Final Report for UKTI:

Analysis of the International Business Strategies, Barriers, and Awareness Monitoring Survey.

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Executive Summary

This study provides secondary analysis of data collected through two recent surveys of UK exporters which were carried out for UK Trade & Investment during 2008 and 2009, in each case involving telephone interviews with 900 firms. The purpose of the study was to delve more deeply into the findings, using multivariate statistical techniques to understand more about the factors driving the descriptive survey results.

The research focused on six questions:

- Are there significant differences between users of UKTI services and non-users, having controlled for other variables such as firm age and size?

- Are there significant differences by size band in the existence or extent of any differences between UKTI users and non-users?

- How do barriers to exporting vary by type of overseas market, controlling for firm characteristics such as age and size?

- To what extent and how do barriers to new markets vary by export experience, as measured by: (a) number of years export experience; and (b) number of overseas markets in which the firm is doing business?

- Are there any firm characteristics which appear to be significantly associated with lack of awareness of UKTI and its services?

- Are there any firm characteristics which are significantly associated with export diversification?

In most cases the analysis has confirmed the descriptive results, and is consistent across the two surveys. Key findings are:

- Innovation and Intellectual Property ownership are positively and highly significantly associated with being a UKTI service user. Users are also more likely to have a written business plan. Firms adversely affected by the economic downturn were less likely to have used UKTI;

- There is a significant difference in the relationship between Intellectual Property ownership and being a UKTI service user across different firm size groups. This is a consistent result across both surveys.

- Innovative firms report a significantly higher number of barriers, and innovation was found to be the only consistent predictor of the number of barriers. Using age as a proxy for experience we find that younger firms are more likely to perceive a higher number of barriers. This is broadly consistent with the Kneller and Pisu (2006) which reported that the number of barriers a firm faces declines with export experience.

- No significant difference in number of barriers was found by type of market. However, there was some evidence that firms which conduct business in more than 50 overseas markets are likely to encounter more barriers than those in only 1-50 markets.

- In terms of severity of barriers, innovation was again the most significant influence, with innovative firms more likely to report more severe barriers, particularly with respect to contacts, establishing an initial dialogue, and building relationships with key contacts. The severity of legal and regulatory barriers was not tested in this analysis.

- Innovative firms are more likely to be aware of UKTI services, as are firms with greater international market experience.

- Larger and older firms are more likely to enter BRICs and other emerging markets, as are highly innovative firms and 'born globals'.

1. Introduction and Research Questions

This research project for the UKTI is composed of several strands of analysis and essentially the aims of the project can be covered by the following six research questions.

1. Firstly we investigate whether there are significant differences between users of UKTI services and non-users, having controlled for other variables such as age and size. In particular we focus on:

- Innovation variables including IP ownership
- Management variables e.g. the existence of a recent written business plan and a high growth objective
- Perceived projective barriers in entering new overseas markets[2]
- The propensity to enter emerging markets
- The probability of having experienced negative effects of the economic down turn.

2. Furthermore we also determine whether there are significant differences by size band in the existence or extent of any differences between users and non-users.

3. Building on work by Kneller and Pisu (2006, 2008) we also explore how barriers vary by type of market, controlling for firm characteristics. Our analysis will aim to explore the potential differences between emerging markets, BRICS, and other high growth markets.

4. Following on from this we then explore to what extent and how do barriers to new markets vary by export experience, as measured by: (a) number of years export experience; and (b) number of overseas markets in which the firm is doing business? Where such differences occur, to what extent can these be explained by the type of overseas market which firms may be seeking to enter?

5. Are there any firm characteristics which appear to be significantly associated with lack of awareness of UKTI and its services?

6. Finally we study the firm characteristics which are significantly associated with export diversification as measured by: (a) number of markets; or (b) number of regions. This analysis includes an exploration of the extent to which innovation variables and/or management variables may be significant determinants of diversification.

[2] It should be noted that for both the 2008 and 2009 datasets we are using projective reported barriers whereby firms are asked to think of barriers relating to a hypothetical firm in a similar position to itself in terms of size, sector and structure.

The outline of the Final Report is as follows: the next section places the research questions in the context of the recent academic literature. Section 3 presents our proposed methodology and introduces the data. Section 4 discusses our results and finally Section 5 presents the conclusions.

2. Research Context and Literature Review

This section aims to illustrate our understanding of the issues surrounding the research questions and place them in the current academic literature.

Motivation for internationalisation

Zahra and George (2002) note that although little is known about why firms enter new markets, common motivations for internationalisation are the anticipation of first mover advantages, organisational learning, and acquisition of new knowledge or increased market shares and the desire to escape stagnation in the domestic market.

Earlier work by Czinkota (1993) divides the motivations for new market entry into proactive, such as profit, technological advantage, unique competences managerial urge and tax benefits, whereas reactive motivations include a decline in domestic demand, excess capacity and proximity to clients. Furthermore Czinkota suggests that certain change agents can motivate the decision to internationalise namely a new managerial strategy, over production, the acquisition of new information and pro- exporting government policy. More recent work (Bishop, 2008) on young knowledge based ventures in Central Europe reported on an environmental consultancy which was motivated to internationalise by its proximity to foreign clients and the need to exploit technological capabilities and language expertise.

Drivers of internationalisation

Firm age and exporting experience are important drivers of internationalisation.
Sapienza *et al.* (2006) raise the issue of firm age and the impact of internationalisation on firm survival and growth. They challenge the traditional process theory of internationalisation which argues that internationalisation early in the firm's life cycle can be detrimental to the firm's performance and survival prospects. Instead they argue that age plays a moderating effect, and interacts with organisational and environmental conditions creating a complex relationship between internationalisation, survival and performance. Younger firms may be better able to adopt a risk taking, innovation and proactive attitude to internationalisation, and are also less likely to suffer from organisational inertia, however their older counterparts "*will be able to better bear the strain of such a pursuit*" (p921) and be able to leverage their reputation, brand recognition, organisational culture and customer loyalty. As a result the authors argue that at the early stages of internationalisation new ventures develop capabilities that may both decrease the probability of survival yet increase the probability of growth. This is where the network approach to internationalisation comes into play. Ylirenko *et al.* (2001) find that relational resources enable young firms to gain access to resources and also help them overcome their "*liability of newness*". Similarly, research by Bishop (2008) reported on a case study that used a partner to help develop a new venture in Turkey by providing

complementary resources and capabilities in the form of local market and technology access. This mirrors the work of Coviello and Munro (1997) who found that a successful internationalisation process depends on firm's involvement in international networks with partners guiding market entry and selection

The "Born Global[3]" firm (see Andersson and Wictor (2003) and Madsen and Servais (1997)) which describes a more recent phenomenon whereby firms adopt a global approach from the start of the operations or shortly after, represents a challenge to traditional models of internationalisation which involves an incremental, gradual approach to entering new geographic markets. More recently, Harris and Li (2007) provide an analysis of the characteristics of UK "Born Globals" in terms of size, region and absorptive capacity. It is not known whether Born Global status makes firms more aware of potential barriers to entering new markets.

Bishop (2003) used a dataset of over 200 privatised companies in the former Soviet Union covering the period 1995-1998 in order to analyse the determinants of export activity (intensity and propensity) and which characteristics determine the presence of a foreign partner in a host firm. The usual firm level characteristics were included such as size, export experience and ownership as well as managerial perceptions of both the host and entering firm, including motivations for seeking a foreign partner such as gaining access to local technology and expertise. The principal findings were as follows; large firms, suffering from industrial decline, with outsider control had higher exports and were more likely to be exporters. Moreover the likelihood of a firm having a foreign partner increases in large, exporting firms and in those that are looking to gain access to local markets

Geographic Focus

The Uppsala Model of Internationalisation associated with Johanson and Vahlne (1977) considers entry mode decisions as a time dependent process and proposes that there is a direct relationship between market knowledge and commitment. Related to this is their concept of psychic distance which they define as the sum of factors which prevent the flow of information from and to the market and can be language barriers, differences in culture or industrial development (p24). The Johanson and Vahlne model states that the time ordering of the establishment chain: no regular export, independent representative, sales subsidiary to production is related to the psychic distance between the home and importing/host country. So firms start off by exporting to clients in countries with similar backgrounds and, as they gain in experience and learning, they later enter markets that are "distant". Eriksson et al. (1997) find that a lack of experiential knowledge will increase the perceived cost of the internationalisation process and this affect the mode of entry. Axinn and Matthyssens (2002) review the limitations to the traditional model and report that the psychic distance concept becomes redundant in light of recent trends in e-commerce. Furthermore the model is unable to explain the Born Global phenomenon or account for those firms which start out using a relatively risky entry mode. Bishop (2003) also makes the point that some firms may decide to adopt multiple entry modes to foreign markets, or skip elementary modes of internationalisation for foreign domestic investment and some firms may even refocus their operations.

[3] This term was first coined by a McKinsey study of high value added manufacturing exporters (Rennie, 1993).

Barriers

Shaw and Darroch (2004) studied barriers to internationalisation in 560 small entrepreneurial new ventures in New Zealand having argued that an entrepreneur's perceptions of the barriers to internationalise will influence his or her decision to enter international markets as well as guide which markets s/he decides to enter and the subsequent level of involvement. After grouping the barrier types via factor analysis into the eight categories (lack of overseas market knowledge and experience, differences in overseas markets, regulation, finance, transport, product characteristics, lack of government incentives and physical location) they test for differences in the perception of barriers to internationalisation by firm size and industry. They report some significant differences in perceptions of barriers across firm size, for example a lack of market knowledge and access to finance was found to be a much greater barrier for smaller firms, however a lack of government incentives is perceived as a greater barrier by both small and large firms. None of the barriers were reported to be industry specific.

Bishop (2008) used a qualitative approach to examine the motivations and challenges faced by knowledge based entrepreneurs in the post-transition environment. Challenges include a poor availability of finance to assist with entering foreign markets, lack of marketing experience, poor language abilities and gaining access to local markets.

This leaves us with the question of how to overcome these challenges to internationalisation. Musteen et al (2007) reported in their study of Czech SME's that understanding foreign business practices can be an available resource and diverse international networks can help enrich a firm's market knowledge. Earlier papers by Kneller and Pisu (2006, 2008) are particularly relevant to research questions 3 and 4 above. They suggest that export experience (even if obtained several years ago) can lower the sunk costs[4] of export market entry, relative to those firms new to exporting. Their study reports on a number of important research questions, such as: how does the number of barriers reported vary with observable firm and industry characteristics, and how does the severity of each individual barrier vary according to these firm and industry characteristics. Using data from the OMB survey they concluded that export experience plays an important role in determining the number of actual barriers, as well as which individual barriers were deemed as important.

UKTI Services

Girma et al. (2005) analyse the impact of various UKTI support programmes on firm performance. The relevant programmes include Aftercare for inward investors located in the UK, DPS (a database on Support for Exhibitions and Seminars abroad (SESA), EMRS (Export Marketing Research scheme) and Passport to Export[5]. They use regression analysis and propensity score matching and reveal that the Aftercare

[4] Sunk costs can include gathering information on foreign markets, developing marketing channels, and adapting packaging.

