

The Day After Grant-Aid: Business Development Schemes for Small Rural Firms in Lagging Areas of Greece

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ABSTRACT. This paper investigates the need for providing follow up business development instruments to small rural businesses that have benefited from grant aid assistance schemes. A sample of 76 small rural businesses in lagging areas of insular Greece is included in the present survey, and ranks thirteen possible business growth instruments. It is found that business development instruments are ranked according to each firm's economic and human capital characteristics. Furthermore, most firms need the concurrent provision of more than one instrument. Likewise, a mixture of business specific schemes, regulatory interventions and infrastructure projects, better serves their business development needs. Results from the present survey indicate that an integrated business development strategy in lagging areas of Greece should be supported by modern, flexibly tailored combinations of assistance, using complex, multi-instrument sets of support to development efforts.

1. Introduction and background

Business development approaches have been associated with the use of the traditional instruments of grant aid and financial assistance aiming to increase invested capital and stimulate employment creation by assisted firms. Financial assistance has, by far, been the end point of regional and rural development policies and not just one

stage within an integrated support framework. Small businesses in Greece are suffering from a wide range of problems associated to their specific characteristics (Liargovas, 1998). These characteristics are related to the firm's capital structure and access to private and public financial sources. They also relate to their human capital characteristics, production methods and the use of appropriate modern technology, the lack of public infrastructure in most lagging areas and the unfavorable external economic environment that is prolonged by the lack of planning controls and regulation.

Business needs extend far beyond mere financial assistance, to the provision of schemes designed for use by individual firms, to the stipulation of regulatory (or de-regulatory) actions and the provision of infrastructure. *Business schemes* refer to instruments intended to assist firms, with marketing the produced goods and services, to provide quality business advice, technical support, access to modern technology, etc. *Regulatory actions* refer to the provision and dissemination of standards and to the de-regulation of certain regulated markets, such as the labour market. *Infrastructure schemes* refer to instruments providing the appropriate transportation and communication networks or to the provision of suitable business premises such as incubators and industrial sites.

An issue of the utmost importance is to devise a set of instruments that will accompany financial assistance schemes, will allow firms to develop and will prepare them to adjust to the changing economic circumstances. Providing the correct set of business development instruments ensures that an initial local rural development plan (bottom-up) for marginal areas will meet the

Final version accepted on December 1, 1999

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Small Business Economics 14: 125–136, 2000.
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actions available within the overall EU framework (top-down). The aim of the present paper is two-fold. First it attempts to examine the needs of enterprises that have already been granted aid, and ascertain the rural entrepreneurs' attitudes towards the importance of providing certain business development instruments in the insular areas of Greece. Second, it attempts to examine the extent of the instruments needed by rural businesses, i.e., the total number of the needed instrument and the factors affecting its observed variability.

2. Data and model

Case study areas and sampling

Surveys of entrepreneur's attitudes towards business development instruments offer a possible way of obtaining useful information on future developments in policy provision. Attitudes embody positive or negative feelings about the object in question, beliefs or ideas about it and a tendency to behave in a particular way towards it. In rural Greece, attitudinal surveys have been used mainly to examine farmers' and fishermen's views on conservation issues and have never been used to examine businessmen's attitudes. In order to examine the importance of various business development instruments following the provision of grant-aid assistance, a survey of rural businesses was conducted in two island areas of Greece.

The islands of Cephalonia and Zakynthos in the Ionian Sea and the islands of Andros and Naxos in the Aegean Sea comprise the study regions of this work. These islands were selected to reflect the diversity of conditions found in the country's insular and coastal regions, which are suffering from economic desertification. In these islands, the demographic trends show an ageing population as a result of both out-migration of the younger, and more educated parts of the population and the return of the older and less economically active or retired population. Unemployment among the young is very high, with female unemployment being significantly higher than male unemployment. Almost 50% of the economically active population is engaged in some form of agricultural activity but 70% of all farmers are pluriactive and spent less than 50% of their worktime on the farm. The primary sector accounts for almost 18% of the

regional gross product in these areas. Employment in the manufacturing sector is very low, ranging from 4.9% of total employment in the island of Cephalonia to 9.2% in Andros and Naxos, while the national mean is around 15%.

