Fees and Sales*. The only relevant explanatory variable for the existence of comercial income is the volumen of total assets. The lowest the assests, the more likely that foundations resort to this type of revenue source. However, the value of R^2 for the model below 40%, suggests the need to identify additional explanatory variables for the involvement of foundations in service delivery and product sales.
4. *Endowment*. Investment income from endowments. In this case, none of the potential explanatory variables in the model is relevant, and the low R^2 clearly suggests additional variables should be taken into account beyond asset volume, which is postively correlated with investment income, as would be reasonable to expect.

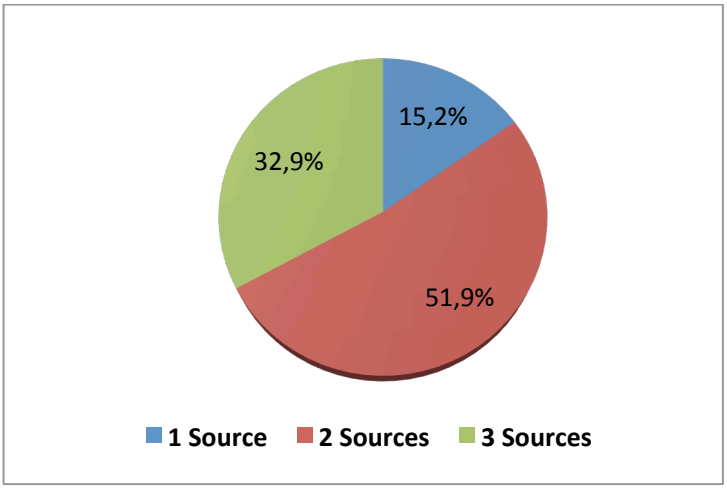
5.2. Degree of revenue diversification

First of all, analysis reveals that Spanish R&I Foundations are highly diversified in terms of sources of income, as 84,8% have more than 1 source of revenue. 51,9% combine 2 types (mainly traditional sources with comercial income) while 32,9% combine traditional sources (government or

endowment), private donations, and commercial income (Figure 1). Secondly, and according to the degree of diversification of their revenues, foundations present statistically significant differences in terms of their origin and typology, size and areas of activity they apply their expenditures to (Table 3-5).

Figure 1. Funding Sources





Foundations with the most diversified revenues are characterized by the following features (Table 3): (1) they are older (66% were constituted before 2002, the year the Foundation Law currently in force was passed), (2) they have been mostly promoted by public entities (56% have public entities among their founders), (3) have larger boards (72% have boards with more than 10 members) and (4) 98,1% characterize their model of operations as operating, as their expenditures are devoted to implementing their own programs or projects.

Table 3. Origin and typology of foundations according to the degree of diversification of their sources of revenue

	Age		**Founders**		**Board members**		**Model of operations**	
	Until 2002	After 2002	Private	Public	≤ 10	> 10	Granmaking	Operating
1 source	40%	**60%**	**100%**	15%	**65,2%**	34,8%	**32,0%**	80,0%
2 sources	56,5%	43,5%	77,1%	48,2%	44,6%	55,4%	14,1%	90,6%
3 sources	**66,0%**	34,0%	68%	**56,0**	28,0%	**72,0%**	14,8%	**98,1%**
Total	57,1%	42,9%	77,1%	46,4	42,4%	57,8%	17,1%	91,5%
Sig.	0,094		0,016	0,007	0,010		0,098	0,025

According to what would be reasonable to expect, the most diversified foundations are also the largest ones in terms of economic magnitudes (Table 4). The majority can be labelled as big, both in terms of income (59,6% have over 2,4 million euros of anual income), and assets (in this case, 71,1% have assets over 2,4 million euros).

Table 4. Size of foundations (income and assets) according to the degree of diversification of their sources of revenue

	Total Income		**Total Assets**	
	Small-Medium (<2,4 M€)	Big (>2,4 M€)	Small-Medium (<2,4 M€)	Big (>2,4 M€)
1 source	**82,4%**	17,6%	**72,7%**	27,3%
2 sources	52,9%	47,1%	37,7%	62,3%
3 sources	40,4%	**59,6%**	28,9%	**71,1%**
Total	52,3%	47,7%	28,9%	62,4%
Sig.	0,012		0,027	

Additionally (Table 5), a greater degree of diversification in revenue sources is associated with larger expenditures (as 52,5% of diversified foundations exceed 2,4 million euros of anual expenditures) and with the development of activities in a broad set of thematic research fields (Figure 4). 67,9% of the most diversified foundations are active in Medical sciences, 50,9% in Natural sciences, 47,2% in Engineering and technology, 22,6% in Agricultural sciences and 30,2% in Humanities. Surprisingly enough, the only key descriptor for which no statistically significant differences are appreciated is areas of research.

Table 5. Total expenditure, areas & fields of research according to the degree of diversification of revenue sources

	Total expenditure		**Areas of research**		**Thematic research fields**					
	Small-Medium	Big (>2,4 M€)	Basic	Applied	NS	E&T	MS	AS	S&BS	H

	(<2,4 M€)									
1 source	**81,3%**	18,8%	57,1%	95,2%	12,0%	20,0%	**68,0%**	---	40,0%	4,0%
2 sources	50,0%	50,0%	42,3%	97,4%	35,7%	44,0%	38,1%	14,3%	33,3%	16,7%
3 sources	47,8%	**52,5%**	50,9%	96,2%	**50,9%**	**47,2%**	**67,9%**	**22,6%**	49,1%	**30,2%**
Total	53,1%	46,9%	47,4%	96,7%	37,0%	41,4%	52,5%	14,8%	39,5%	19,1%
Sig.	0,053		0,391	0,856	0,004	0,058	0,001	0,031	0,186	0,016

6. Conclusions and further research

In order to conclude our exploratory analysis of the organizational factors that explain the revenue structures of Spanish R&I foundations, it is first necessary to provide some background their model of operations, broadly defined as how they create and capture social and economic value. A traditional typology, the one that was used by the EUFORI study, distinguishes between foundations that 1) use their expenditures to make grants to other organizations, and/or support projects carried out by other organizations (grant-making); and 2) those that use their expenditures to achieve their goals by themselves, by carrying out projects within their own organization (operating). An overwhelming majority of Spanish R&I foundations (83 %) perceive themselves as operating only; whereas only 17 % self-report as being grantmaking (solely, or in combination with the management of their own programs). The operating profile is even more prevalent than for the sector in general, with 74.6 % of Spanish foundations considering themselves as operating (Rey & Alvarez, 2015).