[5] Other UKTI services include OMIS (Overseas Market Introduction Service) and TAP (Trade Show Access Programme).

programme has a positive impact on levels of profit, employment, investment, value added and the export ratio in manufacturing establishments. In services Aftercare has a weaker impact on profit ratio, employment (albeit a slightly delayed impact) and value added. In terms of the Passport to Export programme they find that this has a significant and positive impact on labour productivity and wages. In the year of participating British firms in manufacturing in the Passport programme had lower export ratios, compared to other domestic firms. However for service firms a positive relationship is reported.

Internationalisation and Performance

Growth by international diversification is an important strategic option for both small and large firms (Lu and Beamish, 2001, p565). They test the joint effects of both exporting and FDI on performance using a matched dataset of Japanese SMEs. They find that, contrary to their hypothesis, exporting has a negative relationship to firm performance, as measured by return on assets. They also predicted and confirmed a non linear relationship between the level of FDI, (measured by the number of foreign investments and the number of countries invested in), and performance; with a negative relationship at lower levels and a positive relationship at higher levels of FDI.

Zahra and George (2002) recommended that scholars focus on the outcomes of international entrepreneurship. Bishop (2008) reported that the outcomes of internationalisation for three case studies were largely positive with managers commenting on skills improvement, and enhanced reputation via the acquisition of prestigious clients. Bernard and Jensen (1999) use a rich US dataset covering the period 1984-1992 to investigate the serious causality issues surrounding exporting and performance. Their fixed effects estimation confirms their hypothesis that prior success (as measured by employment, productivity and level of wages) increases the probability that a firm becomes an exporter. The evidence on whether exporting leads to superior performance is more mixed; they report that over longer intervals the benefits of exporting tend to be limited to employment growth, however productivity and wage growth is not superior among exporters. Another important issue that their research raises is the question of survival; their estimations reveal that the probability of survival is higher for exporters- a finding that is relevant given the current economic climate.

Another important study is Harris and Li (2005) which identifies links between exporting, innovation and productivity at the establishment level by using the 2001 Community Innovation Survey and the Annual Respondents Database. Of particular relevance to this section is their analysis of the role of exporting and international linkages on productivity, taking into account any possible export-innovation linkages. The Harris and Li study makes the important point that there is a dearth of time series data on exporting and productivity available to researchers and therefore it is not possible to disentangle the direction of causality between exporting and performance, or GVA in this instance. However they were able to confirm that those establishments that export do have certain characteristics that are linked to high productivity, such as size, absorptive capacity, and R&D by estimating an enhanced production function. The Harris and Li (2006) paper extends the 2005 version by using a later version of the CIS- the Community Innovation Survey 4 and closely examining the causality issues between exporting, innovation and productivity. Their key results highlight that absorptive capacity is higher in exporting establishments,

but there is no significant difference in the value of labour productivity when considering those who export and those who didn't export. Furthermore, for manufacturing firms, when R&D is treated as exogenous, the impact of a firm undertaking R&D increases the probability that it will be an exporter.

Harris (2008) uses a different dataset to study the contributions of exporting and FDI to R&D, namely BERD and FAME. In his matched analysis he reveals that UK owned, non exporters account for a larger proportion of growth in aggregate R&D, compared to UK owned exporters. Furthermore he uses a Heckman model to analyse the determinants of growth in R&D which illustrates that larger firms are more likely to undertake R&D and be exporters.

Internationalisation and Innovation

Both the international business and technology management literature suggest that there is a positive relationship between exporting and innovation. For example, Vernon's (1966) product life cycle approach to trade claims that innovation provides market power and hence can improve exporting performance. A science based industry specific study by Pla-Barber and Alegre (2007) argues that innovation and technology are key drivers of exporting activity, as opposed to firm size. Furthermore technological capacity is a rare and valuable resource and can act as a source of competitive advantage in both domestic and international markets. Hence some research has suggested that innovative firms are more likely to enter international markets in order to spread the costs of innovation over a larger number of units (Tidd et al. 1997)

A study by Wakelin (1998) on innovation and export behaviour in UK firms reported mixed evidence using a microeconomic dataset covering 320 manufacturing firms from 1988-1992, based on a sample of firms in the SPRU Innovation survey. An empirical model of the determinants of export behaviour was estimated and the analysis revealed that non innovative firms are found to be more likely to export than innovative firms of the same size. One reason they give for this finding is that innovative firms may have advantages in the domestic market and not need to seek international markets. However, the number of past innovations has a positive impact on the probability of whether the firm is an exporter.

Some research has confirmed a positive relationship between exporting and R&D activities, namely Harris and Li (2005). Although they only have cross sectional data they assume that firms must improve their performance prior to exporting, and this will involve undertaking R&D and innovative activities. Their Heckman weighted regressions depict a strong positive association between sales to international markets and R&D expenditure in UK manufacturing establishments. Later work by Harris and Li (2008) use a merged dataset consisting of the 2001 Community Innovation Survey and the 2000 Annual Respondents Database to explore the linkage between exporting, R&D and absorptive capacity in UK establishments. They use a Heckman model to explore the determinants of export behaviour and their results revealed that establishments which undertake R&D activities and have a greater level of absorptive capacity are able to significantly reduce their entry barriers to export markets. However, when they control for potential endogeneity of R&D they find that it is only absorptive capacity (relating to scientific knowledge) which boosts further export performance, while R&D becomes an insignificant factor in determining export behaviour.

A qualitative study by OMB (2007) provides some anecdotal evidence on how exporting behaviour impacts upon innovation via several channels. For instance firms can use the increase in sales to develop new products and build R&D capabilities and they can acquire new ideas from clients and rivals, which stimulates additional investment in innovation. In some cases firms became involved in a partnership or a cooperative agreement that involves R&D opportunities, which are usually serendipitous.

The Economic Downturn

Several of the research questions we introduce in section 1 consider the impact of the economic downturn on the probability of a being a UKTI user. We also look at its influence on the barriers perceived by firms when conducting overseas business. A qualitative study by OMB (2009) discusses some of the problems faced by exporting firms in the current turbulent climate. Some of the most serious issues include accessing export credit insurance, dealing with underdeveloped countries and their payment systems and increased government involvement in trade standards. A minority of the firms reported that the downturn had resulted in an increased demand for their products.

3. Data Description and Methodology

Data Description

The OMB 2008 Internationalisation Survey and the Accent 2009 Internationalisation Survey both provide a unique opportunity to explore the research questions detailed above. The Surveys contain information on the modes of doing overseas business, drivers of market entry, barriers to doing overseas business and awareness of services available to assist firms in their internationalisation process. In particular the surveys are rich in information on the barriers to exporting; typically research has only been able to focus on exchange rates, agglomeration and policy (Greenaway and Kneller, 2007). The 2009 Survey also includes a module on export market diversification. Only those establishments that do business overseas or those that are planning to undertake overseas business in the next year are included in the two samples.

In August and September 2008 survey a total of 900 completed interviews were carried out with business that were involved in overseas business: 845 were involved with at least 1 form of internationalisation and 55 were planning to become involved in internationalisation in the coming year.

The OMB (2008) Research Report documents some important information surrounding the sampling frame. Initially, the sample frame was sourced from Dunn and Bradstreet based list provided by Experian. It was decided to stratify the sample by the age of the firm and use a disproportionate sample design so that roughly equal numbers of firms were interviewed across the 3 firm age bands (up to 5 years, 6-10 years and over 10 years). Table 1 shows how the sample was first screened in order to identify those firms which were in scope, and interviews were carried out until the quota targets were met. The achieved response rate among contacted firms was 20%. The profile of the achieved sample for 2008 is shown in Table 1b.

Table 1: Sample Analysis 2008-OMB Research

CATI SCREENING	
Selection for CATI	16,753
Unusable- no overseas activity	11,008
Unusable- incorrect contact details	1,299
Achieved Interviews/response rates	
Total useable sample	4,446
Interviews achieved	900
Response rate (%)	20%
Refusal rate (%)	28%

Table 1b: The 2008 Internationalisation achieved sample by age and size

Company size	**0-49**	**50-99**	**100+**	**Don't know**	**Total**
Age of company					
Up to 5 Years	266	12	4	1	283
5-10 years	260	12	12	2	286
10+ years	276	21	30	4	331
Total	802	45	46	7	900

Accent were responsible for administering the survey in 2009 and their Methodology document provides us with some additional insights to the sample design. The sample frame was constructed from a random sample of all businesses purchased from 'Sample Answers' and a quota strategy was employed to ensure that both younger and older businesses were represented. The sample was screened to ascertain involvement in overseas business activity either presently or over the next 12 months.

In the 2009 survey 8 firms were considering involvement with internationalisation in the next year while 881 were already involved in some kind of overseas business.
Again the sample was stratified by age of the company as well as the number of employees with the disproportionate sample design being used so that a roughly equal number of firms were interviewed that were aged up to 5 years, aged 6-10 years and aged more than 10 years.

The Table below summarises the number of records selected for CATI and the screening process. Table 2b illustrates the achieved sample.

Table 2: Sample Analysis 2009-Accent

CATI SCREENING	
Selection for CATI	23,363
Unusable – no overseas business activity	12,286

Unusable – contact details incorrect	1,575
ACHIEVED INTERVIEWS / RESPONSE RATES	
Total useable sample	9,502
Interviews achieved	889
Response rate (%)	10%
Refusal rate (%)	24%

Table 2b: The 2009 Internationalisation sample by age and size

Company size	**0-49**	**50-99**	**100+**	**Total**
Age of company				
Up to 5 Years	165	20	44	229
5-10 years	242	27	36	305
10+ years	191	58	106	355
Total	598	105	186	889

Comparing Tables 1 and 2 we see that a greater response rate was achieved in 2008; the rate was 20% in 2008 but only 10% in 2009, although it is important to note that in both years the response rate was rather low, which raises the issue of non response, which we discuss below. In addition by comparing Tables 1b and 2b we can see that the 2009 sample includes a greater proportion of firms with over 100 employees.

Tables 1-9 in the Appendix present additional sample characteristics for both 2008 and 2009.

Due to the disproportionate nature of the stratified sample design we need to consider the issue of weighting the data. The 2008 data comes with a cell weight based on the 2006 Annual SME Business Survey (ASBS); however the 2009 survey was left un-weighted. The BERR Enterprise Directorate devised a weighting matrix based on the 2007 ASBS, which accounted for both age and size related bias. As the 2007 ASBS was closer in time to the fieldwork of the 2008 survey than the 2006 ASBS, we decided to adopt the BERR weighting system which could be applied to both of the surveys.

The 2007 ASBS profile of exporting firms is shown in Table 2c below and a comparison of the firm profile in either survey before and after weighting is shown in tables 2d and 2e.