Many farms and fewer small rural businesses have benefited from schemes that operate either under the EU's Common Agricultural Policy (CAP) providing financial assistance to rural manufacturing and agro-tourism activities (Regulations 797/85, 2328/91, 866/90), or under the national framework for regional development providing financial assistance to enterprises (Greek Laws 1262/82 and 1892/90). Despite their different origin the two sets of assistance schemes operated in the same way and, in rural areas, they both granted financial aid to small and medium firms. One of the objectives of the survey was to collect information at the level of individual firms, concerning the importance of providing certain rural and regional development instruments other than, or on top of, grant-aid schemes. A survey of rural businesses that have benefited from grant aid assistance schemes was conducted. The survey collected information at the level of individual rural business. Information included data on capital stock change, due to the use of financial assistance schemes in previous years, the firm's debts, profits, employment, net employment change after capital stock change, the business history and certain characteristics concerning the rural entrepreneur, such as age, education, technical training, etc. An exhaustive list of rural enterprises was drawn up and all were included in the sample. After conducting a pilot survey, certain minor adjustments were made to the questionnaire, and personal interviews conducted by trained personnel started in the second half of August 1995 and ended in mid September of the same year. The survey yielded 76 fully completed and usable questionnaires of the 83 originally planned in all study regions. Non-response rate was due to wrong addresses or missed respondents while only one entrepreneur refused to participate. These 76 enterprises dealt with rural tourism activities, mostly room-letting, combined or not with restaurants and/or other services, food processing operations (olive oil refineries, cheese making, etc.) and other activities in the primary sector such as aquaculture, fishery, hog breeding, etc.

Business owner's attitudes towards the proposed business development instruments were assessed by asking each respondent to judge whether the proposed instrument was vital and highly needed for the survival and/or expansion of his/her own business and not generally for businesses in the area. Interviewers stressed to respondents that a highly needed instrument is one that the firm would apply for, in case is made available, or it will greatly assist the firm's performance in case is globally available (regulatory actions and/or infrastructure schemes). This binary choice was preferred to similar 3, 5 or 7 point scales because, despite information loss, it does not confuse the respondent and captures his/her attitudes in a simple, but very valid way.

Explanatory variables

The proposed instruments aim to further business development, taking into account that the surveyed firms had already carried out grant aided investments. Thus, a number of variables, related to business development, were collected from the questionnaire survey and tested in the models. Existing studies identify traits that are positively related to small business startup, growth and survival. From all collected variables, we found three businesses and two entrepreneurial specific characteristics to be significantly related to rating a proposed instrument as important.

Based upon the findings of past econometric studies, explaining small business longevity and growth (Bates, 1990, 1994), greater financial and human capital investments are expected to be related to the adoption of certain business development instruments. The size of the grant aided investment (STOCHANG) measures the extent of the firm's growth and the future expansion postulated by the firm, and determines the labour-capital substitution and output effects. At the same time, the size of the grant-aided investment is related to the firm's financial size and its ability to provide a private capital contribution and to satisfy the granting body's eligibility criteria. Labor input quantity (EMPLOY), is measured in annual work units based on firm responses, i.e. the labor of one person who spends his/her entire annual working time employed in the rural enterprise, and not in numbers of people employed. For

persons who did not work the whole year on the enterprise, fractions of the annual unit were used. Fractions were obtained by multiplying by 0.5 every part-time worker, working the whole year, or any seasonal worker, working full-time. Another fraction was obtained by multiplying by 0.25 every causal full-time and/or seasonal part-time worker. Plant employment has been found to be significantly associated with technology use and more specifically with design and engineering, fabrication and machining and communications and control (Gale, 1998). Finally, if employment is taken to reflect plant size, this is connected to a firm's financial constraints in raising investment funds. Earlier theoretical indications provided by Wren (1994, 1996a, 1996b) suggest that irrespective of whether private funds are cash constrained to small firms, assistance replaces private funds for larger firms and it tends to be more additional for smaller firms.

The business's history and years in operation (HISTORY) is an important factor indicating different business needs. New and young firms are vulnerable to discontinuation and thus are more likely to favor risk-reducing instruments, such as capital and labor subsidies. Furthermore, young firms may favor instruments that assist operations, such as marketing and integration to the transportation and promotion networks, which are highly based on how well known a firm is and how extensive its business network (on both the input and output side) is. On the other hand, older businesses may be in need of renewing their old fashion production process, adopt new technologies, etc. Dunne (1994) suggests that plant size is not an important factor as regards technology adoption while Gale (1998) derives contradictory results, at least for communications technologies.

