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Forest Owners' Organizations in North and Central Portugal – Assessment of Success

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Background and purpose:
The emergence of forest owners' organizations (FOOs) in Portugal occurred in the 1990s. Fifteen years later there were 173 FOOs providing services to the private forest owners and also to the whole of society. This study aims to evaluate the success of FOOs in increasing their membership and the quantity of services provided.

Material and methods:
Eight FOOs from the North and Central Portugal were chosen as case studies. Quantitative data on membership numbers and number of services provided by the eight case studies were collected from the archives of FORESTIS or directly at the FOOs headquarters. Qualitative data from newsletters, annual reports, local newspapers and letters were also collected to be further analysed. Secondary data collected cover a period of substitute 10 years by 11 years (1994-2005). In addition, eight interviews to members of staff or FOOs directors were conducted in 2005. It was hypothesised that the number of members and the quantity of services provided may be interrelated and that the turnover of staff and their productivity influence the success of FOOs in increasing their membership and providing technical advice services.

Results and conclusion:
The study showed that although most FOOs were successful in making their membership grow, there were big differences in the number of members, in the forest area covered by them and in the quantity of services provided. It was concluded that human capital, financial capital and path dependence were the factors that most constrained the success FOOs in North and Central Portugal.

Keywords:
Forest owners' organizations, private forestry, success, membership

INTRODUCTION

In Portugal, where about 93.4 % of the forest is privately owned [1], forest owners' organizations (FOOs) only emerged at the beginning of the 1990s [2]. In 2005 there were 173 FOOs located all over the country and in a very different state of evolution. In other countries, such as Australia, Austria, Belgium, Canada, Finland, Sweden, Denmark, Germany, France, Japan, South Korea, Switzerland, Netherlands, United Kingdom, Ireland, New Zealand, Norway, Lithuania and Slovenia, more than 3.6 million forest owners are members of forest owners' organizations or cooperatives [3]. Small-scale forest owners can achieve similar benefits of large-scale forest owners if they are members of a FOO [3]. By joining together, non-industrial private forest owners (NIPF) can improve their bargaining power and have a say in the forest policy decision-making processes [4].

In some countries there is a long tradition of forest owners' organizations and in others forest owners' organizations are a recent phenomena. For example, in Finland and Norway, FOOs date from the beginning of the 20th century whereas in Portugal and Slovakia they date from the end of the 20th century [2-5]. In Serbia and Croatia they were only established in the new millennium. The differences in the year of implementation of FOOs in each country cause differences in their stage of development. In addition, there

are also several organizational models according to the different political, natural and cultural contexts of each country. For example, in Norway, the main objective was the marketing of wood, but nowadays increased attention is been given to sustainable forest management [2-5]. Other examples of common marketing of wood for FOOs members are Central and Eastern European countries such as Slovakia [6]. In Finland, Slovenia and Canada, FOOs own machinery rings that allow forest owners to share equipment for forest works and construction of roads [3]. In Portugal, FOOs started by giving support to forest owners in writing up the applications for incentive systems to forest investment and by providing services in order to reduce the risk of forest fires [7]. In Romania, FOOs are still dealing with the issues associated to land restitution characterised by a gradual increase of the private forest ownership after the communist regime [5].

Traditionally, FOOs were area-based entities dealing with support to private forestry in specific tracts of land. Historically, many FOOs were closely affiliated to farmer federations. In the present, however, some new challenges are emerging throughout Europe rural out-migration of forest owners, leading to absenteeism, the ageing of active forest owners and the decline of active management by forest owners [12]. Those who inherit forest holdings often live at a distance from them. The historic local stewardship of forests for subsistence or market needs is declining in many countries. Active management has not been helped by low timber prices. FOOs have had to address these challenges and the successful ones are doing so.

This paper aims to examine, for the first time, the differences in the number of members and in the quantity of services provided to the members of FOOs located in North and Central Portugal. It also aims to examine the main constraints facing these FOOs to increase their membership and the quantity of services provided. It was considered that the number of members and services provided to their members over the years are indicators of FOOs' success in achieving their mission of organizing the collective action of private forest owners in North and Central Portugal. According to Mendes et al [8], private forest owners contribute to sustainable forest management when they become collectively organized through the setting up of organizations that support the cooperation among themselves and represent and protect their common interests in their interactions with other stakeholders.

It was hypothesized that the number of members and the quantity of services provided may be interrelated and that the turnover of staff and their productivity are important to increase the membership of FOOs and the quantity of services provided.

THE ORGANIZATION OF PRIVATE FOREST OWNERS IN PORTUGAL

In 1986, with the entry of Portugal into the European Union, private forest owners benefited from a set of programmes and financial incentives for afforestation, reforestation and improvement of existing forest stands [1-9]. The first programme was the Forest Action Plan (PAF in Portuguese initials) which run from 1986/87 to 1996, and subsequently the Forest Development Programme (PDF in Portuguese initials) which run from 1994 to 1999. In the first programme, there was funding to set up a forest extension service which could support the establishment of FOOs, but this action was not implemented [5].

