

# Who uses External Business Advice? A Multivariate Probit Analysis with Sector Effects

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**JEL Classification:** C21; D21; M5

**Keywords:** Business advice, business support policy, multivariate probit analysis

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## Abstract

This paper examines factors that influence the propensity of a firm to take up external business support using random effects nominal probit regression analysis to capture sector heterogeneity. The results suggest a strong positive association between the orientation of the firm towards growth and its propensity to seek external business advice. ‘Push’ factors, including the existence of recruitment difficulties, are identified as key triggers for the seeking of business advice. These findings demonstrate the value of using advanced econometric techniques to analyse business survey data, and provide valuable guidance to public policy organisations concerned with business development and competitiveness.

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## 1. Introduction

This paper investigates the factors that are associated with the use of external business advice services. UK Government policy towards small businesses (see for example Small Business Service, 2003) is based largely on the premise that encouraging more businesses to seek outside advice will help to improve business competitiveness and growth. However, little is known about the reasons why some firms make use of business advice services, and by implication why others do not. Much of the research on these issues (see, for example, Smallbone *et al.*, 1993; Johnson *et al.*, 1998) has utilised small-scale survey or case study approaches and simple bivariate analyses of the data. While this has yielded interesting and valuable results, it is clear that the process of seeking and utilising external support is a complex one, involving a number of inter-related factors.

A further strand of work (for example, Robson and Bennett, 2000; Wren and Storey, 2002) has sought to establish a causal relationship between the use of business advice and the subsequent performance of the individual business. This paper follows a slightly different tack, focusing upon the extent to which the seeking of external business advice is a *consequence* of past performance and/or intended future growth, along with a range of other structural and business-related variables.

The results of our analysis have a number of potential implications for policy and practice. An understanding of the characteristics of those business that tend to seek external business advice may help policy makers and practitioners to target initiatives towards those types of businesses that are likely to be most receptive. Conversely, this type of analysis may help to pinpoint a group of businesses that may benefit from external advice, but at the moment are not seeking or receiving such advice. Finally, an understanding of the characteristics of ‘advice-seekers’

may help to identify the reasons why such advice is sought, and hence suggest improvements in the content and delivery of advice services.

The paper commences with a discussion of the factors associated with the use of business advice. Section 3 then provides details of the data set and Section 4 reviews the estimation techniques. Based on the argument that the incorporation of clustering attributable to sector effects might improve the results, Sections 5 and 6 provide the results of the ordinary probit and random effects probit models respectively. The message appears to be that it is important to take into account the influence of the sector in assessing the factors associated with the use of external business advice. Section 7 concludes and provides policy implications.

## **2. Factors associated with use of business advice**

*A priori* reasoning and an overview of the literature suggest a number of factors that are likely to be associated with the propensity to utilise business support services:

- ? **Structural factors**, notably the size and age of the firm, have been shown by some studies to be associated with the use of external business advice services. On the basis of a bivariate analysis, Johnson *et al.* (1998) suggested that the use of business advice by SMEs is positively associated with firm size. Bennett *et al.* (1999) and Boter and Lundstrom (2001) found similar results using multivariate techniques. The work of Smallbone *et al.* (1993) indicated that, despite a widespread belief that advice and support is most useful to new and young businesses, many mature firms can and do benefit from such support.
  
- ? A further set of structural factors relates to the extent to which the business uses **technology**, and/or is involved in research and development activities. Greater

technological sophistication – in relation to product or process – is likely to require external assistance in the form of training or technical support. R&D often involves collaboration with organisations such as universities, research centres or other businesses.

- ? The nature of the **market** within which the business is operating may influence the extent to which a business owner-manager feels the need to seek external advice or support. A business operating within mainly local markets is likely to need limited support, particularly in relation to market development, whereas considerable advice may be needed by those operating in – or planning to enter – export markets.
  