Plant size and the firm's age are related to the firm's survival with small and younger firms having higher closure rates than other firms (Wren, 1998). In general, it has been found that establishment dissolution declines with age (Nucci, 1999) and thus younger firms are more in risk and in need of support. Higher closure rates may affect the process of private fund raising by smaller firms. In the case of asymmetric information, i.e., where banks are unable to acquire a full picture of the borrower's characteristics, higher interest rates or credit rationing may be applied. Private lenders

apply higher interest rates in their attempt to hedge for higher losses on loans to small and young firms. Storey (1994), however, argues that the lender's preferred reaction is to apply a credit rationing process that reduces loan availability rather than increase interest rates. Finally, smaller firms do not recognize the importance of markets in business expansion and survival and is assumed that marketing related instruments will be needed by larger firms that appreciate the important role played by markets.

From the entrepreneurial characteristics, the quality of owner human capital measured by two variables, experience and level of formal education (EDUCAT) largely determine the entrepreneur's attitudes towards importance of utilising certain development instruments. Most of the surveyed rural entrepreneurs did not have a managerial experience, prior to their present small business entry, so we were inclined to use owner's age (AGE), a broad proxy for work experience. The relation of human capital to business risk, new firm formation and survival has been portrayed in the international literature (Audretsch, 1995; Bates, 1990; Bates and Nucci, 1990; Barkham, 1994; Evans, 1987; Variyam and Kraybill, 1994). Other key explanatory variables, such as industry specific dummy variables and an area specific variable, were also examined but were not found statistically significant. Definition and descriptive statistics of the selected explanatory variables is shown in Table I.

Business development instruments

In this work we originally considered thirteen instruments; nine business specific schemes, three regulatory actions and one infrastructure scheme as follows:

1. *Provision of and access to private finance (PRIFIN)*. Access to private finance was found to be a very significant barrier to the undertaking of investments by small firms. Access to private sources of capital (and venture capital) is closely related to the size of a firm, and we may safely assume that most small firms are cash-constrained (Wren, 1996a). On the other hand, cash-constrained firms are supposed to have higher additionality impacts on grant-aided investments and

thus, it may be in the public interest to facilitate their process of private fund raising (Wren, 1996a).

2. *Provision of public financial support (PUBFIN)*. Most supported firms are not allowed to re-apply for financial support, under the same or other financial support schemes and are therefore, frequently excluded from subsequent investment opportunities or the option to perform a multi-stage long-term investment.

3. *Assistance in marketing the produced goods and services (MARKET)*. Small firms in lagging areas often lack the human and financial capital, needed for marketing their produced goods and services or for accessing the consumer in central markets, due to remoteness and isolation. Appropriate marketing schemes may assist firms to approach marketing consultants, or may promote the region's image and its products and services.

4. *Provision of good quality business advice (ADVICE)*. This instrument will allow entrepreneurs to approach business consultants and get continuous business advice on matters such as accounting schemes, business organization, resource management, etc.

5. *Provision of technical assistance in product development (PRODEV)*. Many rural firms, especially those active in the agro-food sector, lack the appropriate resources in developing new products, particularly those related to local and regional denomination, or products based on traditional methods that require, nonetheless, the application of modern hygienic techniques or modern preservation methods. These firms should get in contact with experts on product development and production organization and are usually not known to the rural entrepreneurs. Recent research into the long-standing problem of technology transfer argues that a key to addressing it, is to understand SMEs as unconfigured users both of government and policy initiatives, and of technological innovation (Woolgar et al., 1998).

6. *Assistance in accessing new technology (TECHN)*. Technological advances in business organisation, production and promotion are not easily diffused in remote rural areas and rural firms exhibit a notable technological regression. New technologies, especially those regarding information spread, have a great potential of assisting small firms in remote areas to promote

their products and services and increase their sales. New technologies may aid firms to avoid the cumbersome intervention of intermediaries or gradually gain an independence from expensive and time consuming marketing channels, over which firms have little or no power at all.

7. *Provision of training facilities (TRAINING)*. Training is widely available in many parts of rural Greece but is considered not to fulfil its role in addressing real business needs. This measure actually deals with re-addressing the whole concept of training, re-training and further education and plan future programs in order to invoke real world business needs. Personnel training is, in general, closely related to the adoption of advanced technology as it has been demonstrated in various case studies (Panizzolo, 1998).

8. *Assistance in hiring skilled labour (SKILAB)*. Rural areas suffer from extreme desertification that has drained away the most active, young and skilled part of their labour force. Firms in rural areas are not able to attract highly skilled and young personnel that would claim wages, highly in excess of those paid in other parts of the country, in order to locate to remote rural areas. Currently, no instrument subsidising the location of highly skilled labour to lagging rural areas, thus assisting firms to attract skilled personnel, can be proposed.