Because of the increasing demand for technical assistance by the NIPF owners driven by the existence of such programmes and the inexistence of a forest extension service capable of responding to this demand, FOOs started to emerge, mostly in the North and Central Portugal where small scale forestry prevails. The growing risk of forest fires which is relatively more severe in those regions also made forest owners increasingly aware of the benefits of collective action [1-10].

In North and Central Portugal a major initial step for the establishment of FOOs was the creation of FORESTIS (initially named "Forest Association of the North and Centre of Portugal" and now called "Forest Association of Portugal") in 1992. The main original mission of FORESTIS was to support the creation of local FOOs mostly in the small scale forestry regions of North and Central Portugal. This organization was relatively successful in accomplishing this mission, so that it gradually moved more to a position of becoming a federation of local FOOs representing their interests at the national and international levels. By 2005, from the 173 organizations registered as FOOs by the State Forest Services, 27 of them were represented by FORESTIS. It should be mentioned that some of the existing organizations have not much more than a nominal existence, or are mostly agricultural organizations without a strong engagement in forestry.

THEORETICAL FRAMEWORK

In Europe, there are several organizational models for FOOs emanating from different political, natural and cultural contexts [2-5]. The socio-economic context surrounding FOOs determines the objectives and the type of services provided [11]. In Norway, for example, the main objective is the marketing of timber, in Portugal it is to provide technical advice and services aiming at the reduction of the risk of forest fires and in Finland, Slovenia and Canada, FOOs own

equipment and machinery rings [5]. Torrijos et al [12] state several advantages of FOOs, namely to promote action among small-scale owners, to improve the profitability of non-industrial private forestry, to promotion forest multi-functional uses and to promote a sustainable use of forest resources. In economic terms, the range of services provided by FOOs falls in the following categories [2]:

Private services: e.g. technical advice, harvesting, or marketing services provided to each individual member;

Club goods: e.g. the implementation of a forest certification scheme;

Public goods: e.g. the contribution to the reduction of the risk of forest fires or to the increase in the provision of positive forest externalities such as landscape quality, climate regulation or recreation.

According to Olson's "selective incentives" theory [13], the voluntary contribution to the provision of public goods by joining an organization delivering that kind of goods is stimulated by the joint production of these goods with private goods or services benefiting the individual members who decide to join in. Since the main purpose of an organization (FOOs and others) is to further the interests of their members, and if the success of an organization is described as the capacity to achieve its objectives [14], a FOO is successful if it is capable of organizing collectively the forest owners with land within its boundaries. In this study, the delivery of an increasing volume of forest services and the increase in the number of members were considered as indicators of the FOO ability to organize collectively the forest owners and to contribute the sustainable forest management of the region were it is implemented.

Following a similar approach to the one proposed by Mendes [2], the supporting and impeding factors to FOOs success can be identified by looking at this kind of organization as structured in terms of principal-agent relationships. That is, relationships between a principal, who delegates or hires an agent to perform a work [15]. In the case of FOOs, these relationships occur between the members of the board of directors and the FOOs' staff and between the members of the FOOs and the FOOs themselves, represented by their staff and directors. This study focus on the relationships between the FOOs and the private forest owners who joined in by assuming that the staff and directors embodied the societal goal of promoting the collective action of those owners. The FOOs were, therefore, considered to be the principal and the forest owners the agents.

To increase the number of members and of services provided, the principal faces the following types of constraints:

a) *Feasibility constraints:* to get more members and to increase the quantity of services provided to the members, FOOs depend on the availability of human, physical, financial, and social capital.

Human capital: The human capital embodied in the staff and members of the board is crucial for the performance of the organization. The accumulation of that human capital comes not only from their educational background and experience exogenous to the organization, but also from the experience of working in the organization [16]. Given the nature of the services provided by FOOs where the knowledge of local conditions and specific characteristics of local forest owners matter, organization-specific human capital accumulation is very important for the performance of an organization.

Physical capital: Even though the quality of human capital is of crucial importance, appropriate office space and office equipment, vehicles and other physical capital are also needed for the activities of FOOs at least at a minimum level of supply below which the organization cannot work.

Financial capital: In Portugal, FOOs were set up with very insufficient equity to provide for the financial needs of their operations where a great deal of services are of a public goods nature, or are private services provided to forest owners at prices below average production costs. To survive, FOOs apply to public financial incentives to forestry and other activities where they may fit. This usually involves substantial transaction costs in terms of the time and other efforts needed to prepare and do the follow up of the applications. Also, when applications are approved for funding often there are long delays between the time the money is spent by the FOOs and the time the reimbursement by the incentive scheme is paid.

Social capital: Social capital in the sense defined by Coleman [17] can be accumulated through external networks (outward looking) and internal networks (inward looking), according to the terminology proposed by Putnam [18]. In the case of the staff working for the FOOs, the internal networks are the relationships connecting them to their members. The external networks are the connections of the organization with other organizations (other FOOs, municipalities, Forest Services, other public agencies, forest contractors, forest industries, research institutions, etc.). When these relationships have a cooperative nature they may have an important role in the development of the organization.