- ? Research has suggested (Storey, 1994; Boter and Lundstrom, 2001) that the most common source of advice for small business owner-managers is his/her bank manager or accountant. Hence it might be expected that a business that is in need of **external finance** is particularly likely, *de facto*, to obtain wider business advice or support. Moreover, the raising of external finance can be taken as an indication of changes in the business that might require additional advice. These might be ‘positive’ changes, such as investing in new equipment or premises, or ‘negative’ changes such as cash-flow difficulties.
  
- ? One of our main hypotheses is that a key set of factors inducing businesses to seek external advice relates to the past and intended future **performance** of the business. In line with Johnson *et al.* (1998), we suggest a positive relationship between ‘growth orientation’ and the seeking of external advice. Businesses that intend to grow – in terms of profits, turnover, employment and/or market coverage – are more likely than others to need (and benefit from) external advice or support. At the other end of the scale, businesses facing difficulties of various types are likely to seek support to assist in overcoming these

problems. In some cases – such as recruitment difficulties – the problems may be a consequence of growth. In most cases, however, problems arise due to poor performance and/or adverse external factors.

? Finally, a considerable amount has been written about the nature of the **owner-manager** of the business as a key factor influencing the behaviour of the organisation, including the use of external advice and support (Gibb, 1993; Storey, 1994; Devins, 1999). The owner-manager is viewed typically as being independent-minded, usually with limited qualifications and consequently averse to seeking or accepting external advice. Factors such as the age, experience, qualifications and psychological make-up of the owner-manager might therefore be expected to influence whether s/he is inclined to seek outside help with business issues. Unfortunately, the survey on which this analysis is based did not collect personal information about the respondent, so we cannot test this set of hypotheses directly. However, we would suggest that indicators such as the degree of formal planning in the organisation and orientation towards growth, to some extent reflect the personal characteristics of the owner-manager (see, for example, Clark *et al.*, 2001).

The model which we present in this paper attempts to incorporate as many of the above factors as possible to explain the extent to which surveyed businesses used any form of ‘external business support services’ during the 2 years prior to the survey. The term ‘business support’ was defined broadly to include ‘business information, advice, guidance, consultancy, training and financial support’ but excluding routine banking facilities and audit requirements.

External support could be sought from any types of organisation, including banks, accounts

and private sector consultants, as well as publicly funded institutions such as Business Link.<sup>1</sup> The next section describes the data in more detail.

### **3. Data**

Data used in the analysis were taken from the South Yorkshire Employer Survey, which was conducted in 2000 by the Policy Research Institute (at Leeds Metropolitan University) on behalf of the Training and Enterprise Councils (TECs) in South Yorkshire. This survey is part of a regular series which provides labour market information to inform the work of the TECs (now the Learning and Skills Council, LSC) and local partner organizations such as the Small Business Service and Business Link.

The survey comprised telephone interviews – using a structured survey instrument – with over 2000 employers located in the Sheffield, Doncaster, Rotherham and Barnsley districts of South Yorkshire. A stratified sampling approach was adopted in order to produce a sample that was representative (after weighting) of employers in all sectors in the sub-region. The majority of the questions focused upon labour market variables such as employment growth, recruitment, skill shortages and training activities. However, a number of questions covered business variables such as investment, finance, R&D and – crucially for this study – use of external business support services. After attrition, the full sample for analysis here is 1499 firms. This is smaller than the total number of firms surveyed because of omitted observations for variables that are included in the econometric analysis.

Twenty nine per cent of respondents had used at least one type of business support, with the most popular business area being training and development, followed by business planning and

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<sup>1</sup> Unfortunately, the survey data do not allow us to distinguish between different sources of advice.

development and then by health and safety. Table 1 summarizes the types of external advice and support that the surveyed businesses had used in the past two years. They are ranked according to the frequency of use of external advice. As an example, of those who did use external business advice 29.1% used external business advice for recruitment purposes.<sup>2</sup>

Table One about here

Table 2 contains the means and standard deviations of the variables used in the estimation. The models include a set of variables that are expected to be important determinants of whether a firm uses external business advice. The average age of the firms in the sample was roughly 19 years and these firms employed on average 30 people. Of the firms in the sample, between 20% and 50% were intending to expand their business in some way.