Table 2c: Profile of businesses by size and age at the beginning of 2007: exporters only (percentage of total number of businesses)

	Less than 1 year	**1 year**	**2 year**	**3 year**	**4 year**	**5 year**	**6 - 10 years**	**11 - 20 years**	**More than 20 years**
None	0.4	0.5	1.5	3.2	3.4	3.9	17.1	16.5	22.1
Micros (1-9) employees	0.2	0.2	0.5	0.3	1.0	1.2	5.4	6.5	8.5
Small (10-49) employees	0	0	0	0	0.1	0.1	0.8	1.6	3.1
Medium (50-249) employees	0	0	0	0	0	0	0.1	0.2	0.9
Large	0	0	0	0	0	0	0	0	0.2

Source: BERR Annual Small Business Survey 2007/8 and Small and Medium Enterprise Statistics for the UK 2007.

Table 2d: The impact of the weighting regime: 2008

Size and age profile of firms before weighting								
	1 Year or less	1-2 years ago	2- 3 years ago	3- 4 years ago	4 - 5 years ago	5- 10 years ago	10-20 years ago	Over 20 years ago
1to9	2.1%	2.2%	6.0%	5.3%	6.0%	18.4%	9.4%	6.6%
10to 49	0.3%	0.9%	1.9%	2.5%	2.5%	10.8%	7.4%	7.4%
50to249	0.1%	0.2%	0.4%	0.1%	0.6%	2.1%	1.1%	2.4%
250 plus	0.0%	0.0%	0.2%	0.0%	0.1%	0.6%	0.4%	1.8%
Size and age profile of firms after weighting								
1to9	0.7%	0.6%	1.7%	1.1%	3.1%	20.9%	20.9%	27.3%
10to 49	0.1%	0.1%	0.1%	0.2%	0.4%	3.0%	5.0%	10.1%
50to249	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.7%	2.8%
250 plus	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.6%

Table 2e: The impact of the weighting regime: 2009

Size and age profile of firms before weighting								
	1 Year or less	1-2 years ago	2- 3 years ago	3- 4 years ago	4 - 5 years ago	5- 10 years ago	10-20 years ago	Over 20 years ago
1to9	1.26%	2.52%	1.83%	1.95%	3.67%	13.29%	3.09%	5.15%
10to49	0.57%	1.49%	1.49%	1.49%	2.63%	14.09%	2.75%	10.54%
50to249	0.46%	0.92%	0.80%	0.92%	1.15%	5.50%	1.03%	11.57%
250plus	0.11%	0.80%	0.69%	0.46%	0.57%	1.49%	0.23%	5.50%
Size and age profile of firms after weighting								
1to9	0.69%	0.60%	1.70%	1.10%	3.14%	20.88%	20.93%	27.35%
10to49	0.09%	0.12%	0.05%	0.15%	0.38%	2.95%	5.00%	10.06%
50to249	0.01%	0.01%	0.02%	0.00%	0.02%	0.39%	0.66%	2.81%
250plus	0.00%	0.00%	0.00%	0.00%	0.00%	0.09%	0.15%	0.62%

Given that the regression analysis in this report includes controls for age and size we expect the differences in the weighted and un-weighted coefficients to be fairly small. This proves largely to be the case. In the absence of sample related biases, the coefficients from an un-weighted regression are to be preferred to the coefficients from a weighted regression, as the former are more efficient. We therefore present the results of the un-weighted regressions in the body of the report. However we point out any important differences in the weighted and un-weighted results in the relevant sections of the report, and report these weighted regressions in the in Appendix B. Where a discrepancy arises between the weighted and un-weighted results the weighted results are to be preferred.

We also considered weighting the 2009 dataset to the Community Innovation Survey (CIS); however as this under represents firms with less than 10 employees we prefer the ASBS option. Nevertheless it is worth noting that from our analysis of CIS 2007 we find a broadly similar size profile for exporters with 10 or more employees in the ASBS, as shown in Table 2f (while allowing for some variation due to sampling error and differences in questionnaire design, for example the manner in which firms are asked about their international activities), promoting confidence in the ASBS 2007 weights, derived by BERR. Kneller and Pisu (2008) note that it is impossible to find data on the population of exporters for the UK (see p15); therefore we think that the use of the ASBS is a suitable option.

The Kneller and Pisu (2008) study also makes some interesting remarks on the representativeness of the 2005 UKTI dataset: they note that comparing the survey data with other UK firm data is complicated by the fact that these datasets are only available for the manufacturing sector and don't always contain information on the export sales of the firm (p14). The Kneller and Pisu study investigate the size distribution of firms in the UKTI survey, FAME and the UK Census Data (Annual Respondent Database). Although they find that the size profile of the UKTI sample is similar to that which might have been produced from random sampling of firms attempting to expand export sales, the hypothesis that the proportion of small firms in the UKTI survey is equal to the estimated figure of small exporters in the sub sample of export firms (p16) is rejected by formal statistical tests. In their analysis of the

determinants of the number of barriers to exporting they report on the sensitivity of their results using the estimated populations from FAME and the UK Census (Adjusted to FAME and CIS4, see table 2, p21 for example). As the un-weighted regressions are not incongruent to the weighted regressions they use these in the remainder of their research (p20).

Table 2f: Size Profile of ASBS 2007 compared to weighted CIS 2007: Exporters only

	ASBS (%)	**CIS (%)**
Small (10-49) employees	80	64
Medium (50-249) employees	17	20
Large	3	8

Source: BERR Annual Small Business Survey 2007/8 and Small and Medium Enterprise Statistics for the UK 2007 (based on counts of firms with greater than 10 employees) and ONS for the Community Innovation Survey 2007.

As Fowler (2009) points out *"Non response is a problematic, important source of survey error"* (see p66) and given the low response rates reported in Tables 1 and 2 we would have liked to examine the data for other biases arising from non response. The survey company OMB provided call records for the 2008 survey containing size, age and industry sector information for all cases. However, the contact procedure for the survey incorporated a screening stage whereby those not exporting or planning to export were sifted out; this was not completed for all firms in the sample - around one third of the issued sample are designated as 'non-contact' (answering machine, always engaged etc). Subsequently we have not been able to determine whether these units are in scope or out of scope of the survey. Therefore it is not clear whether they should be included in the comparison with respondents or excluded from that comparison. Different results are obtained under either of the two scenarios. So we have not been able to pursue this issue in any further depth.

A final issue concerning data quality relates to the exclusion of certain industry groups from the sample (see Accent Appendix A on SIC Code Exclusions and OMB (2008), p14) Two-digit industry sectors in which fewer than 20% of firms were exporting were excluded from the issued sample. If exporters in these industries differ in any way from exporters within industries that remained in the issued sample, then the final sample may not be fully representative of all exporters. It is not clear how substantial any bias might be, as the survey-analysis reports do not indicate what proportion of all exporters may have been given no chance of appearing in the achieved sample. The proportion may be non-negligible since some of the excluded industries are relatively large (even though the rate of exporting in an industry may be low, the industry may account for a larger number of exporters than another industry which, although it has a high rate of exporting, is relatively small in comparison).

Methodology

More generally, our methodological approach is inspired by several earlier studies, for instance Girma et al. (2005) examine the profile of both users and non users of a

UKTI export promotion programme, namely Passport to Export, by using probit modelling[6]. In addressing research question 1 on the differences between users and non users of UKTI services we use a similar approach.

Given the nature of the dependent variables in research questions 3 to 6 on the severity of individual barriers, determinants of the number of barriers a firm perceives, entry into new markets and awareness of UKTI and its services we also use ordered probits and negative binomial models. Kneller and Pisu (2006, 2008) use a similar suite of techniques.

In their study of barriers to internationalisation Shaw and Durroch (2004) use factor analysis to examine the differences in perceptions of exporters, likely exporters and non exporters. Given the relatively large number of barriers in our survey we employ factor analysis to explore the possible correlations between the perceived barriers that businesses might face when doing business overseas.

[6] However their focus is on performance factors such as labour productivity, average wages and profitability.

4. Results

Research Question 1: Exploring the Profile of UKTI Service Users

This section shall examine whether there are significant differences between users of UKTI services and non-users, controlling for size and age. Note that we are modelling associations, as compared to analysing the causal determinants of UKTI support take up. Furthermore there are potential concerns about multicollinearity between particular factors, e.g. size and innovation, and hence the ability of the models to delineate between the relevance of these. We report the correlation matrix in Table 11 of the Appendix below and VIFs (Variance Inflating Factors) in Table 12. Not surprisingly there are significant correlations between several variables such as size, age and innovation; there are also relatively high correlations between some of the barriers. However the VIFs are all in the acceptable range: none are over 11, with the highest VIF relating to the age variable. The estimation of separate models by size band should help to reduce the problems of multicollinearity.

The Tables below show some un-weighted descriptive statistics on firm level characteristics, innovation and barriers to doing international business as well as chi squared and t-tests to explore where the potential differences lie between the users and non users of UKTI services in 2008 and 2009.

Table 3a: Descriptive Statistics across Users/Non Users of UKTI Services
T Tests: Null Hypothesis: difference between the Two Means is zero.

	Obs	Mean	Standard Deviation	T statistic	Degrees of freedom
No. of employees (ln): NON User (2008)	586	2.37	0.08	-0.9	895
No. of employees (ln): User (2008)	311	2.49	0.09		
No. of employees (ln): NON User (2009)	281	2.83	1.5	-3.9***	871
No. of employees (ln): User (2009)	592	3.29	1.7		
Turnover (ln): NON User (2008)	589	17.1	0.2	2.0*	898
Turnover (ln) User (2008)	311	16.6	0.2		
Turnover (ln): NON User (2009)	229	14.98	2.33	-1.97*	715
Turnover (ln) User (2009)	488	15.37	2.41		
No. of emerging markets firm has operations in: NON User (2008)	589	1.1	0.08	-1.9*	898
No. of emerging markets firm has operations in: User (2008)	311	1.4	0.1		

No. of emerging markets firm has operations in: NON User (2009)	283	1.77	2.12	-4.31***	887
No. of emerging markets firm has operations in: User (2009)	606	2.49	2.44		

*p<0.05, ***<0.001

Table 3b: Descriptive Statistics across Users/Non Users of UKTI Services

	UKTI User Frequency (%)	**Non UKTI User Frequency (%)**	**Chi Squared statistic**
Superinnovator[7] (2008)	182(59)	236(41)	27.9***
Greater than 10 employees(2008)	158(51)	243(41)	7.5**
Superinnovator (2009)	476(79)	194(69)	10.38**
Greater than 10 employees (2009)	426(70)	177(63)	5.31**

***p<0.001 **p<0.01 (column frequencies)

Results in Table 3a show that there is a statistically significant difference between the mean turnover for UKTI service users and non service users, as well as in the mean number of emerging markets. In the 2008 survey users have lower turnover than non-users, on average. The reverse is the case in the 2009 survey. On average, users operate in a higher number of emerging markets than non-users. This is evident in both surveys. Interestingly the differences between the mean size (as measured by the number of employees) across users and non users is not significantly different from zero for 2008, but for 2009 the difference is significant. However, when we begin to look at different size bands further on in the analysis we begin to see some significant differences.