Characteristics of the socio-economic and environmental context: The socio-economic and environmental context in which the FOO operates is a conditioning fac-

tor of the availability of resources and the easiness with which the organization accomplishes its activities [14].

b) Individual rationality constraints: Without selective incentives to motivate participation, collective action is unlikely to occur even when large groups of people with common interests exist [13]. Membership to a FOO is a voluntary action, thus, to become members of a FOO the services that members get from this organization have to make them better off. The provision of these services has to be designed, therefore, in order to meet this constraint of members' welfare improvement and consequently, to contribute to the FOO development.

c) Incentive compatibility constraints: There are asymmetric information problems of various types in the functioning of FOOs. Moral hazard and adverse selection problems may exist in the relationships between the organization and its members when the staff does not have perfect information about the members' actions or characteristics which are relevant for their deals with the organization [19]. This is likely to happen in a country without cadastre for most of its forest land. To cope with these problems a FOO has to be managed by providing appropriate (positive and negative) incentives the forest owners to behave in a way that is compatible with the development of the organization.

d) *Path dependence:* Since we are dealing here with the history of human organizations, it is possible that the conditions (economic, social, cultural, political) prevailing at the moment when they got started may have an influence in the subsequent stages of their development [20].

MATERIALS AND METHODS

To assess of the success of Portuguese FOOs in increasing the number of members and the quantity of services provided to their members a case study approach was followed. The case study approach is appropriate when the research questions are of the types "how" and "why" and the researcher does not have much control over the events which are currently evolving within their real context [21]. In addition, with no quantitative database available about the structure and operations of FOOs in Portugal, it was not feasible to collect quantitative data about all the existing FOOs and in a complete way for each of them. As it will be seen, there are many missing values in the quantitative data reported in the next section and, therefore, there will be no attempt to estimate quantitative models.

By taking the cases of the FOOs which was possible to observe in the time frame of this study, the main purpose here is not so much to examine the empirical validity of a theoretical hypothesis, but to specify for those cases the theoretical framework proposed in the previous section, still as an hypothetical explanation for the evolution and success of those organizations. The case studies correspond to eight FOOs affiliated with FORESTIS, the most representative federation of FOOs for small-scale forestry in Portugal. As it was said in a previous section, this type of forestry and the strongholds of FORESTIS correspond to North and Central Portugal. Some of the eight FOOs chosen for this project are the oldest ones among those affiliated with FORESTIS. The group of FOOs was chosen in order to cover a representation of the various sub-regions of North and Central Portugal, different years of implementation, different environmental and social contexts and different management strategies.

The eight FOOs chosen were:

- *AFEDV:* Associação Florestal de Entre Douro e Vouga,
- *AFL:* Associação Florestal do Lima,
- *AFLODOUNORTE:* Associação Florestal do Douro Norte,
- *AFVS:* Associação Florestal do Vale do Sousa,
- *APFLOR:* Associação dos Produtores Florestais de Pedrógão Grande,
- *SFATB:* Secção Florestal do Alto Tâmega e Barroso-Cooperativa Agrícola de Boticas,
- *PORTUCALEA:* Associação Florestal do Grande Porto,
- *URZE:* Associação Florestal da Serra da Estrela.

There were two stages of data collection. Firstly, quantitative and qualitative data was collected from the archives of FORESTIS. The sources of data included annual reports of FOOs activities, FOOs newsletters, financial reports, correspondence exchanged between FORESTIS and FOOs staff and news on forest issues published in local newsletters. Secondly, eight interviews were undertaken with staff members and, in some cases, with the members of the board of directors. At this stage, additional sources data not available at FORESTIS archives were provided by the staff and directors interviewed.

Data collected includes quantitative data on the evolution of membership numbers and of quantity of services provided by each case-study over the years as well as the total forest area owned by the members of each FOO. It also includes qualitative and quantitative data that was used as indicators of the constraints facing by the FOOs (principal) to increase the number of members and the quantity of services provided, and qualitative information on whether the FOOs members (agents) take into account the technical advice given by the staff or not. The constraints to the increase of membership numbers and quantity of

services provided are feasibility constraints, individual compatibility constraints, incentive compatibility constraints and path dependence. To each constraint the following indicators were chosen:

a) Feasibility constraints:
- Human capital: Number of staff members, training sessions attended by the members of staff, staff's turnover, staff's high education background;
- Physical capital: Availability of basic material needed to provide services of technical advice to the members (e.g. office, phone, internet access, ArcGIS software;);
- Social capital: Existence or not of external networks with other entities such as municipalities, other FOOs, regional Forest Services, pulp and paper industries;
- Characteristics of the socio-economic and environmental context: Data for this section is mainly qualitative and it was provided by the people interviewed. It covers information on the absenteeism or active management of forest owners in region, infrastructures such as forest roads, payment of membership fees, participation of forest owners in FOOs activities (e.g. meetings, seminars), predominant forest management systems and tree species existing in the region.