Table Two about here

There is also some indication of the problems that the firm may be facing. 17% of firms were having trouble filling vacancies, with double that proportion experiencing problems of some kind that restrict the ability of the business to prosper. As would be expected, the majority of firms (76%) were using information technology. Between 36% and 47% of the sample were involved in some planning for the future either via a business plan or a training plan, aimed at overcoming future problems. The firms were fairly evenly spread between each of the major areas, with slightly more in the Sheffield area and less from the Doncaster area.

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<sup>2</sup> The questionnaire did not ask respondents to indicate the organisation that provided the support, but as noted above, previous research has indicated that banks and accountants are very important sources, with only a minority of businesses contacting public or quasi-public organisations such as Business Link.



#### 4. Estimation Technique

Multivariate statistical techniques, such as probit regression analysis, enable us to take account of the complexity of the factors associated with the use of business support, and to investigate the inter-relationships between variables. The size of the South Yorkshire Employer Survey database, and the range of information collected, allows us to conduct such an analysis. In so doing we can build a picture of the type of businesses that are most (and by implication least) likely to seek out business support.

We present a model that is estimated through random effects nominal probit regression analysis to incorporate heterogeneity that may be attributable to the sector in which the firm is operating. Clustering in this way identifies the significance of sector heterogeneity and highlights the extent to which adopting external business advice can be explained by the membership of a sector.

*A priori* reasoning and previous research findings (Johnson *et al.*, 1998) provide strong rationale for suggesting that firms in certain sectors are more (or less) likely to seek external business advice than others. Businesses in rapidly changing sectors (such as information technology or financial services) are much more likely to seek external advice than those in more stable sectors such as retailing or transport. To the extent that there exist a number of other sector-specific attributes that might be associated with use of external advice (e.g. export orientation) it is very important to ensure that the model controls for sector effects in order to avoid drawing erroneous conclusions. More widespread use of such multilevel, multivariate techniques in small business research might lead to a clearer picture being built of the relationships between small firm behaviour and policy. As such, the use of multivariate

statistical techniques could provide a useful additional tool for policy makers and practitioners in devising, implementing and evaluating business support policies.

As the data in the survey were collected at firm level, we can also cluster according to the sector in which the firm operates. There exist two levels to the data here: the individual firm level and the sector level. Although we can estimate a model of firm choice, by doing so ignores the fact that the individual firm operates in a sector which might have similar characteristics. An obvious extension therefore would be to integrate sector heterogeneity in order to allow for a degree of dependency within sectors and then to estimate the usual model parameters with sector effects. In the econometrics literature examples of such models are random or fixed effects models (see, for example, Greene, 1990). In order to estimate the models we use a maximum likelihood estimator that incorporates random sector effects to control for clustering. For a discussion of the model and software package, see Hedeker (1999).

## 5. Ordinary Probit Results

Table 3 presents the results from the initial probit estimations. The dependent variable in each regression is whether the firm used external business advice in the two years prior to the survey. The table contains the result from three preliminary models. The first model (1) includes a full set of regressors.

Table Three about here
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It is clear from model (1) that our *a priori* expectations regarding the signs of most of the coefficients are borne out. Having a forward-looking approach to business, as proxied by the presence of a training plan (*Fundtrain*), increases the likelihood of taking up external business

advice. Similarly if the business has experienced problems, then this also increases the probability of using external business advice. There is some evidence to suggest that greater concentrations in local markets reduce the likelihood of using external business advice, although the variable, *Pcentlocal*, is significant in only one of the specifications. Some other evidence of this may be inferred however from the coefficient on *Willexpt*, which is positive and very significant in all cases. Interestingly, there is no evidence that size or age of firm exerts any significant influence. In addition to the above, we can also see that firms using IT or those who possess a research and development budget are also more likely to take up external business advice. There is no evidence of any sectoral effect here (when split by manufacturing/retail/services) although there is some evidence that location is important with firms from the Rotherham or Barnsley area being less likely to take up external advice than those located elsewhere in South Yorkshire.