9. *Assistance in hiring semi-skilled and unskilled labour (UNSKIL)*. This scheme refers to labour subsidies that can be directed to rural firms in a versatile framework. Currently, firms are offered labour subsidy schemes that are very strict and rigid, due to the fact that assist labor is hired on a full-time basis for a certain period of time (a minimum of three years). Most rural firms however, especially those active in the agro-food sector and tourism services, face either a seasonal or causal demand for labour or a continuous demand for part-time labour. As a result, during certain periods there is excess demand for unskilled labour that creates seasonal labour bottlenecks. Likewise, there are periods of time with labour surplus. Firms react to this seasonal variation in the labour market, either by hiring illegal migrants that are paid far less than the minimum wage agreements or by attempting to substitute labour for capital.

10. *Devise a regulatory framework concerning*

the labour market (LABMAR). Closely linked to the previous measure is this one, concerning adaptations of the current regulatory framework governing the labour market. Due to the existence of many illegal migrants that work in the country's rural areas, minimum wage agreements and work hours are in practice relaxed and the present legal framework regulating the operation of the labour market is "de-regulated". This of course, does not help social cohesion and stability of the rural community in the long term. The labour market may be formally de-regulated by facilitating insurance and other legal issues, concerning part-time and seasonal employment. Furthermore, the absorption of illegal migrants and their incorporation in the legal labour force will prevent social disrupts.

11. *Provision of standards and regulations for produced goods (STAND)*. This measure concerns mainly dissemination of information on quality standards (Products of Geographic Indication, Products of Denominated Origin, organic products, hygienic information, etc.), the provision of guidelines to meet such standards, and strict control on the firms producing standardised and regulated products and services.

12. *Provide transportation and telecommunication networks (NETWRK)*. Remoteness and isolation are the major causes of peripherality in most Greek rural areas. Providing modern telecommunication (digital) networks and enhancing and regulating the transportation network will make the "exporting" operations of many rural enterprises easier.

13. *Provide suitable business premises and industrial sites (PREMIS)*. This measure concerns with the establishment of appropriate business premises, such as enterprise incubators and industrial sites, that will reduce production costs and protect the rural environment, a valuable asset to many firms, especially those active in tourism services.

A short definition and the percentage of firms ranking each instrument as highly important, is shown in Table II.

Economic model

Attitudes towards importance for each of the 13 instruments under consideration may be placed in

TABLE I
Variable definitions and summary statistics

Variable	Definition	Mean	Std. dev.
STOCHANG	Total (private and grant-aided) Cost of Investment in million Greek Drachmas	17.31	26.16
EMPLOY	Size of the firm in Annual Work Units	3.56	9.06
HISTORY	Years the bussiness is in operation	8.93	16.88
AGE	Owner's Age	43.24	12.43
EDUCAT	Years of Owner's Formal Education	9.80	4.70

US\$ = 240 Greek drachmas in 1994.

an economic analysis framework. Assuming that profits for firm j are π_j and given the fact that output and prices are random variables, profits are stochastic. The expected utility-of-profits function may be derived by a Taylor's series expansion of the unknown utility-of-profits function, about the mean of profits. If we assume that firms are risk averse, the general form of the expected utility function may be written as:

$$EU(\pi_j) = f_j(\mu, \sigma^2, \dots, \sigma^k, \varphi_j), \quad (1)$$

where μ , σ^2 and σ^k are the mean, variance and higher moments of profits respectively, and are determined by production activities including those reflecting the availability and operation of the instruments under consideration. The risk attitudes are represented by each firm's risk aversion coefficient φ_j . For each one of the instruments proposed by the survey, we define U_{j0} and U_{j1} to be the firms' expected utilities, without and with making use of the instrument, should it become available. Firm j will rank each instrument according to the following rule:

$$\begin{aligned} &\text{if } U_{j0} \geq U_{j1} \text{ as non-important} \\ &\text{if } U_{j0} < U_{j1} \text{ as important} \end{aligned} \quad (2)$$

An instrument may be ranked as non-important for many reasons. Primarily, because the expected utility-of-profits, once the instrument is provided and adopted, is lower than the respected utility-of-profits without the instrument (a rather infrequent case). Secondly, because the proposed instrument is irrelevant to the firm's long term strategic development plans. Thirdly, because, even if the firm's expected utility-of-profits increases the adoption of the instrument, time and effort may be required by the firm's staff, which decreases its overall utility. This is a case where estimated adjustment costs offset expected profits. A quali-

tative Y_j variable that indexes the firm's ranking rule presented in equation (2), is then given by

$$Y_j = \begin{cases} 0 & \text{if } U_{j0} \geq U_{j1} \\ 1 & \text{if } U_{j0} < U_{j1} \end{cases} \quad (3)$$