b) *Individual rationality constraints*: The ratio between the number of technical advice meetings and the number of members of each FOO was the data used to examine these constraints. Meetings for technical advice happen between the forest owners who are members of the FOOs and the FOOs staff. The objective of these meetings is the provision of advice on forest management practices, forest policies or other forest-related issues. When the ratio between the number of meetings to provide technical advice services and the number of members is higher than one, it means than on average, the FOOs members asked for advice to the staff more than once. This was considered an indicator of the members satisfaction for the services provided by the FOOs' staff.

c) *Incentive compatibility constraints*: The evidence of incentive compatibility constraints came from the interviews undertaken with the staff or board of directors. The question that gathered information on this type of constraint was: How do the FOO members take into consideration the advice given by the members of staff on forest management practices? Additional information published in the annual activity reports was also taken into account.

d) *Path dependence*: Data on path dependence was collected by interview. It was asked to the directors and members of staff if any decision taken in the period of implementation its FOOs determined its subsequent trajectory.

RESULTS

A comparative study aimed at identifying the relevant differences in the evolution of the number of members and quantity of services provided in each case study was undertaken. It was not possible to compare all indicators of success for all FOOs because of limited data availability.

Number of members and quantity of the services provided

The evolution in the number of members is presented in Figure 1. The general trend is positive, i.e., there is an increase in membership over the years. There are differences, however, in the individual trend for each FOO which deserve further analysis. Some interesting differences can be noticed:

- AFVS and AFL initiated their activity in the same year (1994), but AFVS had much more members in 2005 than AFL. This difference is disproportionate with respect to the differences in the number of forest owners in the areas of the two FOOs. The same remark can be made about AFLODOUNORTE and PORTUCALEA, both started in 1997 and with a big difference in the number of members in 2005;
- A rapid increase in the membership of AFLODOURONORTE, APFLOR and URZE between 2000 and 2005.

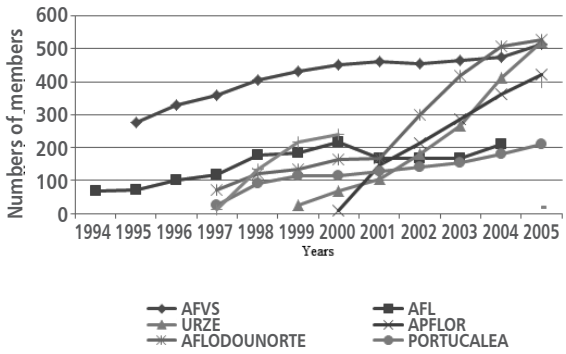

FIGURE 1
Evolution of the number of members in each FOO between 1994 and 2005

The total forest land owned by the members of each FOO is presented in Figure 2. AFVS stands out as by having reached the highest value for this indicator with all the others far behind. This means that for those with high rates of growth in the last part of the period covered by this data collection (AFLODOURONORTE, APFLOR, URZE), there was a large room for recruiting new members since the initial number of members was very small. The more intriguing cases are those (PORTUCALEA, AFL) where there has been a

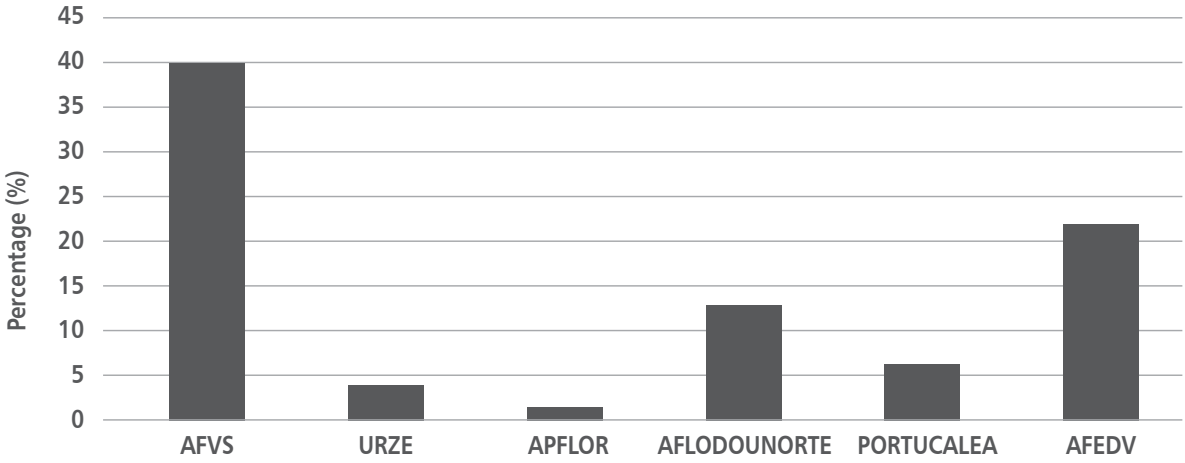

FIGURE 2
Percentage of forest area owned by the members of each FOO as a proportion of the total forest area in the territory of each FOO in 2005 (data not available for AFL and SFATB)

slower growth in membership, in spite of a relatively large potential for recruiting new members.