In Table 3b we report Chi squared statistics to test for association between innovation, size and UKTI user dummy variables. Although this statistic relies on the assumption of random sample data we use it here as means of exploratory data analysis to show potential associations between these categorical variables. In 2008 41% of non users were highly innovative, compared to 59% of users, and the Chi square statistic reveals that there is significant association between the innovation activities of the firm and whether the firm is a UKTI user or not. The difference in innovation frequencies between UKTI users and non-users is smaller in the 2009 survey than in the 2008

[7]This is the tighter OMB 2008 definition: Innovative' firms are those that have more than one employee engaged in R&D activity and more than one employee engaged in new product or service development and at least some R&D employees are engaged in the 'development of scientific or technical knowledge that is not commonly available' Or, have employed someone external to conduct new product or service development in the last year Or, derive at least some turnover from products & services introduced in the last 3 years (H7a) *except firms established in the last 2 years* and these products & services are either 'new to the world' or 'new to the industry/sector'

survey (in the 2009 survey 69% of non users were highly innovative, compared to 79% of users), but remains statistically significant. Note that later, when we investigate the association between innovation activities and UKTI service usage in a multivariate setting, the difference in innovation frequencies between UKTI users and non-users ceases to be statistically significant in the 2009 survey.

As Research Questions 3 and 4 focus on barriers we also provide some descriptive tables on projective barriers[8]. Table 4 reports the percentage of firms reporting each projective barrier (see Table 10 in the Appendix for a full code and variable list), the percentage of UKTI user/non user firms reporting each projective barrier and the percentage of firms operating/not operating in a BRICS market reporting each projective barrier. Here we assume a firm treats the issue as a barrier if the firm gives it a score of 4 or 5 on the Likert scale. We do this firstly for firms selling directly to businesses or individuals abroad (769 firms in 2008 and 795 firms in 2009) and for firms selling to businesses or individuals abroad through agents or distributors (256 firms in 2008 and 590 firms in 2009). For firms selling directly, barriers relating to building relationships with key influencers or decision makers, establishing dialogue with prospective partners and identifying contacts are the most frequently cited barrier in 2008. Concerning differences between UKTI users and non UKTI users, UKTI users are typically more likely to report barriers, and users are again most frequently citing barriers relating to building relationships and establishing contacts.

Earlier work by Kneller and Pisu (2008) was unable to examine the relationship between market type and barriers, but the OMB Survey (2008) includes some information on the type of market the firm is operating in, firms responded to questions about barriers in relation to the most challenging or most recent market which they entered. We also looked at the perceptions of barriers in firms that do business in one of the BRICS and in those who don't have operations in these high growth markets. However the differences between firms operating in BRICS markets and non BRICS markets do not appear to be clear cut, in fact for some barriers the two groups of firms report very similar perceptions of barriers. As for the 2008 dataset barriers relating to identifying a contact and building relationships are cited the most frequently across all firms in general, as well as for UKTI users and firms which operate in one of the BRICS economies in 2009. Also in the 2009 survey, firms that do business in one of the BRICS are more likely to report barriers than firms that do not do business in one of the BRICS.

Table 4: Reported Projective Barriers, 2008 and 2009: for firms selling directly

Reported Projective Barriers, 2008					
	% of firms reporting as	% of UKTI users	% of non UKTI users	% of BRICS	% of non BRICS

[8] According to the OMB (2008) report, '*Following difficulties encountered in previous studies in measuring barriers through direct questioning techniques, a projective questioning technique was employed for this research. This technique attempts to get over issues relating to the reluctance of firms to acknowledge barriers by asking them to talk about issues that other similar firms would face*.' This OMB report also includes some statistics on barriers by mode, age and size, however their tables relate to firms that rate a specific barrier a 4 or 5 (very or extremely difficult) (see page 135).

	a barrier (n)	reporting as a barrier	reporting as a barrier	firms reporting as a barrier	firms reporting as a barrier
barr_info	24(181)	24	23	22	24
barr_contact	35(270)	39	33	40	32
barr_part	29(224)	34	26	31	28
barr_relat	31(235)	36	28	34	29
barr_cult	17(127)	17	16	18	15
barr_office	20(156)	23	19	22	19
barr_bias	20(156)	23	18	18	21
barr_cost	23(179)	27	21	24	23
barr_time	24(186)	25	24	24	24
barr_er	28(217)	29	28	24	31
barr_visa	1(9)	1	1	1	1
Reported Projective Barriers, 2009					
barr_info	22(165)	22	23	23	20
barr_contact	49(360)	51	44	52	45
barr_part	36(267)	36	34	36	35
barr_relat	39(294)	42	34	42	36
barr_cult	24(182)	25	20	27	19
barr_office	36(258)	36	37	38	34
barr_bias	30(215)	31	28	31	29
barr_cost	33(249)	33	31	37	26
barr_time	36(278)	38	33	34	39
barr_er	34(258)	33	37	35	33
barr_visa	20(4)	26	0	14	33

An issue is perceived a barrier if it scores 4 or more on the Likert scale.

Table 4b: Reported Projective Barriers, 2008 and 2009: for firms selling via an agent/distributor

Reported Projective Barriers, 2008					
	% of firms reporting as a barrier (n)	% of UKTI users reporting as a barrier	% of non UKTI users reporting as a barrier	% of BRICS firms reporting as a barrier	% of non BRICS firms reporting as a barrier
barr_info	27(69)	27	27	25	28
barr_contact	43(110)	41	45	41	44
barr_part	33(85)	36	31	33	34
barr_relat	39(101)	42	38	39	40
barr_cult	20(51)	22	18	21	19
barr_office	26(66)	29	23	23	28
barr_bias	28(72)	32	25	26	30
barr_cost	27(70)	30	25	23	30
barr_time	29(75)	30	29	27	31
barr_er	33(84)	34	32	23	39
barr_visa	2(5)	1	3	2	2
Reported Projective Barriers, 2009					

barr_info	23(127)	21	26	24	21
barr_contact	51(284)	54	43	54	46
barr_part	37(207)	37	38	35	41
barr_relat	43(242)	43	43	44	43
barr_cult	26(150)	28	21	27	24
barr_office	36(191)	34	43	35	38
barr_bias	33(176)	34	30	33	32
barr_cost	36(200)	34	39	37	33
barr_time	40(226)	39	39	38	42
barr_er	34(191)	33	38	35	33
barr_visa	19(3)	23	0	8	33

An issue is perceived a barrier if it scores 4 or more on the Likert scale.

As for firms selling via an agent or distributor barriers relating to building relationships with key influencers or decision makers and identifying contacts are the most frequently cited barrier in 2008. In 2009 barriers relating to devoting managerial time to doing business in international markets are also important with 40% of firms citing this as a barrier.

Also of note in Tables 4 and 4b is the very small cell size for the barriers to obtaining visas or work permits: only 24 firms report this as a projective barrier in 2008 and 17 firms in 2009, this occurs as the question is only asked of firms with an overseas site, and therefore isn't relevant for the majority of firms. Consequently this variable isn't included in further analysis on the determinants of barriers or severity of barriers.

Finally we replicate some of the descriptive statistics shown in the 2008 OMB Research Report using the innovation and intellectual property variables.

Table 5: Innovative Firms by size and age, 2008 and 2009

	AGE (YEARS TRADING)						SIZE (NO. OF EMPLOYEES)			
	New firm	Aged 1-5	Aged 6-10	Aged 11-20	20 plus		<5	5-9	10-19	20 plus
Superinnovative (tighter OMB 2008 definition)	1%	27%	35%	19%	18%		26%	26%	19%	28%
Patents (IP active)	1%	27%	31%	19%	22%		19%	25%	19%	36%
2009										
Superinnovative (tighter OMB 2008 definition)	2%	21%	34%	6%	36%		12%	14%	15%	59%
Patents (IP active)	2%	21%	29%	8%	39%		9%	11%	14%	65%

From Table 5 we can see that there is no consistent pattern between innovative and IP activities and firm size and age, although we can see that the incidence of innovative and IP active firms peaks in those firms aged 6 to 10 in 2008 and with 20 or more employees in 2009. Innovative activity is higher amongst larger firms (20 plus), particularly in the 2009 survey[9].

Earlier work by Rogers and Helmers (2008) investigated the relationship between intellectual property (IP) and a particular UKTI service, the Passport programme which is marketed at SMEs that aim to increase their exporting activity, yet have a current export intensity of less than 25%. They used data on firms which had participated in the Passport programme, provided by UKTI matched with intellectual property from the OFLIP (Oxford firm level IP) and FAME databases. Their econometric analysis revealed a positive association between being a Passport service user and a firm having IP activities in 2005.

Following this exploratory data analysis we estimated a Probit model to explore the determinants of UKTI service users in 2008 and 2009 as suggested by the proposed model:

Equation 1:

$$USER/NON = \beta_1 FIRM + \beta_2 INN + \beta_3 MGT + \beta_4 BARR + \beta_5 EM + \beta_6 DOWN + \beta_7 EXP + \varepsilon$$

[9] It should be noted that in the 2009 survey the definition of a highly innovative firm changed slightly since the 2008 survey. As a variable was missing relating to turnover from products and services introduced in the last 3 years, except for firms established in the last 2 years.

Where USER/NON is a dichotomous variable taking the value of 1 if the firm is a user of UKTI services and zero otherwise, FIRM is observable firm level characteristics such as age and size, INN captures innovation and intellectual property (IP) activities, MGT depicts managerial level characteristics such as strategy, factor scores from projective reported barriers are represented by BARR, EM is a variable to capture the operations in emerging markets, DOWN is a dichotomous variable which takes the value of 1 if the firm has experienced negative effects of the economic downturn, and zero otherwise and EXP represents the firm's experience in doing international business.

Earlier versions of this research included individual Emerging market dummies and individual barriers variables. However, comments from the Steering Group have led to the following developments and extensions:

- Instead of using individual emerging market dummies we include a dummy variable to depict whether a firm had operations in any of the BRICS (Brazil, Russia, India, China and South Africa, see Goldman Sachs (2005) for a discussion on the rise of the BRICS). In addition, in the second model we also include a separate measure of entering high growth markets (Brazil, Russia, India, China and the Gulf States) as suggested by the London Economics (2009) report. Their 2009 report illustrated that it is not inappropriate to draw conclusions for high growth markets as a homogenous group. Our original results presented in the Interim Report can be seen in Table 13 in the Appendix.
- We also add a measure of firm experience. As we expect this to be highly correlated with firm age we run factor analysis on a number of variables such as percentage of turnover from overseas markets, years exporting, self reported experience and the number of emerging markets a firm operates in order to derive a factor score which can be inserted into the model. Results from the factor analysis are shown in the Appendix.
- In earlier versions of the analysis we inserted the barrier variables individually, however we now enter 2 factors derived from factor analysis of the barriers question, as shown in Table 10. These factors relate to social capital or relationship building and more practical, financial barriers.