The probability that Y_j takes on one of the two values in equation (3) may be expressed in a logit framework as a function of a vector of entrepreneur and firm-specific characteristics $\mathbf{x}$ as:

$$\Pr ob(Y_j = 1) = \frac{e^{\beta \mathbf{x}}}{1 + e^{\beta \mathbf{x}}}, \quad (4)$$

where $\mathbf{x}$ as defined previously, and β is a vector of parameters to be estimated by the model. Coefficient estimates and marginal effects are derived by maximising the well-known logit log-likelihood and by taking the first partial derivatives of equation (4) respectively. A goodness of fit measure based on the likelihood ratio test statistic, usually reported as McFadden's ρ^2 measure can also be estimated (Maddala, 1983).

The discrete choice by firm j , to rank each instrument as highly important and vital for its survival and development, is presented in equation (2) and shows the individual decisions for each of the twelve instruments. The outcome of the thirteen decisions can be expressed as:

$$N_j = \sum_{k=1}^{14} Y_j, \quad (5)$$

which may be regarded as a measure of the extent of the overall needs of a firm and a measure for business development policy intensity. Since each firm decision is linked to firm and entrepreneurial characteristics, it may be expected that will also depend on the same characteristics. Due to the fact that N_j is a count data variable, a Poisson regression model is appropriate for analysing

equation (5). The variable N_j is assumed to be drawn from a Poisson distribution with parameter λ_j . The probability that the number of instruments chosen by a firm (or the number of “successes”) equals n , may be written as:

$$\Pr ob(N_j = n_j) = e^{-\lambda_j} \frac{\lambda_j^{n_j}}{n_j!}, \quad (6)$$

$$n_j = 0, 1, \dots, 14, \quad \ln \lambda_j = \beta' \mathbf{x}$$

which is the basic formulation of the Poisson regression model with β and $\mathbf{x}$ as defined previously. In the Poisson regression model, λ_j is both the mean and the variance of n_j . Maximising the log-likelihood function derives coefficient estimates for the Poisson model. Marginal effects and goodness of fit measures can also be estimated (Greene, 1998). Tests for over-or-under dispersion in the Poisson regression model are also applied (Cameron and Triverdi, 1990).

4. Results

The empirical logit model of equation (4) was estimated for each of the thirteen proposed instrument using the LIMDEP statistical package (Greene, 1998). Maximum likelihood estimated coefficients, their corresponding t -ratios, the chi-square test, the ρ^2 goodness of fit measure, and the percentage of correctly predicted cases are shown in Table III. The likelihood ratio tests are highly significant with a score ranging from 28.4 to 58.68

and the corresponding goodness-of-fit ρ^2 measures indicate a very satisfactory fit. The models correctly predict from 71.1% (54 out of 76) to 97.4% (74 out of 76) of all responses. Marginal effects for all logit models are presented in Table IV. The results for the firms that do not rank the instruments as very important are of exactly the same magnitude and opposite sign. The estimated marginal probability responses and estimated asymptotic t -ratios reveal some significant relationships between the used explanatory variables and the ranking decision, with profound implications for the design and implementation of effective small business development policy at the local, rural space.

Stock change effects

The size of the grant aided investment (STOCHANG) has a significantly positive impact, on the probability that the firms will consider the instruments of public finance provision (PUBFIN), assistance in marketing goods and services (MARKET), provision of standards (STAND) and provision of infrastructure for businesses (PREMIS), and a significantly negative impact on assistance in hiring unskilled labor (UNSKIL). These results indicate that the larger the investment, the higher the probability that the firm will require more public capital for consequent investments, access to marketing channels and assistance in marketing its goods, provision of

TABLE II
Instrument definitions and summary statistics

Name	Description	% of firms ranking instrument as highly important
PRIFIN	Access to private finance	48.68
PUBFIN	Provision of subsequent public finance	75.00
MARKET	Assistance in marketing goods and services	53.95
ADVICE	Provision of good quality business advice	48.68
PRODEV	Provision of technical assistance	40.79
TECHN	Assistance in accessing new technology	47.37
TRAING	Provision of training facilities	46.05
SKILAB	Assistance in hiring skilled labour	17.11
UNSKIL	Assistance in hiring unskilled labour	31.58
LABMAR	Regulation concerning the labour market	28.95
STAND	Provision of regulations, standards and controls	30.26
NETWRK	Improve transportation-communication networks	69.74
PREMIS	Infrastructure for businesses	55.26