Concerning the volume of services provided to the members (Table 1), data available was very scarce and it was only possible to collect information for a very small number of FOOs (AFVS, AFL, PORTUCALEA). Data covers the number of meetings between the staff and the FOOs' members to provide them technical advice on forest management, clarification on forest policies or any other forest-related issues.

Considering now the ratio of the number of encounters between the staff and the members with respect to the total number of members of each FOO (Figure 3), AFVS stands out very clearly for its fast increasing trends whereas AFL and PORTUCALEA have declining or stagnating ratios. For example, in 2005, each member of AFVS met, on average, a staff member nine times to ask for technical advice. In the cases of AFL and PORTUCALEA, the ratio is less than one which means that, on average, there were members that did not meet a member of staff to ask for technical advice even once.

It is also reported the ratio between the number of members of staff and the number of meetings for technical advice recorded in AFVS and PORTUCALEA (Figure 4). It can be noticed the big disparity existing when these two FOOs are compared. In 2005, in AFVS, each member of staff participated, on average, in about 1000 meetings with the FOO's members while in PORTUCALEA the number of meetings between the members of staff and the FOO's members was very low.

It is now compared the indicators of the constraints faced by FOOs in North and Central Portugal to increase their membership and the number of services provided. These indicators were mentioned previously in the methodological section.

a) Feasibility constraints

Human capital

AFVS was the FOO with the highest capacity to provide technical advice services (Figure 3 and 4) and also the one with greatest increase in the number of members over the years (Figure 1). It should be noticed that in 2005, AFVS had only one member of staff more than PORTUCALEA (five against four). As the services provided by the FOOs in North and Central Portugal are similar, this may indicate that AFVS' staff was more able to recruit new members and to provide them technical advice services than the PORTUCALEA's staff. Another hypothesis is that the AFVS' staff is better managed than the PORTUCALEA's staff.

TABLE 1
Number of technical advice meetings in each FOO

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
AFVS		**173**	**365**	**866**	**1194**	**1535**	**1906**	**2006**	**2841**	**4776**
AFL		**93**	**126**	**149**	**175**	**140**	**85**	**63**	**93**	**126**
PORTUCALEA				**25**	**30**	**25**	**115**	**52**	**59**	**63**

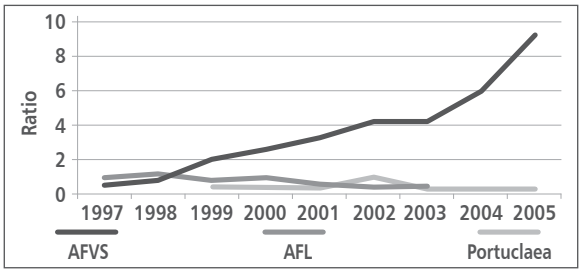

FIGURE 3
Ratio between the number of technical advice meetings and the number of members

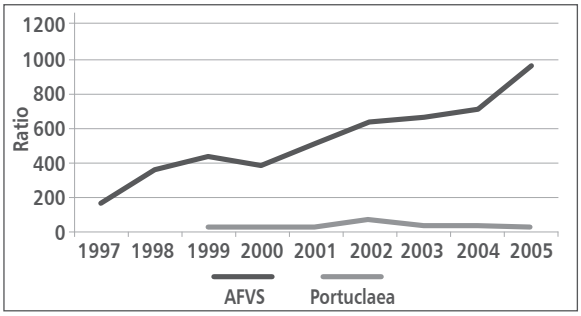

FIGURE 4
Ratio between the number of technical advice meetings and the number of staff members in AFVS and PORTUCALEA

Another indicator related to human capital is the turnover of staff. It is considered that a higher turnover of the members of staff corresponds to less human capital accumulated within the organization over the years. AFVS, URZE and AFLODOUNORTE were the organizations with the lowest turnover in its technical staff and PORTUCALEA and AFL the organizations with the highest turnover.

In terms of high education background of the staff, no significant differences were found between the FOOs studied. Some differences were found, however, in the number of training courses or seminars attended by the staff after being hired by the FOOs. AFL and AFEDV were not very enthusiastic in supporting their staff to attend this kind of training. AFVS, SFABT and PORTUCALEA showed great support to their staff in attending training sessions.

Physical capital

There were no significant differences in physical capital endowment between the eight FOOs studied. This physical capital usually consisted in an office that was usually rented or provided free of charge by local authorities, some office equipment, telephone and internet, tools for forest works, and pick up trucks.

Financial capital

This factor was mentioned in the interviews as having a very important influence on the success of FOOs. This may have happened because FOOs started with an amount of permanent capital very insufficient to make them at ease in terms of providing for the short term needs of their operations. By far, the major source of funds of all of them in this initial stage of their lives was what they could get by applying to financial public incentive programmes co-funded by the European Union, or simply national. Usually these programmes did not provide any cash advance, so the FOOs first had to implement and pay the actions supported by these programmes in advance and get partially reimbursed afterwards. Often there were long delays between the moment of spending the money and the moment of being reimbursed causing difficulties to FOOs to pay the staff wages and other expenses on time. This was pointed out as a factor of high staff turnover and a constraint to the recruitment of new members because the members of staff were busy trying to apply for new funding or simply trying to get a faster reimbursement of the money previously spent.