Table 6: Probit Regression Analysis of UKTI Service Users

	Model 1 **2008**	Model 2 **2008**	Model 1 **2009**	Model 2 **2009**
New firm	-0.06 (0.158)	-0.06(0.159)	-0.504(0.14)***	-0.508(0.139)***
age1_5	0.009(0.069)	0.01(0.069)	-0.215 (0.069)***	-0.219(0.069)***
age6_10	0.001(0.062)	0.003(0.062)	-0.214(0.056)***	-0.212(0.056)***
age11_20	-0.02(0.065)	-0.02(0.065)	-0.172(0.097)*	-0.176(0.097)*
superinnovator	0.179(0.041)***	0.179(0.041)***	0.003(0.049)	-0.001(0.049)
patents	0.098(0.047)**	0.1(0.049)**	0.089(0.042)**	0.089(0.042)**
Business plan	0.046(0.044)	0.047(0.044)	0.178(0.049)***	0.181(0.049)***
High growth objective	0.059(0.045)	0.059(0.045)	0.035(0.043)	0.034(0.043)
downturn	-0.087(0.041)**	-0.087(0.041)**	-0.041(0.041)	-0.043(0.041)
BRICS	0.043(0.05)		0.021(0.043)	
Experience	0.022(0.026)	0.023(0.026)	0.041(0.025)	0.031(0.025)
Barrier_socialcap	0.002(0.021)	0.002(0.021)	0.032(0.019)*	0.033(0.019)*
Barrier_ecmgt	0.024(0.021)	0.023(0.021)	-0.023(0.019)	-0.023(0.019)
No. employees(ln)	0.005(0.013)	0.006(0.013)	-0.007(0.014)	-0.007(0.014)
HGM (high growth market)		0.03 (0.048)		0.058(0.046)
Observations	614	614	577	577
Pseudo R-squared	0.06	0.06	0.11	0.11

***p<0.01, **p<0.05, *p<0.1
Reported coefficients are all estimated marginal effects, robust standard errors in parentheses.
Reference categories are firms aged over 20 years.
See Table 10 in the Appendix for a full description of variable codes.

As Table 6 shows we have run 2 separate models on the likelihood of a firm being a UKTI service user. In Model 1 we insert a dummy variable for operations in at least one of the BRICS. In Model 2 we include an additional measure of operations in high growth market entry into Brazil, Russia, India, China or the Gulf States. These variables are derived from the section in the question which asks the firm about opportunities in high growth and emerging markets; the firm is asked if it sees a particular emerging economy as a possible or good opportunity for the firm or if it is already doing business there.

Across the 2 models we see similar results. The innovation variables, in particular the 'super innovator' variable (this is the tighter definition of innovation, specified in OMB(2008, p51)) is positively and highly significantly associated with being a UKTI service user in 2008. Similarly, for those firms that hold a patent or trademark these are positively associated with UKTI service usage. A similar finding was also found in an earlier study on the impact of UKTI service use on R&D which reported a positive relationship between those firms which engage in R&D activities focused on sales and UKTI support (see Driffield, et al, forthcoming). Finally our results reveal that those firms that claimed they had been adversely affected by the economic downturn are less likely to be UKTI users[10].

When we consider the 2009 results we now see that the age variables are negatively and significantly associated with being a UKTI user, compared to the reference category of firms aged over 20 years old. The other key differences are that if a firm has a business plan and reports projective barriers relating to social capital then the firm is more likely to be a UKTI user. It is worth noting that that the 2009 survey under represented small firms in its population of UKTI users, as illustrated below.

Table 6b: Comparison of company size by UKTI usage with client profiles from PIMS 12-15 and 7-10 and PIMS Non-user surveys of 2008 and 2009

			Total				
		UKTI Non-users	**UKTI users**	**PIMS Non-users 2009**	**Users PIMS 12-15**	**PIMS Non-users 2008**	**Users PIMS 7-10**
UKTI Users	**Base**	290	621	300	3985	302	3143
		100%	100%	100%	100%	100%	100%
0-9 employees		38%	30%	59%	41%	56%	42%
10-49 employees		39%	32%	33%	28%	37%	29%
50-99 employees		10%	12%	4%	8%	4%	10%
100+ employees		13%	25%	4%	20%	1%	18%

[10] Although as London Economics (2009) remark it should be noted that these questions were posed in the early stages of the downturn, as data for the 2008 survey was collected in the period August-September 2008. As a result the companies' reaction to the downturn may have evolved during the last year.

We also included an additional variable to represent if a firm was a 'Born Global'[11] however this was insignificant across the 2 models (results available on request).

With regards to the weighted regression results for 2008 the most notable difference is in the experience and high growth objective coefficient- this now becomes significant and positive. In the un-weighted regressions this result is not borne out until we look at the differences across size band in research question 2. However the key coefficients for age and innovation actives are all of a similar sign, significance and magnitude. As for the 2009 weighted regressions patents are now insignificant and the downturn becomes a negative, significant factor. These results are shown in Table 1, Appendix B. As we pointed out on page 15 if the weighted and un-weighted results are different then the weighted results are to be preferred in this case.

Summary Findings for Research Question 1

The innovation and IP variables (the tighter definition of innovation, and patents) are positively and highly significantly associated with being a UKTI service user. In 2009 this result only holds for patents.

Firms adversely affected by the economic downturn are negatively associated with UKTI service usage (2008 only, and 2009 weighted regressions.

Firms with a business plan are positively highly significantly associated with being a UKTI service user (2009 only).

Being a "Born Global" does not significantly impact on the likelihood of a firm being a UKTI user.

In 2009 younger firms are less likely to be UKTI users, compared to the reference category.

[11] We use a proxy for Born Global behaviour: did the firm commence international business operations in the same year that it was established i.e. the variable captures both the age of the firm and the year it started to conduct business overseas.

Research Question 2 Exploring the Profile of UKTI Service Users across Size Bands

Earlier research by UKTI highlighted some background evidence which showed that the proportion of UK exporters who have used UKTI services increases by size of firm. Therefore we re-estimate Equation 1 above across 2 size groups of firms: those with less than 10 employees and those with over 10 employees, thus aiming to address Research Question 2.

Firstly though, in Table 7 we review the size distribution for the full sample.
Table 7 reveals that 94% of the firms or 847 firms employ less that 100 employees, and almost a third of those (271) employ less than 5 workers in 2008. In the 2009 sample there are more firms with over 100 employees.

Table 7: Size Distribution: 2008 and 2009

	2008		**2009**	
	Frequency	%	Frequency	%
No employees	3	0.3	0	0
1 to4	271	30	145	17
5 to9	228	25	141	16
10 to19	161	18	139	16
20-49	139	15	167	19
50-99	45	5	104	12
100-199	13	1	77	9
200-249	5	1	14	2
250-499	16	2	46	5
500 or more	12	1	40	5
Don't know	3	0.3		
Refused	4	0.4		
Not applicable			16	2
Total	900		889	

In Table 8 we illustrate how larger firms are more likely to be UKTI service users when we include only the size bands as regressors, with firms with 20 or more employees being the reference category. Note that we do not find significant differences between smaller and larger firms, in the probability of using UKTI services, when we measure size by the continuous variable “number of employees” (see Table 6). The regression results in Table 8 suggest that micro firms and those with 5 to 9 employees are approximately 8-9 per cent less likely to use UKTI services than firms with 20 or more employees, similar results occur for 2009 albeit with a stronger significance level. Thus, in terms of the propensity to use UKTI services, the sample of firms is essentially split into two groups: those with less than 10 employees and those with 10 or more employees. We estimate equation 1 for each of these groups in turn.

Table 8: Probit Regression Analysis of UKTI Service Users: Size bands only.

	2008	**2009**
micro	-0.088**(0.04)	-0.136***(0.05)
size5_9	-0.075*(0.04)	-0.104**(0.05)
size10_19	0.009(0.05)	-0.167***(0.05)
Observations	900	889
Pseudo R-squared	0.006	0.02

***p<0.01, **p<0.05, *p<0.1
Reported coefficients are all estimated marginal effects, robust standard errors are in parentheses.
Reference categories are firms with 20 or more employees.

Table 9: Probit Regression Analysis of UKTI Service Users, across size band: for firms with 0-9 employees and for 10 or more employees: 2008

	Model 1	Model 2	Model 1	Model 2
	0-9 employees	0-9 employees	10 or more employees	10 or more employees
age1_5	0.215**(0.106)	0.210**(0.106)	-0.084(0.106)	-0.068(0.106)
age6_10	0.279***(0.097)	0.278***(0.098)	-0.232***(0.087)	-0.221**(0.087)
age11_20	0.187*(0.111)	0.185*(0.111)	-0.132(0.091)	-0.124(0.09)
superinnovator	0.199***(0.053)	0.2***(0.053)	0.139***(0.069)	0.143(0.069)*
patents	0.156**(0.065)	0.154***(0.065)	0.069(0.07)	0.074(0.07)
Business plan	0.24(0.05)	0.023(0.054)	0.049(0.081)	0.05(0.08)
High growth objective	0.083(0.059)	0.086(0.059)	0.013(0.072)	0.014(0.07)
downturn	-0.083(0.052)	-0.078(0.053)	-0.156**(0.067)	-0.157**(0.067)
BRICS	0.016(0.065)		0.074(0.079)	
experience	0.074**(0.035)	0.065*(0.034)	-0.39(0.0423)	-0.02(0.04)
Barrier_socialcap	-0.009(0.026)	-0.01(0.026)	0.024(0.036)	0.025(0.036)
Barrier_ecmgt	0.02(0.027)	0.019(0.026)	0.039(0.034)	0.03390.034)
HGM (high growth market)		0.058(0.064)		0.006(0.076)
Observations	357	357	248	248
Pseudo R-squared	0.1	0.1	0.07	0.06

***p<0.01, **p<0.05, *p<0.1 Reported coefficients are all estimated marginal effects, robust standard errors are in parentheses.
Reference categories include age20_plus i.e. firms aged over 20 years ago. (The new_firm variable was dropped as it predicts failure perfectly).