TABLE III
Coefficient estimates of logit models

Instrument	Variables						Model specification		
	STOCHANG	EMPLOY	HISTORY	AGE	EDUCAT	Constant	$\chi^2_{(5)}$	ρ^2	% correct predictions
PRIFIN	0.026 (1.532)	-0.144 (-1.757)*	0.012 (0.455)	-0.119 (-3.765)**	-0.194 (-0.284)	5.085 (3.102)**	31.25	0.297	75.0
PUBFIN	0.059 (1.852)*	-0.384 (-2.534)**	0.216 (2.312)**	-0.165 (-3.641)**	-0.238 (-2.324)	10.124 (3.597)**	39.28	0.459	85.5
MARKET	0.082 (3.011)**	-0.365 (-2.759)**	0.211 (2.943)**	-0.087 (-2.638)**	-0.404 (-3.496)*	6.238 (3.027)**	39.15	0.373	76.3
ADVICE	0.172 (3.566)**	-0.222 (-1.597)	0.147 (2.784)**	-0.024 (-0.884)	0.009 (0.137)	-1.830 (-1.127)	34.72	0.330	81.6
PRODEV	0.028 (1.366)	0.050 (0.879)	-0.020 (-0.798)	0.159 (3.868)**	0.389 (3.732)**	-11.727 (-4.197)	41.11	0.400	78.9
TECHN	0.008 (0.412)	-0.161 (-1.426)	0.350 (3.245)**	0.078 (2.364)**	0.171 (2.181)**	-6.662 (-3.293)	43.83	0.417	77.6
TRAING	0.158 (0.993)	-0.228 (-2.391)**	0.058 (1.863)*	0.091 (3.117)**	0.225 (2.987)**	-6.390 (-3.634)**	28.40	0.271	71.1
SKILAB	0.031 (1.267)	0.286 (2.725)**	-0.054 (-1.186)	0.001 (0.019)	-0.506 (-2.507)**	1.077 (0.426)	32.64	0.469	92.1
UNSKIL	-0.025 (-1.668)*	0.063 (1.009)	0.063 (2.255)**	0.038 (1.379)	0.291 (3.530)**	-5.893 (-3.393)**	29.31	0.309	77.6
LABMAR	0.125 (2.228)**	-0.901 (-2.447)**	0.207 (2.518)**	0.094 (2.554)**	0.313 (3.184)**	-10.292 (-3.725)**	46.07	0.504	81.6
STAND	0.136 (2.636)**	0.203 (1.750)*	-0.025 (-0.806)	0.124 (3.329)**	0.147 (1.733)*	-10.300 (-3.781)**	42.39	0.455	85.5
NETWRK	0.089 (1.647)*	1.531 (2.136)**	-0.061 (-1.554)	0.122 (3.239)**	0.166 (1.879)**	-7.838 (-3.462)**	40.22	0.432	84.2
PREMIS	0.035 (1.841)*	0.041 (1.152)	-0.032 (-1.498)	0.118 (3.614)**	-0.150 (-2.026)**	3.664 (-2.442)**	32.67	0.312	72.4

Note: Figures in parentheses are *t*-values, single and double asterisks indicate statistical significance at the $\alpha = 0.10$ and 0.05 levels, respectively.

TABLE IV
Change in probability of a “Highly Important Instrument” response caused by a marginal change in explanatory variable

Instrument	Variables				
	STOCHANG	EMPLOY	HISTORY	AGE	EDUCAT
PRIFIN	0.006 (1.538)	-0.036 (-1.771)*	0.003 (0.455)	-0.029 (-3.803)**	-0.005 (-0.284)
PUBFIN	0.005 (1.755)*	-0.033 (-2.042)**	0.019 (2.782)**	-0.014 (-2.498)**	-0.206 (-2.219)*
MARKET	0.019 (3.155)**	-0.086 (-2.875)**	0.050 (3.253)**	-0.021 (-2.674)**	-0.095 (-3.640)**
ADVICE	0.006 (1.356)	0.012 (0.877)	-0.005 (-0.804)	0.037 (4.004)**	0.090 (3.756)**
PRODEV	0.006 (-1.356)	-0.012 (0.877)	-0.005 (-0.804)	0.037 (4.004)**	0.090 (3.756)**
TECHN	0.001 (0.411)	-0.030 (-1.347)	0.066 (5.354)**	0.015 (1.992)**	0.032 (1.810)*
TRAINING	0.004 (0.995)	-0.056 (-2.463)**	0.014 (1.850)*	0.022 (3.089)**	0.055 (2.981)**
SKILAB	0.002 (0.986)	0.016 (1.451)	-0.295 (-1.095)	0.000 (0.019)	-0.278 (-2.248)**
UNSKIL	-0.005 (-1.656)*	0.012 (0.994)	0.012 (2.145)**	0.007 (1.396)	0.056 (3.634)**
LABMAR	0.010 (1.364)	-0.072 (-2.254)**	0.016 (1.504)	0.007 (1.465)	0.025 (1.585)*
STAND	0.031 (2.159)**	0.046 (1.584)	-0.006 (-0.811)	0.028 (3.289)**	0.033 (1.767)*
NETWRK	0.001 (0.509)	0.006 (0.584)	-0.001 (-0.565)	0.001 (0.477)	0.001 (0.451)
PREMIS	0.008 (1.867)*	0.010 (1.151)	-0.008 (-1.506)	0.028 (3.769)**	-0.036 (-2.019)**