Model (1) is then reduced through the elimination of insignificant variables to form models (2) and (3) respectively.<sup>3</sup> There does not appear to be any omitted variable bias to the coefficients of each regressor in each model as the log-likelihood statistics are very similar. It is quite clear that variable deletion has made little difference to the significance of each regressor.

Of particular interest here are the coefficients on the variables that relate to the future plans or ambitions of the business (*expndemp*, *willexpt*, *uprofits*, *upturn*). The mean values of these variables (Table 2) indicate that there is a 'hierarchy' of growth ambitions with just over half of responding organisations aiming to increase profits and 32 per cent wishing to increase turnover. At the other end of the scale, 23 per cent envisaged an increase in employment and 12 per cent had aspirations to export. The results of the probit analysis (Table 3) suggest that – in general – businesses that are aiming for increased profit and/or turnover without necessarily

entering new markets or recruiting new staff, have a relatively low probability of requiring external business support. It appears to be more substantive changes – new markets, new employees or indeed new products or processes – that are most associated with the need for external assistance. We can therefore suggest, along the lines indicated by Johnson *et al.* (1998), that growth orientation (using anticipated employment growth as a proxy) is a key factor that predisposes businesses to seek external support. This finding has important implications for the targeting of advice services, to which we return at the end of the paper.

The seeking of external advice is also positively related to the extent to which businesses have experienced particular difficulties that they feel have impaired their ability to prosper. This is clear in relation to recruitment difficulties, which might lead businesses to contact the public employment service, recruitment agencies, educational institutions or other organisations that might be able to provide advice or assistance in filling vacancies. More generally, surveyed firms mentioned problems related to increased competition, shortage of finance, difficulties in finding new customers, cash flow problems and access to training as affecting business growth and profitability. These ‘push’ factors can and do combine with the ‘pull’ factors associated with business growth, to create a potential demand for external advice or assistance.

## **6. Extending the analysis to incorporate sector effects**

The possible downside of the above analysis is that the probit regressions above implicitly assume that each of the units of observation included in the sample were random. However, this is unlikely to be true as these units are firms and each firm will probably have similar characteristics to other firms in the same sector. If firm characteristics are not totally random but instead can be clustered according to sector, then using ordinary probit estimation will

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<sup>3</sup> We retain *pcentloc* as it is marginally insignificant at the 10% level.

produce biased results. The solution to this problem is to use a model in which the degree of dependency within clusters is jointly estimated with the usual model parameters. In the econometrics literature examples of such models are random or fixed effects models, as detailed above.

Table 4 presents the results of the random effects probit models. The models presented use only a subset of the regressors included in Table 3 as the models became increasingly difficult to estimate as the number of regressors increased. However, we have included in the estimations those variables that were found to be the most significant in the ordinary probit regression results. In order to afford some comparison, we have also estimated results from equivalent probit models (columns 1, 3, and 5).

The first point to note from Table 4 is that in each of the models there is evidence for the presence of sectoral effects. Both the log-likelihoods and the significance of the random effects variance term suggest that the random effects models are significant improvements on the ordinary probit results. The manner in which this manifests itself within the regressor is via either the size or the significance of the coefficients. Whilst most of the variables are significant in both the random effects and ordinary probit regressions, when random effects attributable to sector heterogeneity is taken into account the significance of the regressors' coefficients is reduced. One of the best examples of this is *Expndemp*. Not accounting for sectoral heterogeneity suggests that if a firm wishes to expand employment then it will use external business advice. However, when sector heterogeneity is taken into account, it appears that not only does the effect of this employment expansion diminish with respect to the decision to use external business advice, but the statistical significance of this effect also reduces.