Table 9b: Probit Regression Analysis of UKTI Service Users, across size band: for firms with 0-9 employees and for 10 or more employees: 2009

	Model 1	Model 2	Model 1	Model 2
	0-9 employees	0-9 employees	10 or more employees	10 or more employees
New_firm	-0.534***(0.16)	-0.531***(0.16)	-0.448**(0.2)	-0.467**(0.2)
age1_5	-0.194(0.16)	-0.189(0.16)	-0.223***(0.08)	-0.231***(0.08)

age6_10	-0.248*(0.13)	-0.245*(0.13)	-0.204***(0.06)	-0.199***(0.06)
age11_20	-0.106(0.17)	-0.106(0.17)	-0.235*(0.12)	-0.237*(0.12)
superinnovator	-0.024(0.08)	-0.025(0.08)	0.025(0.07)	0.013(0.06)
patents	0.153*(0.08)	0.155**(0.08)	0.078(0.05)	0.081*(0.05)
Business plan	0.253***(0.08)	0.255***(0.08)	0.144**(0.06)	0.146**(0.06)
High growth objective	-0.005(0.09)	-0.009(0.09)	0.044(0.05)	0.048(0.05)
downturn	-0.134*(0.07)	-0.135*(0.07)	0.005(0.05)	0.002(0.05)
BRICS	0.024(0.08)		0.012(0.05)	
experience	0.061(0.05)	0.061(0.05)	0.038(0.02)	0.022(0.02)
Barrier_socialcap	-0.011(0.04)	-0.011(0.04)	0.051**(0.02)	0.053**(0.02)
Barrier_ecmgt	-0.051(0.04)	-0.052(0.04)	-0.01(0.02)	-0.009(0.02)
HGM (high growth market)		0.02(0.08)		0.086(0.06)
Observations	180	180	402	402
Pseudo R-squared	0.1	0.1	0.1	0.1

***p<0.01, **p<0.05, *p<0.1 Reported coefficients are all estimated marginal effects, robust standard errors are in parentheses.
Reference categories include age20_plus i.e. firms aged over 20 years ago.

Firstly, beginning with the results common across the two size bands we can see that in 2008 again those firms which are super-innovators are positively and significantly associated with being a UKTI service user (although the relationship is stronger for firms with 0-9 employees).

However, there are several differences in the estimations across the two size groups which are worthy of discussion. For the category with 0 to 9 employees firms aged 1-20 are positively associated with being a UKTI user, compared to the base category of firms aged over 20 years old. Moreover, firms in this size category that possess patents are also more likely to be UKTI users. Interestingly, experience in international markets is now positively associated with being a UKTI user for firms in the 0-9 employees band.

If we now turn to those firms with 10 or more employees we can see that the results pertaining to the age variables have altered: firms aged 6 to 10 years old are negatively associated with being a UKTI user, compared to the base category of firms aged over 20 years old. The economic downturn has also found to be a significant factor for this size group: those firms that are adversely affected by the economic downturn are less likely to be UKTI users.

Overall, estimating the equations across the two size bands has illustrated several interesting differences in the two groups of firms. Again the key variables relating to age, the downturn and innovation are largely similar across the weighted and un-weighted results for 2008.

If we now refer to Table 9b we can examine the results for the 2009 dataset. Here we see that the relationship between age and UKTI usage is stronger for firms with more than 10 employees. More generally we see that the relationship between a firm having a patent and business plan increases the likelihood of a firm being a UKTI user across the 2 size bands. For firms with more than 10 employees the social capital barrier is

positively related to UKTI use, although this is insignificant for smaller firms. The main differences between the 2008 and 2009 results are as follows: in 2009 the 'superinnovation' variable becomes insignificant, although the business plan now becomes a more significant factor in all 4 models. Furthermore, the downturn variable is only significant for the smaller firms in 2009. Finally we examined the differences in the weighted 2009 results- with this estimation the high growth objective variable becomes a positive and significant factor in determining the use of UKTI services, while the social capital barriers become insignificant.

We also ran some formal tests in order to detect significant differences in the regression coefficients across the 2 size bands. We did this by creating interaction variables of the type sizeband0_9 employees**variable*[12] and sizeband10plusemployees**variable* and running the standard probit model, followed by testing the null hypothesis: *coefficient_* sizeband0_9 employees= *coefficient_* sizeband10plusemployees.

Table 9c below reports the test statistics from testing the null hypothesis that coefficients for the key variables are the same across the two size groups. The results show that for the key variables reported in Tables 9 and 9b significant differences do indeed exist across the 2 size groups in both 2008 and 2009, with the exception of experience in 2008 and the impact of the downturn in 2009.

Table 9c: Testing for differences across size groups: 2008 and 2009

*Ho: coefficient_* sizeband0_9 employees= *coefficient_* sizeband10plusemployees	Chi squared statistic
2008	
age1_5	8.94*
age6_10	18.22***
age11_20	8.57**
Downturn	7.10***
superinnovator	18.24***
Patents	9.01**
Experience	4.60
2009	
New_firm	9.68***
age1_5	23.13***
age6_10	26.15***
age11_20	9.17**
Downturn	2.21
Patents	12.28***
FA_soc_cap	5.44*

***p<0.01, **p<0.05, *p<0.1

[12] This was done for key variables identified in Tables 9 and 9b.

Summary Research Question 2

94% of firms in the 2008 data employ less than 100 employees. In the 2009 data 80% of firms employ less than 100 employees.

Super innovators are significantly more likely to be UKTI service users, regardless of firm size, in 2008. Patent holders are more likely to be UKTI service users, again regardless of size, in 2009. In 2008 this result holds only for firms with 0-9 employees.

For those firms in the 0-9 employee band younger firms are positively associated with being a UKTI user, compared to the base category of firms aged over 20 years old in 2008. This finding does not hold for those firms with more than 10 employees.

Experience in international markets and holding a patent is positively associated with being a UKTI user for firms in the 0-9 employees band in 2008.

Firms that are negatively affected by the economic downturn are less likely to be UKTI users in the 10 or more employees band in 2008; in 2009 it is those firms with less than 10 employees that report a significant relationship between the downturn and UKTI service use.

Formal testing revealed a number of significant differences in regression coefficients across the 2 size bands. In both years the relationship between patents and the likelihood of being a UKTI user is significantly different across size groups. In 2008 the coefficients on innovation and the impact of the downturn are significantly different across the two size groups.

Research Questions 3 and 4: Investigating the Number of Barriers and the impact of market type, firm characteristics and experience.

This question addresses the issue controlling for firm characteristics, to what extent, and how, do barriers vary by type of market? This analysis investigates the differences between emerging markets and other markets.

In the first instance we used Factor Analysis to explore the correlations between any underlying patterns in the perceived projective barriers to conducting overseas business. Results from Varimax Rotation (which attempts to maximise dispersion of loadings) revealed two factors, shown in the Table below. Here factor loadings refer to the correlation between a factor and a variable. The KMO test reports on sample adequacy and a score above 0.5 reveals that the sample is of adequate size.

Table 10: Varimax Rotation of Barriers: 2008[13]

	Factor 1: Social Capital Barriers (factor loadings)	**Factor 2: Economic and Management Barriers (factor loadings)**
barr_info	0.513	
barr_contact	0.827	
barr_part	0.855	
barr_relat	0.794	
barr_cult	0.469	
barr_office		0.655
barr_bias		0.604
barr_cost		0.766
barr_time		0.640
barr_er		0.622
Kaiser Meyer Olkin (KMO) Measure of Sampling adequacy		0.881[14]

Although we used these factors in the analysis for Research Questions 1 and 2 we prefer to examine the separate barriers independently in this section where we are analysing what influences the number and severity of barriers, rather than including barriers as regressors.

We look at how the number of barriers perceived by the firm varies by the type of market, by using a negative binomial model, extending the work of Kneller and Pisu (2006, 2008). Essentially we begin by estimating the following count model:

Equation 2:

$$No.BARR = \beta_1 FIRM + \beta_2 nonEM + \beta_3 BRICS + \varepsilon$$

[13] We ran a similar exercise for the 2009 data: the overall KMO was 0.71 and individual KMOs were all greater than 6.

[14] Individual KMOs for each barrier were also greater than 0.5.

Where No.BARR represents the number of perceived barriers reported by the firm, FIRM represents firm level characteristics such as size and age, BRIC is a dummy variable which equals 1 if a firm operates in 1 of the BRICs[15] and non_EM is a dummy variable which equals 1 if a firm does not export to the emerging markets and zero otherwise.

Research question 4 asks how do barriers to new markets vary by export experience, as measured by: (a) number of years export experience; and (b) number of overseas markets in which the firm is doing business? In this case we estimate the following:

Equation 3:

$$No.BARR = \beta_1 FIRM + \beta_2 X \exp + \beta_3 NOM + \varepsilon$$

Where No.BARR represents the number of perceived barriers reported by the firm, FIRM represents firm level characteristics such as size and age, Xexp represents the number of years of export experience (measured in bands) and NOM depicts the number of overseas markets the firm operates in (again measured in bands). In both of these equations we also include a dummy which equals 1 if a firm sells directly to individuals or businesses.

Table 11 reports the results for both equations 2 and 3. Model 1 focuses on market type only, and therefore looks at the impact of a firm operating in at least one of the BRICS economies or a non emerging market economy (No_em). In Model 2 we introduce the experience variables (int_exp for years conducting business overseas and market1_10 etc for how many countries a firm has done overseas business in over the last 5 years). Finally in Model 3 we include a factor scores for an overall level of experience, as described on page 22 and Table 10 in the Appendix.

Table 11: Negative Binomial Regression for the Number of Barriers; 2008 and 2009

	Model1R Q3:2008	Model2R Q4:2008	Model3R Q4:2008	Model1R Q3:2009	Model2R Q4:2009	Model3R Q4:2009
No. employees(ln)	-0.004	-0.006	0.031	0.028	0.024	0.031
	-0.23	-0.37	1.47	1.71	1.46	1.86
age1_5	0.75*	0.788*	0.718	0.287	0.18	0.189
	2.4	2.4	1.64	0.95	0.59	0.64
age6_10	0.735*	0.802*	0.727	0.377	0.1	0.251
	2.36	2.4	1.66	1.26	0.3	0.85
age11_20	0.426	0.481	0.435	0.395	0.021	0.247
	1.34	1.37	0.98	1.26	0.06	0.8
age20plus	0.693*	0.784*	0.629	0.333	0.009	0.16
	2.19	2.24	1.42	1.11	0.03	0.54
superinnovator	0.301***	0.311***	0.238***	0.163*	0.173*	0.145
	4.71	4.68	3.38	2.18	2.29	1.95
No_em	-0.093	-0.111	-0.036	0.001	-0.001	-0.002
	-0.74	-0.85	-0.26	0.01	-0.01	-0.02

[15] We also repeated this estimation replacing the BRIC variable with HGM (high growth market entry into Brazil, China, India, China and the Gulf States). The results remain unchanged.

BRICS	-0.059	-0.122	-0.094	0.084	0.082	0.053
	-0.46	-0.9	-0.65	0.94	0.9	0.58
selldirect	-0.113	-0.012	-0.036	-0.019	0.009	0.054
	-1.23	-0.1	-0.28	-0.2	0.1	0.56
export<1yr		0.109			-0.24	
		0.56			-1.14	
export2_5yr		0.059			-0.214	
		0.35			-1.11	
export5_10yr		0.104			-0.017	
		0.65			-0.1	
export10_20yr		0.121			0.082	
		0.75			0.7	
market1_10		-0.409**			-0.007	
		-3.22			-0.07	
market11_50		-0.409**			-0.021	
		-3.18			-0.28	
experience			0.048			0.058
			1.09			1.74
_cons	0.302	0.48	0.247	0.645	0.955	0.736
	0.87	1.18	0.52	1.98	2.33	2.24
lnalpha						
_cons	-0.446***	-0.47***	-0.58***	-1.875***	-1.907***	-2.01***
	-5.01	-4.98	-5.55	-10.09	-9.97	-9.89
N	897	842	673	628	624	602
Pseudo R Squared	0.01	0.013	0.008	0.007	0.008	0.008
chi2	42.74	57.013	27.025	15.944	20.445	20.144
alpha	0.64	0.625	0.56	0.153	0.149	0.134

* p<0.05; ** p<0.01; *** p<0.001

Reference categories include newly established firms, firms with over 20 years experience, and those firms with operations in over 50 overseas markets. Z statistics shown below coefficient

By focusing on barriers to conducting overseas business we can shed light on where policy intervention needs to focus its efforts in order to assist firms to overcome these difficulties in conducting overseas business. This is especially important if an export led recovery is required as a possible solution to the current economic downturn.