Note: Figures in parentheses are *t*-values, single and double asterisks indicate statistical significance at the $\alpha = 0.10$ and 0.05 levels, respectively.

standards and adequate business premise. The need for marketing assistance instruments is an indication that grant-aided investments have a significant output effect. The larger the investment, the lower the probability that the firm will require labor subsidies for hiring unskilled labor. One interpretation may be that larger investments are directed for acquiring high-tech machinery in manufacture and thus demand for unskilled labor is not a crucial factor. In other firms, where investments are not directed to the acquisition of high-tech machinery, the substitution of labour by capital may be a risk reduction business strategy reacting to seasonal peaks in labour demand that creates labour supply shortages.

Firm size and age effects

The firm's size in labor units (EMPLOY) has a significantly negative impact on the probability that the firm ranks as very important the instruments concerning with access to private capital (PRIFIN) and provision of public finance (PUBFIN), assistance in marketing (MARKET) and training (TRAINING) and in regulation concerning the labor market (LABMAR). The negative impact indicates that the smaller the firm, the higher its need for access to private capital and provision of public finance, for assistance in marketing and training and for de-regulating the labor market, especially in what concerns

minimum wage agreements and man-hours. Smaller firms have labor requirements that are part-time, seasonal or casual, which are not facilitated by the current regulatory framework.

The firm's history (HISTORY) has a significant positive impact on the probability that the firm ranks, as very important, the instruments concerning with public finance provision (PUBFIN), assistance in marketing (MARKET), assistance in accessing new technologies (TECHN), assistance in training (TRAINING) and provision of labor subsidies for unskilled labor (UNSKIL). The positive sign of the coefficient and the marginal effect for the assistance in marketing instrument is surprising, because one would expect that older firms have established marketing channels and are known to the market. One tentative explanation may be that older firms may want to differentiate their production or enter new markets and thus value assistance in marketing as a very important instrument. Furthermore, older firms are in need of introducing new production technologies, which creates a need for personnel re-training.

Human capital effects

The owner's age (AGE) increases the probability that instruments related to provision of business advice (ADVICE), provision of technical assistance (PRODEV), assistance in accessing new technology (TECHN), provision of training (TRAINING) and standards (STAND) and provision of business premises (PREMIS) will be ranked as highly important. On the other hand the owner's age decreases the probability that instruments, related to access to private sources of finance (PRIFIN), provision of public finance (PUBFIN) and assistance in marketing (MARKET), will be ranked as highly important. This provides a clear indication that younger or starting up businessmen are in need of financial instruments and marketing assistance, while older business owners need more access to modern technology and technical and business assistance, in organising or re-organising their businesses followed by training.

The owner's level of formal education has also different impacts on the probability of ranking certain instruments as important. The higher the educational level of the owner, the lower the probability that instruments related to private

(PRIFIN) and public finance (PUBFIN), marketing (MARKET), the provision of subsidies to skilled labor (SKILAB) and provision of business premises, (PREMIS) will be valued as very important. The higher the educational level of the owner, the higher the probability that instruments related to business (ADVICE) and technical advice (PRODEV), assistance in accessing new technology (TECHN), provision of training (TRAINING), provision of subsidies to unskilled labour (UNSKIL), provision of a new regulatory framework for the labour market (LABMAR) and provision of standards (STAND), will be valued as very important.

Extent of needed support

The outcome of the Poisson model, estimating the simultaneous outcome of the thirteen decisions, which expresses the overall needs of a firm in terms of instruments ranked as highly important, was estimated using the LIMDEP statistical package (Greene, 1998). Maximum likelihood estimated coefficients, their corresponding t-ratios, the chi-square test and goodness of fit measures are presented in Table V. A test for overdispersion in the Poisson model, provides satisfactory evidence that overdispersion does not exist, and thus, the used Poisson model is adequate. The estimated marginal effects and corresponding t-ratios of the Poisson model are shown in Table V.