There are differences between the FOOs observed in terms of their degree of autonomy concerning public funding (Table 2). The FOOs which were less dependent of public funding, i.e., with higher percentage of

TABLE 2
Financial indicators

	AFVS	AFL	URZE	APFLOR	AFLODOUNORTE	SFATB	PORTUCALEA	AFEDV
Net income over the years (% of total revenues)	[15-62]	[4-55]	[13-29]	[27-58]	[2-25]	n.a.	[13-26]	[5-28]
Time period	1995-2005	1995-2003	2002-2005	2000-2003	1999-2004	n.a..	1998-2005	1998-2001
No of years with net income <0	1	3	0	1	1	n.a.	1	4
Time period	1995-2005	1995-2003	2002-2005	2000-2003	1998-2001	n.a.	1998-2005	1998-2000

total revenues in the given range of years, were AFVS, APFLOR and URZE. In addition, AFVS only had one year with negative net income and URZE managed to have four years with positive net income. Again, it seems to exist here some connection between less dependency of public funding and the evolution in the number of members and quantity of technical advice services provided to the members, in the FOOs studied.

Social capital

The major external stakeholders of FOOs were the municipalities, the universities with forest education and pulp and paper industries. No major differences were found here between the FOOs in terms of the intensity and quality of their relations with this kind of stakeholders.

Characteristics of the socio-economic and natural context of the FOOs

One of the characteristics of the socio-economic context considered important by the staff and members of the board of directors interviewed was the ageing of forest owners and the tendency for out-migration of the rural population. Their views on how these facts influence the success of the FOOs to get more members and for them to provide more services differed from one FOO to another. In one hand, AFL and AFEDV considered these facts to be a constraint on their activities. In the other hand, URZE, and APFLOR considered these facts to be an opportunity for the development of their services in response to the growing difficulties of forest owners to manage their forests. In the case of AFVS, because most forest owners live no further than 40 km from their forest holdings, their willingness to manage their forests, to become members of the organization and to ask for forest services was perceived to be higher than in regions affected by land abandonment.

Another factor mentioned to be relevant in the success of FOOs was the surrounding natural environment. Members of staff and directors of AFVS, AFEDV and APFLOR stated that it was favourable for their organization to be in a region suitable for growing tree species with commercial value such as eucalyptus and maritime pine. In the case of URZE, whose territory is mostly in a natural conservation area, the organization seems to be more oriented towards a multifunctional approach, with the members of staff having other professions besides foresters (e.g. environmental and agricultural engineers).

b) Individual rationality constraints

It was assumed that for a forest owner to become and remain member of a FOO he/she was better off in this condition than staying out. The more the FOO is able to benefit its members, the more they will demand its services. In the same line of thought, it was assumed that forest owners were better off by being a member of a FOO when the ratio between the total number of times the members met the FOOs' staff for technical advice services from the FOO and the total number of members over the years. In the case of AFVS, the ratio increases by increased for the period covered by data collected, reaching a ratio of almost 10 in 2005. In the cases of PORTUCALEA and AFL the ratio hardly ever reached one (Figure 3). This fact may indicate the satisfaction of members by the technical advice services provided by AFVS' staff.

c) Incentive compatibility constraints

Data collected during interviews with staff members and board the directors did not indicate the existence of opportunistic behaviours of members in the use of the services provided by the FOOs studied. It was stated in unanimity that forest owners demanded services from the FOOs with a true interest in improving the management of their forests. It was mentioned that the FOOs' staff closely monitored the provision of services, decreasing the possibility of incentive compatibility constraints.

d) Path dependence effects

Apart from AFVS, which started with 250 members, the remaining seven FOOs studied were created by a small group of forest owners, together with other people concerned with forest-related issues. FORESTIS had an important role in their start up. So, in all of them the affiliation with FORESTIS remains. Also, some of the founding members have kept a leading position in the board of directors, if not from the very beginning, at least since very early years in the lives of these organizations. Their strategies, internal organization and external relations have been, therefore, strongly influenced from what happened in the initial stages of their existence.

DISCUSSION

Data collected and the comparative study undertaken revealed that there was a positive trend in the evolution of the number of members over the years for most of the FOOs studied. Some FOOs, however, were able to increase their membership faster than others as is the case of APFLOR, URZE and AFLODOUNORTE (Figure 1). An interesting aspect is that these three FOOs were not those covering the highest forest area but AFVS (Figure 2). This aspect leads to suppose that a combination between the number of members and the area of forest owned by these members is likely to be a more effective indicator of the success of FOOs in organising forest collective action than only the increase in the number of members over the years.