Beginning with the results for 2008 Model 1 in Table 11 reports the basic results with general firm level characteristics and two dummy variables representing the type of market the firm does business in: firstly doing business in one of the BRICs (BRICS) or no emerging market business activity at all (No_em). From these estimations we can see that those firms aged 1 to 5, 6-10 and 20 or more years old increases the number of barriers reported to doing overseas business, relative to the omitted category (newly established firms). Similar results relating to these age variables exist for Model 2. As for highly innovative firms they perceive significantly more barriers than those firms without innovation capabilities.

In Model 2 we introduce the experience variables in terms of number of markets and years of experience in conducting overseas business. The only significant variable is for operations in 1 to 10 overseas markets. Firms doing overseas business in 1 to 10

and 11 to 50 markets seem to perceive fewer barriers in relation to the reference category (operating in over 50 overseas markets). This may reflect the psychic distance issue- when firms begin doing overseas business they may start out in a small number of countries that are psychically close in term of managerial practice, language and culture, but as firms expand into different markets psychic distance increases, along with the perceived barriers.

Finally in Model 3 we add factor scores from several experience variables: percentage of turnover from overseas, years exporting, self reported experience, experience of doing business in more than 10 countries, and exposure to emerging markets. However this 'experience' factor is insignificant.

Table 11 also presents results for 2009 and again innovative firms perceive significantly more barriers than those firms without innovation capabilities; however age and experience are now insignificant.

The dummy variable for firm selling directly to individuals or abroad is insignificant for all models in both years.

In Table 12 below we also run these equations using size bands, as opposed to a continuous measure of the number of employees. In this case the experience variables are now insignificant in Model 2 for 2008. The size dummies are insignificant throughout, however similar results relating to age and innovation still hold, as shown in Table 11.

Table 12: Negative Binomial Regression for the Number of Barriers

Variable	Model1R Q3: 2008	Model2R Q4: 2008	Model3R Q4: 2008	Model1R Q3:2009	Model2R Q4:2009	Model3R Q4:2009
emp10_49	-0.028	-0.039	0.007	-0.029	-0.036	-0.012
	-0.39	-0.52	0.09	-0.42	-0.52	-0.17
emp50_249	-0.012	-0.103	0.067	0.105	0.091	0.105
	-0.11	-0.86	0.56	1.47	1.26	1.44
emp250	0.006	-0.039	0.255	0.125	0.113	0.14
	0.04	-0.25	1.4	1.41	1.27	1.57
age1_5	0.756*	0.791*	0.729	0.294	0.216	0.203
	2.43	2.42*	1.64	1.06	0.77	0.75
age6_10	0.739*	0.802	0.738	0.385	0.138	0.277
	2.39	2.42	1.65	1.4	0.45	1.03
age11_20	0.425	0.474	0.448	0.395	0.05	0.263
	1.34	1.36	0.99	1.36	0.15	0.93
age20plus	0.695*	0.791*	0.642	0.333	0.036	0.184
	2.2	2.28	1.42	1.2	0.11	0.68
superinnovator	0.298***	0.305***	0.238***	0.158*	0.169*	0.138
	4.67	4.6	3.38	2.15	2.27	1.89
No_em	-0.099	-0.118	-0.054	-0.006	-0.007	-0.004
	-0.79	-0.91	-0.39	-0.06	-0.07	-0.04
BRICS	-0.061	-0.124	-0.095	0.079	0.08	0.065
	-0.47	-0.92	-0.66	0.91	0.9	0.71
selldirect	-0.11	-0.008	-0.019	0	0.027	0.072

	-1.21	-0.07	-0.15	0	0.29	0.75
export<1yr		0.115			-0.222	
		0.59			-1.06	
export2_5yr		0.065			-0.229	
		0.38			-1.2	
export5_10yr		0.114			-0.024	
		0.71			-0.15	
export10_20yr		0.13			0.079	
		0.81			0.66	
market1_10		-0.429			0.004	
		-3.26			0.05	
market11_50		-0.409			-0.016	
		-3.08			-0.22	
experience			0.044			0.046
			0.97			1.41
_cons	0.302	0.497	0.287	0.701	0.973	0.767
	0.88	1.22	0.6	2.33	2.52	2.55
lnalpha						
_cons	-0.444***	-0.468***	-0.581***	-1.907***	-1.94***	-2.023***
	-5	-4.98	-5.56	-10.23	-10.09	-10.02
N	900	845	674	641	637	611
Pseudo R Squared	0.01	0.013	0.008	0.007	0.008	0.008
chi2	43.01	57.359	26.567	18.633	22.611	21.038
alpha	0.641	0.626	0.559	0.149	0.144	0.132

* p<0.05; ** p<0.01; *** p<0.001
Reference categories include newly established firms, firms with less than 10 employees, firms with over 20 years experience, and those firms with operations in over 50 overseas markets. Z statistics shown below coefficient

As the BRICS and non Emerging market variables were insignificant in Tables 11 and 12 we re-run the estimations to include the separate Emerging market dummies (with Russia as the reference category), a general emerging markets dummy and a continuous variable to represent the total number of emerging markets a firm does business in. The results for firm size, age and innovation hold but the only emerging market dummy which is significant is for Qatar[16]. These results were presented in the Interim Report and can now be reviewed in the Appendix (Table 13).

Instead, here we present results which consider some different groupings of the emerging markets. In this case we include dummy variables for doing business in emerging economies such as Russia, India, China and South Africa (RICS), Latin American countries such as Mexico and Brazil (LATIN) and in the Gulf States of Saudi Arabia and Qatar (GULF). However Table 13 shows that these groupings are all insignificant in both the results for 2008 and 2009. Taken with the results in Table 12 we can conclude that the type of market does not significantly influence the numbers of barriers perceived to doing international business. Although the descriptive results in Table 4 showed that the perceptions of certain barriers differ across those firms which operate in BRICS and those who do not it appears from

[16] We also ran these regressions with the experience variables but they were insignificant throughout.

Tables 12 and 13 that the innovation variable is driving the results. The differences in the descriptive statistics and multivariate results are possibly caused by innovative firms being more likely to be operating in emerging markets and high growth economies (see Research Question 5)

Table 13: Negative Binomial Regression for the Number of Barriers (Different types of market)

	Model1R Q3: 2008	Model2R Q4: 2008	Model3R Q4: 2008	Model1R Q3: 2009	Model2R Q4: 2009	Model3R Q4: 2009
No. employees(ln)	-0.002	-0.005	0.033	0.027	0.024	0.031
	-0.14	-0.28	1.53	1.6	1.42	1.85
age1_5	0.755*	0.8*	0.721	0.281	0.176	0.186
	2.41	2.44	1.66	0.92	0.57	0.62
age6_10	0.738*	0.807*	0.722	0.367	0.095	0.244
	2.37	2.42	1.66	1.22	0.29	0.82
age11_20	0.436	0.492	0.433	0.38	0.02	0.235
	1.37	1.4	0.98	1.2	0.06	0.76
age20plus	0.702*	0.794*	0.625	0.31	0.009	0.142
	2.21	2.27	1.42	1.02	0.03	0.47
superinnovator	0.304***	0.315***	0.236***	0.164*	0.174*	0.149*
	4.75	4.73	3.33	2.21	2.32	2.01
RICS	0.02	-0.027	-0.065	0.102	0.107	0.083
	0.27	-0.34	-0.73	1.72	1.75	1.33
LATIN	-0.002	-0.029	-0.083	-0.06	-0.059	-0.093
	-0.01	-0.23	-0.63	-0.99	-0.97	-1.51
GULF	-0.008	-0.01	-0.002	0.064	0.077	0.055
	-0.08	-0.1	-0.02	0.96	1.1	0.78
Selldirect	-0.109	-0.01	-0.037	-0.022	0.009	0.055
	-1.19	-0.09	-0.29	-0.24	0.09	0.56
export<1yr		0.103			-0.218	
		0.53			-1.05	
export2_5yr		0.053			-0.192	
		0.31			-1.02	
export5_10yr		0.102			0.002	
		0.63			0.01	
export10_20yr		0.123			0.091	
		0.76			0.77	
market1_10		-0.418**			0.019	
		-3.18			0.21	
market11_50		-0.411**			-0.016	
		-3.13			-0.2	
Experience			0.06			0.058
			1.29			1.63
_cons	0.209	0.382	0.223	0.624	0.877	0.707
	0.65	0.97	0.49	1.93	2.13	2.15
Lnalpha						
_cons	-0.445	-0.469	-0.581	-1.89	-1.923	-2.028

	-5	-4.96	-5.56	-10.03	-9.9	-9.82
N	897	842	673	628	624	602
r2_p	0.01	0.013	0.008	0.008	0.009	0.009
chi2	41.926	56.292	27.948	19.044	24.443	24.439
Alpha	0.641	0.626	0.559	0.151	0.146	0.132

* p<0.05; ** p<0.01; *** p<0.001
Reference categories include newly established firms, firms with over 20 years experience, and those firms with operations in over 50 overseas markets. Z statistics shown below coefficient

When we compare the un-weighted 2008 regressions to the weighted regressions we see that the signs and significance levels are largely the same with two key differences in Model 2 appearing: in the weighted results the experience variable for 1 to 10 markets becomes insignificant, but the age dummy for those firms aged over 20 years old becomes positive and significant. Interestingly with the 2009 weighted results the coefficient on the Latin dummy becomes negative and weakly significant in all 3 models: suggesting that firms which do business in these emerging economies perceive fewer barriers. These weighted results are shown in Table 2 in Appendix B.

We then carried out a similar exercise, but this time using, where possible[17], the specification used by Kneller and Pisu (2006) which uses several different independent variables.