However, we argue that this apparent 'operating' homogeneity of Spanish R&I foundations conceals a rich diversity of models, ultimately reflecting the heterogeneity of people and institutions promoting them, of visions inspiring the way they are governed and funded, and of expectations about the roles they should play in society. The traditional distinction between grantmaking and operating foundations therefore needs to be complemented with more fine-grained typologies in the case of those devoted to R&I, in order to properly contextualize our interpretation of results. Instead of bulding only upon the use of expenditures, we propose a complementary typology based upon qualitative criteria, i.e. founder and board profiles specific of the field in Spain. We further argue for the relevance of this typology, as founders do not only contribute resources to the endowment of a new foundation, but also tend to maintain control of its board over time, being thus ultimately responsible for the revenue structure of the foundation and for its capacity to mobilize new resources. The five types of R&I foundations accordingly identified are the following: 1) family R&I foundations, created and controlled by entrepreneurs and wealthy families; 2) corporate R&I foundations; 3) R&I foundations promoted by other NPO; 4) R&I foundations instrumental for one public entity; and 5) technological centers and parks and R&I institutes or groups incorporated as foundations (Rey & Alvarez, 2015). We will use this typology to illustrate the following discussion.

Despite the leading role played historically by endowed family R&I foundations, and the active role played recently by public entities as founders or co-founders of private R&I foundations, our results

suggest that Spanish R&I foundations are today highly diversified in terms of income sources. Diversification is positively associated with age, public founders, large boards and an operating model. This is clearly the profile of types 4 and 5 in our proposed typology. However, the fact that the most diversified foundations are also the largest ones in terms of income, assets and expenditures apparently contradicts recent evidence on the positive association between revenue concentration and total revenues (Chikoto and Neely, 2014).

Our results also show that the inclusion of specific sources of revenue in the mix is explained by certain organizational features. The profile of founders is an important explanatory factor. Whereas those promoted by public founders are more likely to count on income from public sources, those that have *not* been promoted by public founders are more likely to count on private donations, suggesting a crowding-out effect. This is partly consistent with previous literature showing that nonprofits with higher bureaucratic orientation, stronger domain consensus with government, and longer government funding history are more likely to receive government contracts and grants (Lu, 2015).

The area and field of research are also relevant explanatory factors. Foundations active in the Engineering and technology field are more likely to count on income from public sources, suggesting the relevance of State and European investments in technological infraestructures and applied research in Spain over recent years. These results are consistent with our proposed typology, as they reflect the key role public entities have played (co)creating and funding foundations to provide technological centers and parks, R&I institutes or research groups with their own legal personality, and the successful effort of this type of foundation to raise income from the EC and also from the government of Spain, particularly until the crisis.

Regarding private donations, both the area of basic research –which is the focus of almost every privately endowed prize or award for research- and the field of Medical sciences attract them, whereas the field of Engineering and technology tends to disincentive access to this type of income source. This results are consistent not only with conclusions of the EUFORI study for Spain, but also with previous literature suggesting the relevance of socialization of personal problems or concerns and amenity potential for the choices of private donors (Rey & Puig, 2010). Finally, we attribute the fact that older foundations are more likely to count on private donations -although this relationship is conditioned by income volume- to a halo effect of their consolidated brands, making them most trustworthy for donors.

As this is a work-in-progress, our proposal for further research is twofold. First, it consists of operationalizing the proposed typology of R&I foundations, in order further analyze its influence on the revenue structure of these organizations, and to start dealing with the interactions between different revenue streams in the context of each model of operations. Second, more dissagregated data should be obtained for revenue sources in order to investigate about what has been called "within-source" diversification (Chikoto & Neely, 2014), e.g., public funding from different levels of government, or under different types of competitive pressures. The differences between EC Framework Program funding and non-competitive sources such as recurrent subsidies from regional governments, for example, are too notorious to be disregarded. Our best guess is that these

differences explain the extremely diverse effects of the crisis on foundations of the same type and with apparently similar weight of public funding on their revenue structures. Technology centres, parks and institutes incorporated as foundations and promoted by regional and local governments and universities provide again a case in point. While some lacked the capacity to innovate in the face of crisis, or a strategy to compete for sustainable business partnerships, service contracts and big individual and institutional donors, and faced closures, mergers and financial stress during the period, others have grown and become leading organisations in a European context (e.g. Tecnalia Foundation, based in the Basque country, and which is the largest private R&D&I entity in Spain and the fifth largest in Europe) (Rey & Alvarez, 2015).

However, it should be noted that the main limitation of this research, beyond its exploratory nature, lies in the fact that most financial data analyzed come from a survey, complemented with a narrow set of secondary sources, as only a small portion of Spanish foundations –and an even smaller portion of the around 50 administrative units supervising them- make complete annual accounts online available, and no tax returns are made available by tax authorities, different from the IRS in the United States. This constraint must be overcome by further research if substantial advances are to be expected.

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