In relation to the number of services provided, it was estimated a high ratio between the number of meetings for technical advice and the number of members in AFVS, this suggesting that the level of satisfaction of the members for the services provided was high (Figure 3). A big discrepancy (almost a tenfold) in the number of meetings for technical advice per member of staff in AFVS and PORTUCALEA was found (Figure 4). As mentioned before, this may indicate poor staff management or low staff productivity of the staff in PORTUCALEA and a high productivity or better management of staff in AFVS, reflecting its higher number of members and services provided. It is difficult to corroborate this, based in the comparison of only two cases because even though the services provided by the FOOs studies are similar, there are always some differences in their strategy. The case of URZE is an example of a FOO where part of the services provided is related to conservation issues because this organization is located and has members who own forest area within the boundaries of the Natural Park of Serra da Estrela.

In terms of services provided, there seems to be a positive correlation between the number of members and the number of services provided. This correlation implies circular causation, i.e., on the one hand the increasing number of members generates a higher demand for the provision of services and on the other hand, the increasing number of services provided by a FOO contributes to attract a higher number of members.

There is some evidence pointing to the hypothesis that two factors contributing to sustain this mechanism are a relatively low turnover in the FOOs staff and a relatively high productivity of this staff. It was often mentioned during the interviews that the members of staff with more years of experience in the same FOO were more knowledgeable about the forest area and forest owners and were more effective in accomplishing their tasks of recruiting new members and providing quality services to the existing ones. Since the recruitment and the design of incentives provided to the staff are under the responsibility of the board of directors, this means that the composition of this body is also likely to have strong influence in the success of the FOOs.

After the identification of these correlations and despite the gaps in data collected, another factor that seems to contribute to the success of FOOs is the lack of individual rationality constraints. In the case of AFVS, the satisfaction of the members by the services provided indicates they are likely to ask for more services and that they are better off by being members of this organization.

The financial capital is expected to be another factor influencing the success of FOOs in increasing the number of members and of services provided since less dependency of public funds appears to be associated with higher number of members - cases of AFVS, URZE and APFLOR. Even though all FOOs were implemented with low financial resources, which may have limited their success in the long-term, the management of financial capital towards less dependency of public funds appears to have positive repercussions on the turnover of staff and consequently their productivity. This contributes to an increase in the recruitment of forest owners and the faster delivery of technical advice services.

In what is concerned to the characteristics of the socio-economic and natural environment surrounding the FOOs it is important to notice that the proximity of the forest owners to their land and willingness to manage their forests in the area where AFVS is implemented coincide with the highest number of members and services provided in this organization. This suggests that this may also be a factor contributing to the FOOs' success.

Finally, it is considered that the effects of path dependence are also relevant in the success of FOOs. Even though the services provided by the FOOs studied were similar, the trajectories followed by each FOOs were very different and that was likely to have influenced their strategy in recruiting forest owners and providing technical advice services.

CONCLUSIONS

This study has highlighted some important questions about the success of FOOs in Portugal. Even though this study covered a small number of cases and there are gaps in the data collected it seems possible that the capacity to maintain the staff and to give technical advice that satisfy the members are the most important features of the success of FOOs in organizing forest collective action in North and Central Portugal.

It is recommended that a second study is undertaken with more cases and supported by better data in order to assess empirically the hypotheses explored here. For this to be possible there is the need, however, for an improvement in data recording on the FOOs activities, as for example the number of technical advice meetings between the staff and the FOOs' members. With more activities covered and more information recorded, it is likely that a better comparison between indicators of FOOs' success can be made, new indicators can be proposed and more reliable conclusions can be taken.

The assessment of the success of FOOs in Portugal and in other countries where they are highly dependent of public funds is a delicate, but very important matter that may be essential for the survival of the best. In Portugal, FOOs still struggle to subsist essen-

tially because most of the services they provide have the characteristic of public goods, such as, for example, the reduction of the risk of forest fires. In addition, small- scale forest owners, who are the main type of forest owners in the North and Central Portugal do not own large forest areas from which they could make profit and be able to pay for highly priced forest services. These reasons contribute to the FOOs dependence of public funds which are scarce and rarely paid on time. Since State funding does not differentiate between the FOOs that are successful in increasing the membership and the quantity and quality services provided and those that are not, they all struggle to get their bills paid in the end of the month. If there wasa mechanism of competition that could recognize and reward the most successful FOOs, they would certainly improve the services they provide and concentrate more efforts in recruiting more members which consequently would make them to become stronger at organising forest collective action. This would be a major step when it comes to their contribution to the sustainable forest management and development of forest innovative projects in the region where they are implemented.

The results of this study expose some big differences in some indicators of FOOs success but so far, there is no recognition of this fact by government entities. Since there is a strong element of public good provision in the operation of FOOs, it is recommended that the distribution of public support becomes much more closely linked to success than is currently the case.