*Expndemp* is not the only variable that reacts in this way. When sector heterogeneity is taken into account, the magnitude of the coefficients on *Fundtrain* and *UseIT* also reduce in magnitude. However, it appears that these regressors remain significant across the whole range of estimations, indicating regressor stability and highlighting the importance that if a firm funds employee training or uses information technology then the firm is also likely to use external business advice. It is not clear from this analysis whether this external advice is restricted primarily to issues directly relating to training and/or IT. It may be that businesses that are involved in training and/or IT are predisposed to seek advice across a range of other issues.

Table Four about here
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Notwithstanding the complexities involved in the interpretation of the results of these models, the message appears to be that it is important to take into account the influence of the sector in assessing the factors associated with the use of external business advice. Nonetheless, the results do indicate that ‘push factors’ (growth orientation, non-local markets) and ‘pull factors’ (recruitment difficulties, other problems) both play an important role in influencing whether a business seeks external business advice or support.

## **7. Conclusions and policy implications**

The main motivation for undertaking this analysis was to demonstrate the value of using relatively advanced econometric techniques, notably random effects probit analysis, to analyse data collected through relatively large-scale employer surveys, of the type conducted by a range of organisations including the Small Business Service and Learning and Skills Councils. We have demonstrated that it is possible to test a number of hypotheses about the determinants

of business advice use, and that the results can add value to the insights obtained from straightforward bivariate analysis of data and/or small-scale case studies. The type of database and analytical techniques presented in this paper could be helpful in exploring these issues further.

Notwithstanding the potential for further theoretical and empirical development of this model, we can identify a number of factors that are associated with businesses that are more likely than average to seek out and use external business support, as follows:

- ? They can be of any size or age
- ? They are more likely to be located in densely populated metropolitan areas
- ? They are more likely than average to be using information technology and/or involved in research and development activities
- ? They are likely to be planning to grow their business, particularly in terms of employment and/or expansion into new geographical markets
- ? They may have had, or be currently experiencing, difficulties in recruiting new employees
- ? They are more likely than average to have sought and received external funding for their business in terms of a bank overdraft, loan, grant or equity investment

As noted in the introduction, policy towards small business at national and local levels is based heavily upon the provision of advice and support services of various types. This paper has been unable to distinguish between the types of organisation providing advice, due to the limitations of the data source; however, it would seem reasonable to conclude that businesses that are inclined to seek advice from (say) their bank or accountant, are more likely than average to be prepared to use publicly funded advice or support services. While there may be

specific barriers to the use of publicly funded services (such as mistrust of government, lack of trust in the quality of the service) research suggests that the key hurdles lie in convincing owner-managers to accept *any* external advice or support.

If this reasoning is valid, we can argue that publicly funded advice services should be targeting those types of businesses that are predisposed to the use of external advice, and attempting to add value to the advice and support that they already receive. This argument is strengthened by the observation that – in general – such businesses are wishing to grow and develop their businesses, and in many cases create new jobs and enter new (sometimes export) markets.

A central issue here is how to identify such businesses, given the large number of businesses within the catchment areas of most agencies. This problem is reduced considerably by the observation that such businesses have already sought advice or support from at least one organisation on at least one issue. For example, nearly 17 per cent of our sample sought advice or support on training-related issues, suggesting that training organisations, colleges and similar organisations should be important partners for agencies that supply wider business advice and support. Similarly, organisations providing support on financial issues – such as banks and accountants – are in a good position to refer clients on to other advice providers. Clearly, confidentiality issues will prevent many organisations from handing over client records. However, it would seem feasible for business support organisations to work with, say, banks to identify likely beneficiaries, perhaps using a model of the type outlined in this paper.

A further potential target group – but one which is more difficult to identify – consists of those businesses that have characteristics that are associated with advice-seeking, but that do not currently use external advice. Such businesses could be identified through surveys such as the one analysed here, through direct marketing efforts or possibly through contact with



organisations such as banks and accountants. In the last case, businesses may have contact in relation to ‘routine’ issues, but do not seek further advice or support on business, employment or related issues.