All explanatory variables, except the firm's size measured in work units, exercise a significant positive effect on the number of development instruments valued as highly important. An increase in the grant-aided investment, by ten million Greek drachmas, increases the number of instruments by 0.27. An increase in the business's history, by 10 years, is associated with an increase in the number of instruments by 0.39. Accordingly, an increase in the owner's age, by 10 years, and the level of education, by one year, will increase the number of instruments by 0.57 and 0.13 correspondingly. Clearly, the number of instruments needed to support grant-aided firms varies among firms and is affected by firm and entrepreneurial characteristics. The extent of needed instruments increases with the size of stock change undertaken through grant-aid, with the firm's and the owner's age and his/her education.

TABLE V
Poisson regression estimates and marginal effects

Variable	Coefficient estimates	Marginal effects
STOCHANG	0.004 (2.558)**	0.027 (2.492)**
EMPLOY	-0.008 (-1.169)	-0.046 (-1.139)
HISTORY	0.007 (2.533)**	0.039 (2.467)**
AGE	0.010 (2.299)**	0.057 (2.239)**
EDUCAT	0.022 (2.087)**	0.134 (2.033)**
Constant	1.014 (4.254) **	
$\chi^2_{(5)}$	21.53	
R^2_p	0.227	
R^2_q	0.218	
Dispersion parameter	-0.102 (-0.648)	

Note: Figures in parentheses are *t*-values, single and double asterisks indicate statistical significance at the $\alpha = 0.10$ and 0.05 levels, respectively.

This variability in the quality (which instruments) and quantity (how many instruments) of required instruments has profound implications for the design and execution of business support policies in rural and lagging areas of Greece.

5. Conclusions and policy implications

Evidence from the present survey suggest that financially assisted businesses in rural and lagging areas of Greece are in need of following up support schemes in the form of business specific initiatives, provision of infrastructure and regulatory actions. The need for various instruments depends upon the capital stock change undertaken by assisted businesses, the firm's size and age and characteristics of the firm's human capital such as the owner's age and education. Survey evidence suggests that business needs for specific instruments are related to a substitution of labour by capital effect and an output effect as a result of investments undertaken with the assistance of grant-aid schemes. Thus, firms that carried out

larger investments are more in need of marketing assistance schemes, instruments for the provision of hygienic and quality standards and the provision of appropriate business premises. Small firms are in need of assistance in accessing private funds while older firms are in need of assistance in introducing new production technologies and re-training their personnel. Young entrepreneurs are in need of schemes for accessing private funds while educated entrepreneurs are in need of business and technical advice schemes. Finally, the number of follow up instruments needed by each firm varies according to the business and owner's characteristics. The number of different schemes needed to support development of grant-aided firms is higher for small and older firms, and for older and educated owners.

The growth potential of small rural firms in lagging areas depends on the provision of policy instruments that extend far beyond the mere provision of grant aid schemes. Policies designed to assist grant aided rural firms should form an integrated framework, made up of business specific instruments, tailored to meet the needs of certain firms, area-wide provision of basic infrastructure needs and interventions, aiming to regulate local markets for goods (standards) and inputs (labour). The proposed instruments aim to combat business constraints, arising from the hostile economic and physical environment, in lagging areas. It is evident, from the results of the present work, that businesses need a set of instruments, rather than a single instrument. This set, however, differs from business to business, depending on its specific economic and human capital characteristics. This points out the two main characteristics that a small rural business growth policy should possess. First, in lagging areas, where the aim of harnessing the growth potential of small firms is not an easy task, firms should be supported by modern, flexibly tailored combinations of assistance, using complex, multi-instrument sets of support to development efforts. Second, different instruments are needed by different firms, a fact indicating the need to consider a selection mechanism in the policy of the delivery process.

Acknowledgements

The authors would like to thank three anonymous reviewers of this journal for their constructive comments on the paper and Ms. Sophia Stathopoulou, post-graduate student at the Department of Economics of the University of Patras for assistance in computing. This publication derives from AIR project (AIR-CT94-1545) funded by the European Commission on 'The Impact of Public Institutions on Lagging Rural and Coastal Regions'. The collaborative laboratories were as follows: Departments of Geography at the Universities of Lancaster, Caen and Valencia; Scottish Agricultural College, Aberdeen; Teagasc, Dublin; CEMAGREF, Clermont-Ferrand; Department of Economics, University of Patras.

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