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REFERENCES

1. MENDES A M S C, FELICIANO D, TAVARES M, DIAS R 2004 The Portuguese Forests. Research Report prepared for the EFFE Project – Evaluating Financing of Forestry in Europe. Porto: Faculty of Economics and Management – Portuguese Catholic University. Available at: http://ideas.repec.org/p/cap/wpaper/132007.html. (Accessed: 21 May 2007)
2. MENDES A M S C 2006 Implementation Analysis of Forest Programmes: some theoretical notes and an example. *Forest Policy Econ* 8 (5): 512-528
3. KITTREDGE D B 2005 The cooperation of private forest owners on scales larger than one individual property: international examples and potential application in the United States. *Forest Policy Econ* 7 (4): 671-688. Available at: http://harvardforest.fas.harvard.edu/publications/pdfs/kittredge_ForEcolMan_2005.pdf (Accessed 8 May 2007)
4. RICKENBACH M G, GURIES R P, SCHMOLDT D 2006 Membership matters: comparing members and non-members of NIPF owner organizations in southwest Wisconsin, USA. *Forest Policy Econ* 8: 93-113
5. MENDES A M S C, STEFANEK B, FELICIANO D, MIZARAITE D, NONIC D, KITCHOUKOV E, NYBAKK E, DUDUMAN G, WEISS G, NICHIFOREL L, STOYANOVA M, MAKINEN P, ALVES R, MILIJIC V, SARVASOVA Z 2011 Institutional Innovation in European Private Forestry: the Emergence of Forest Owners' Organizations. *In*: Weiss G et al *(eds)* Innovation in Forestry: Territorial and Value Chain Relationships. Wallingford, Oxon (UK): CAB International, p 68-86
6. SARVASOVA Z, TUTKA J 2005 Change in the Ownership and Management of Forests in Slovakia. Small scale forestry in a Changing Environment, International Symposium Proceedings, Vilnus, p 200-207
7. MENDES A M S C 2008 The Role of Institutions in Forest Development: The Case of Forest Services and Forest Owners' Associations in Portugal. *In*: Cesaro L, Gatto P, Pettenella D *(eds)* The Multifunctional Role of Forests – Policies, Methods and Case-Studies EFI Proceedings No. 55, 2008. Joensuu: European Forest Institute, p 105-116
8. MENDES M S, STEFANEK B, FELICIANO D, MIZARAITE D, NONIC D, KITCHOUKOV E, NYBAKK E, DUDUMAN G, WEISS G, NICHIFOREL L, STOYANOVA M, MAKINEN P, ALVES R, MILIJIC V, SARVASOVA Z 2011 Institutional innovation in European private forestry: the emergence of forest owners' organizations. *In*: Weiss G, Pettenella P, Ollonqvist P, Slee B *(eds)* Innovation in Forestry Territorial and Value Chain Approaches CABI Publications, Wallingford, Chapter 6, p 87-100.
9. RADICH M C, MONTEIRO ALVES A A 2000 Dois séculos da floresta em Portugal. Lisbon: CELPA – Associação da Indústria Papeleira
10. MENDES A M S C, FERNANDES L C 2007 Políticas e instituições florestais em Portugal - desde o final do Antigo Regime até à actualidade. *In*: Sande Silva *(ed)* Árvores e Florestas de Portugal (7) - Floresta e Sociedade: uma história em comum. Lisbon: Fundação Luso-Americana para o Desenvolvimento, Público - Comunicação Social SA & Liga para a Protecção da Natureza, p 77-125
11. MORAIS DE ALMEIDA C A 1997 Landowner's Organization and Forestry Development in Portugal. A definition of an action strategy for the Pinhal Sul region based upon the local actor's views. Non-published PhD thesis
12. TORRIJOS Y A, MARTIN J P, GUTIERREZ DEL OLMO E V 2003 Small non-industrial forest owner's cooperation examples in Galicia (NW Spain). F.A.O. Workshop on Forest Operation Improvements in Farm Forests. Logarska Dolina (Slovenia) 9-14 September 2003
13. OLSON M 1965 The logic of collective action: public goods and the theory of groups. Cambridge, MA: Harvard University Press

14. LUSTHAUS C, ADRIEN M H, ANDERSON G, CARDEN F, MONTALVAN G P 2002 Organizational Assessment: A framework for Improving Performance. Ottawa: International Development Research Centre. Available at http://web.idrc.ca/openebooks/998-4/ (Accessed 21 May 2007)

15. STIGLITZ J E 1987 Principal and agent. The New Palgrave: A Dictionary of Economics 3, p 66-71

16. LAURSEN K, MAHNKE V, VEJRUP-HANSEN P 2004 Do differences make difference? The impact of human capital diversity, experience and compensation on firm performance in engineering consulting. Paper presented at the DRUID summer conference 2004 on Industrial Dynamics, Innovation and Development. Elsinore. Available at: http://www.druid.dk/ (Accessed 8 May 2007)

17. COLEMAN J 1988 Social capital in the creation of human capital. *Am J Sociol* 94: 95-120

18. PUTNAM R 2006 Bowling alone: le déclin du capital social aux États-Unis. *In:* Bevort A, Lallement M *(eds)* Le capital social: performance, équité et réciprocité. Paris: Éditons la Découverte/M.A.U.S.S.

19. RASMUSEN E 1989. Games and information: an introduction to game theory. Cambridge: Cambridge: University Press

20. DAVID P A 1985 Clio and the economics of QWERTY. *Am Econ Rev* 75 (2): 332-337

21. YIN R K 1994 Case study research. Design and methods. *(2nd ed)*. Applied Social Research Methods Series. 5. SAGE Publications