To summarise, although we believe that our approach yields some useful results that help to identify businesses with a predisposition to seeking external advice, it does not provide a magic formula. However, it does provide a possible basis upon which fruitful partnership with a range of support providers might be developed, and for the effective targeting of scarce resources in a way that focuses upon the ultimate objective of publicly-funded business support – more competitive businesses and a more competitive economy.

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**Table 1: Types of advice used by South Yorkshire businesses**

<b>Area of support</b>	<b>% of all respondents receiving support</b>
Any support	29.0, of which
Training and development	58.2
Business planning and development	40.5
Health and safety	36.6
Recruitment	29.1
Information and communication technology	26.0
Legislation	23.5
Marketing	22.8
Accounts / bookkeeping / tax	18.4
Environmental issues	18.3
Business information and research	17.9
Quality initiatives	16.5
Raising finance / grants	16.2
Sales	13.8
E-commerce / web design	12.4
Production issues, including new technology	9.0
Product approvals	8.4
Exporting	6.6
Product / service design	6.6
Re-location	4.6
Intellectual property rights	3.5
Other	2.1

**Table 2: Means and standard deviations of variables used in estimation**

<b>Variable</b>	<b>Definition</b>	<b>Mean</b>	<b>Stand. Dev.</b>
<b>Advice</b>	= 1 if the firm has used external business advice in the past 2 years; = 0 otherwise	0.29	0.46
<b>Estyrsn</b>	The number of years that the firm has been established	18.72	29.61
<b>Totempn</b>	Total number of employees	29.50	97.32
<b>Pcentlocal</b>	The percentage of business done locally	55.94	42.02
<b>Expandemp</b>	= 1 if the firm wishes to expand employment in the next year; = 0 otherwise	0.23	0.42
<b>Willexpt</b>	= 1 if the firm exports or intends to export in the next year; = 0 otherwise	0.12	0.33
<b>Uprofits</b>	= 1 if the firm aims to increase profits; = 0 otherwise	0.51	0.50
<b>Upturn</b>	= 1 if the firm aims to increase turnover; = 0 otherwise	0.32	0.47
<b>Nofilvac</b>	= 1 if the firm is having trouble filling vacancies; = 0 otherwise	0.17	0.38
<b>Problems</b>	= 1 if the firm is experiencing problems that restrict its ability to prosper; = 0 otherwise	0.34	0.47
<b>UseIT</b>	= 1 if the firm uses information technology; = 0 otherwise	0.76	0.43
<b>Resdevt</b>	= 1 if the firm has a research and development budget; = 0 otherwise	0.16	0.37
<b>Fundtrain</b>	= 1 if the firm funds or supports employee training; = 0 otherwise	0.56	0.50
<b>Finance</b>	= 1 if the firm has raised external finance in the past year; = 0 otherwise	0.20	0.40
<b>Busplan</b>	= 1 if the firm has a business plan; = 0 otherwise	0.47	0.50
<b>Trainplan</b>	= 1 if the firm has a training plan; = 0 otherwise	0.36	0.48
<b>Doncaster</b>	= 1 if the firm is located in the Doncaster area; = 0 otherwise	0.21	0.41
<b>Rotherham</b>	= 1 if the firm is located in the Rotherham area; = 0 otherwise	0.24	0.43
<b>Barnsley</b>	= 1 if the firm is located in the Barnsley area; = 0 otherwise	0.26	0.44

**Table 3: Probit estimates of factors affecting take-up of business advice**

Variable	1	2	3
<i>Estyrsn</i>	0.002 (1.27)		
<i>Totempn</i>	0.0004 (0.85)		
<i>Pcentloc</i>	-0.002* (1.92)	-0.002 (1.60)	-0.002 (1.60)
<i>Expndemp</i>	0.36*** (3.91)	0.34*** (3.84)	0.34*** (3.84)
<i>Willexpt</i>	0.63*** (5.24)	0.62*** (5.18)	0.62*** (5.19)
<i>Uprofits</i>	-0.03 (0.39)		
<i>Upturn</i>	-0.08 (0.90)		
<i>Nofilvac</i>	0.27*** (2.73)	0.28*** (2.94)	0.29*** (2.96)
<i>Problems</i>	0.44*** (5.35)	0.43*** (5.36)	0.43*** (5.36)
<i>Useit</i>	0.40*** (3.59)	0.41*** (3.74)	0.41*** (3.74)
<i>Resdevt</i>	0.19* (1.80)	0.21** (2.04)	0.21** (2.04)
<i>Fndtrain</i>	0.61*** (6.69)	0.62*** (7.07)	0.62*** (7.08)
<i>Gotfnanc</i>	0.26*** (2.79)	0.27*** (2.97)	0.27*** (2.97)
<i>Busplan</i>	-0.01 (0.16)		
<i>Trainpln</i>	0.19* (1.92)	0.22** (2.54)	0.22** (2.53)
<i>Donny</i>	0.06 (0.57)	0.03 (0.26)	
<i>Roth</i>	-0.34*** (3.00)	-0.38*** (3.49)	-0.39*** (4.14)
<i>Barnsley</i>	-0.22** (2.03)	-0.26** (2.36)	-0.27*** (2.83)
<i>Manuf</i>	0.07 (0.40)		
<i>Retail</i>	0.07 (0.39)		
<i>Services</i>	0.23 (1.44)		
<b>Constant</b>	-1.72*** (7.65)	-1.61*** (11.13)	-1.61*** (11.13)
<b>-Log Likelihood</b>	715.1	719.8	719.8

**Notes:** Absolute *t*-statistics in parentheses. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% level respectively. The dependent variable in each regression is whether the firm uses external business advice.

**Table 4: Comparison of probit and random effects probit estimation**

Variable	1	2	3	4	5	6
	Probit	Random effects	Probit	Random effects	Probit	Random effects
<i>Estyrns</i>	0.002* (1.65)	0.003 (0.67)			0.001*** (2.85)	0.001** (2.05)
<i>Pcentloc</i>	-0.003*** (3.54)	-0.003 (1.07)	-0.003*** (3.51)	-0.003 (1.51)		
<i>Expndemp</i>	0.43*** (4.85)	0.38 (1.53)	0.41*** (4.67)	0.36* (1.65)	0.43 *** (4.98)	0.38** (2.09)
<i>Nofilvac</i>	0.24** (2.57)	0.25 (1.06)	0.25*** (2.66)	0.26 (1.60)	0.22** (2.42)	0.25* (1.69)
<i>Problems</i>	0.49*** (5.78)	0.45*** (2.80)	0.45*** (5.79)	0.45*** (2.98)	0.46*** (5.92)	0.46*** (2.62)
<i>Useit</i>	0.51*** (4.69)	0.44** (2.12)	0.50*** (4.66)	0.44** (2.26)	0.55*** (5.22)	0.47*** (2.65)
<i>Fundtrain</i>	0.73*** (8.89)	0.71*** (8.46)	0.73*** (8.93)	0.71*** (8.31)	0.71*** (8.65)	0.70*** (6.17)
<b>Constant</b>	-1.60*** (12.82)	-1.57*** (6.34)	-1.56*** (12.72)	-1.51*** (8.31)	-1.80*** (17.44)	-1.73*** (10.53)
<b>Random effect variance</b>		0.24* (1.65)		0.23** (1.82)		0.23** (1.83)
<b>-log likelihood</b>	757.8	750.9	759.3	752.6	762.3	754.2

**Notes:** Absolute *t* values in parentheses. \*, \*\*, \*\*\*, denote significance at the 10%, 5% and 1% level respectively. The dependent variable in each regression is whether the firm uses external business advice.