Table 14: Negative Binomial Regression for the Number of Barriers (following Kneller and Pisu, 2006)

	Model1RK: 2008	Model2RK: 2008	Model1RK: 2009	Model2RK: 2009
export<1yr	0.037	0.035	-0.172	-0.159
	0.21	0.2	-1.35	-1.25
export2_5yr	0.064	0.047	-0.026	-0.015
	0.41	0.3	-0.31	-0.18
int_exp5to10	0.153	0.147	0.099	0.107
	0.98	0.94	1.38	1.5
export10_20yr	-0.055	-0.07	0.053	0.061
	-0.3	-0.38	0.5	0.57
Manufacturing	0.084	0.075	-0.031	-0.035
	1	0.89	-0.5	-0.57
emp10_49	0.017	0.001	0	0
	0.18	0.01	0.01	0
emp50_249	-0.186	-0.206	0.098	0.091
	-1.17	-1.29	1.04	0.96
emp250	0.009	0.023	0.094	0.085
	0.03	0.08	0.86	0.77
R&D intensity	0.003	0.003	0.033	0.027
	1.01	0.88	0.24	0.2
Foreign own	0.049	0.047	0.12*	0.126*

[17] For example in the 2008 data we do not have information on co location, worker mobility, Trade Association membership, or if the firm is a subsidiary.

	0.29	0.28	1.66	1.73
UKTI_user		0.128		0.047
		1.55		0.66
_cons	0.784***	0.762***	1.208	1.173
	5.18	4.97	11.33	9.68
lnalpha				
_cons	-0.298**	-0.304**	-2.141	-2.145
	-2.88	-2.94	-8.7	-8.68
N	591	591	476	476
Pseudo R squared	0.002	0.002	0.006	0.006
chi2	5.444	7.833	12.93	13.652
alpha	0.742	0.738	0.117	0.117

* p<0.1

Reference categories include those firms with less than 10 employees and firms with over 20 years international market experience. Z statistics shown below coefficient

Our results differ from the Kneller and Pisu (KP) (2006) study. When using the 2008 and 2009 data the international experience variables are insignificant (as well as the firm level variables), in contrast the KP study report that the number of barriers the firm faces decrease with export experience. However, in our earlier specifications (Tables 11-13) which included a proxy for experience- age, we found that younger firms (aged 1-5 years old) are more likely to perceive a high number of projective barriers. This is more consistent with the KP study. In direct contrast to the KP study we report a weak positive relationship between foreign owned firms and the number of barriers perceived in 2009, suggesting that foreign owned firms may be more aware of the costs and difficulties of conducting international business.

There are several factors which could account for the different results. Firstly the makeup of our dataset and that used in the KP study is slightly different; in our 2008 dataset 35% of firms are UKTI users: in the KP study some 68% of firms are UKTI users. Users and non users perceive barriers differently, as we saw in Table 4, so this may account for some of the differences. In addition the KP study examines *actual* barriers[18], while the 2008 and 2009 surveys ask firms about their *projective* reported barriers. Perhaps more importantly the two studies are being carried out in very different conditions. The KP study uses data captured in the summer of 2005, while our study focuses on firms international activities in summer 2008 and 2009. Given the current economic climate, experience in international markets may be less of an important factor; instead all firms now may face stiffer competition and barriers to doing overseas business. This is something we will focus on in later specifications by controlling for the impact of the downturn.

Unfortunately we are unable to replicate results shown in the KP 2008 study as they carry out factor analysis to arrive at 3 barrier types: networking and marketing, procedural and exchange rates and cultural (see KP p37, Table 13). We would not be able to compare these results with those in the current study as the 2008 survey does

[18] As the KP study points out firms were asked about different barriers they had encountered when trading overseas.

not contain information on dealing with legal, financial and tax regulations, logistic problems or language barriers, which all appear in the KP study.

Summary Research Questions 3 & 4

There is some evidence, albeit weak, that firms aged 1 to 5 years are more likely to perceive a higher number of barriers, compared to the reference category of newly established firms in 2008. In 2009 age is insignificant.

Firms which currently conduct overseas business in 1 to 50 markets are more likely to perceive a lower number of barriers compared to the reference category of those which do business in more than 50 overseas markets in 2008 only.

Innovation experience is the only consistently significant predictor of the number of barriers perceived. Firms that are highly innovative experience a higher number of barriers in both 2008 and 2009.

The type of market (RICS, LATIN etc) does not appear to influence the number of barriers perceived. This is owing to the innovation dummy variable driving results and the fact that innovative firms are more likely be operating in BRICs and other high growth economies.

We replicate (to some extent) the Kneller and Pisu (2006) study and find several differences. For example in our study international experience variables are insignificant, while the Kneller and Pisu study reported that the number of barriers the firm faces decrease with export experience. However when we use age as a proxy for experience, we found that younger firms are more likely to perceive a high number of projective barriers. A final difference between the two studies relates to foreign ownership: we report a weak positive relationship between foreign owned firms and the number of barriers perceived in 2009. The differences across may result from differences in the composition of the sample, survey design and the time frames of both studies.

Research Questions 3 and 4: Investigating the Severity of Barriers

In Research Questions 3 and 4 we examine the specific barriers in turn by using the ordered Probit model, as shown in equations 4 and 5.

Equation 4:

$$BARR\_Type = \beta_1 FIRM + \beta_2 nonEM + \beta_3 BRICS + \varepsilon$$

Equation 4 when modelled by an ordered Probit technique allows us to examine how the extent of each single barrier (BARR_type) is affected by the type of market. As the survey asks establishments to evaluate different barriers in terms of importance on a 1 to 5 scale, the ordered probit is our chosen estimation tool.

As specified in research question 4 we will then examine the impact of experience on specific barriers:

Equation 5: $BARR\_type = \beta_1 FIRM + \beta_2 X \exp + \beta_3 NOM + \varepsilon$

Zahra (2005) suggests that too much experience can lead to managerial rigidity, so we introduce a non linear term to equations 4 and 5 to test this hypothesis. We also explore the potential differences between 'Born Global' establishments and those establishments that are later internationalisers in their perceptions of barriers.

Given the issues raised in the previous section we also include a dummy variable to account for the impact of the downturn and to see if this has pushed firms to look for business in emerging markets. We also include a dummy variable for UKTI service users.

Table 15 presents 4 models for each barrier: Model 1 includes market type (BRICS and non emerging markets), Model 2 introduces experience in international markets, and Model 3 also includes the experience factor scores described in Model 3, Table 10, above. Finally Model 4 introduces a quadratic measure of experience (coded non_lin_exp): the number of emerging markets a business operates in. As the KP (2006) paper points out, ordered probit analysis produces raw statistical output that is very difficult to interpret given that there are 5 different outcomes, so at this stage we present coefficients and Z scores for ease of interpretation and focus on the sign and magnitude of associations[19].

Beginning with projective barriers to obtaining basic information about doing international business firms that are aged 1 to 10 years have a higher probability of reporting this barrier as extremely difficult across all 4 models. In model 2 those firms aged 11-20 are more likely to report this as a severe barrier. As for innovation activities, those firms that are highly innovative have a higher probability of reporting obtaining basic information as an extremely difficult barrier to overcome. The results are rather different when we consider those reported for 2009: in this case firms that

[19] The O Model test (Wolfe and Gould, 1998) computes an approximate LR test. This test was carried out for all of the estimations. This test compares the log likelihood from the ordered probit with that obtained from pooling J-1 binary regressions fitted with a probit model. The test results revealed that the parallel assumption can be accepted i.e. coefficients are identical across each regression.

operate in non emerging economies are less likely to report this as a serious barrier; and the more general experience variable in Model 2 is positively and significantly associated with this barrier.

The experience variables in model 2 are largely insignificant, apart from those firms who have operations in 11 to 50 international markets who are less likely to report information access projective barriers as extremely difficult.

As for identifying a suitable contact or partner firm size negatively affects the perception of this projective barrier in models 1, 2 and 4, so larger firms are less likely to report identifying a suitable contact or partner to a critical extent. Older firms, on the other hand are more likely to perceive this barrier as extremely difficult. In the 2009 results we see that the firm size and age are less important factors in determining whether firms perceive this barrier as a crucial issue. It is important to note that this is related to mode of internationalisation and therefore the question is only applicable to firms using a mode which acquires a contact or partner i.e. selling via agents/distributors, contractual arrangements and overseas sites, and as a result does not include firms selling directly to businesses or individuals abroad.

As for innovation capabilities, highly innovative firms are again more likely to report this as a critical barrier. Although for the experience variables it is the firms which do business in at least 1 to 50 international markets that are less likely to report this as an extremely difficult problem to overcome.

The questionnaire also asks firms about projective barriers to relationship building, for example establishing initial dialogue with potential clients or partners. For this barrier it is only the highly innovative firms that are more likely to report this barrier as being critical; other firm level and experience characteristics are insignificant. When it comes to building relationships with key decision makers and influencers highly innovative firms are again more likely to report this as an extremely difficult barrier to overcome but larger firms are less likely to report this as a critical issue, as shown in models 1 and 2. As for the experience variables it is the firms which do business in at least 1 to 10 international markets that are less likely to report this relationship building barrier as a severe problem. In Model 2, in 2009 the only significant result concerns experience: this suggests that experienced firms are more likely to report relationship building as a severe barrier.

Moving on to barriers relating to cultural differences the majority of firm level and individual experience variables are insignificant except the super-innovation variable which is now weakly and positively associated with the perception of this barrier in Model 4 only. However in Model 3 we introduce a combined experience variable derived from factor analysis, as explained above. In this case, firms with higher factor scores for experience are more likely to report cultural barriers as a critical problem to doing international business.

If a firm doesn't have an office or site in the location where it is conducting international business this could also act as a projective barrier. In this case larger firms and those firms reporting a negative impact from the economic downturn are more likely to report this as a critical barrier. Those firms that are a UKTI service user are also more likely to report this as an important barrier in Model 1 (this becomes

insignificant in 2009). In contrast, those firms which do business in 11 to 50 international markets are less likely to report this as an extremely difficult problem to overcome. In the 2008 survey only 92 firms have their own office or site and half of these firms operate in just 1 to 10 overseas markets. In 2009 only innovation activities and the experience factor are significantly and positively related to this infrastructure barrier.

Experience and firm level characteristics are insignificant in determining perceptions of projective barriers pertaining to customer bias. In contrast, in 2009 age and innovation are positively and across the board strongly associated with this barrier.

Lastly the survey covers barriers relating to economic, financial and management issues. In terms of barriers concerning costs with doing international business firm age is positively and significantly associated with projective barriers of cost (see models 1-4 for the age category of 1-5 and model 3 for the age category of 6-10, 11-20 and over 20 years). In addition those firms that use UKTI services are more likely to report this as a critical barrier. In 2009 only innovation (across all 4 models) and experience (model 3) are positive and significant factors.

As for barriers regarding management time firm size is positively associated with the perception of this projective barrier in Model 3. Moreover those firms with operations in 11 to 50 markets are less likely to perceive management time as a critical barrier. However in 2009, the result pertaining to firm size becomes insignificant but UKTI service users are more likely to report management time as a critical barrier.

Lastly we consider barriers relating to exchange rates and currency. In this case larger firms are more likely to report this projective barrier as severe (model 3 only). In addition those firms that report a negative impact from the economic downturn are also more likely to report these as a critical issue across all 4 models. Finally in model 4 we include a quadratic term of experience in emerging markets: the results show that this non linear term is negative and weakly significant, suggesting that those firms with extensive experience in emerging markets are less likely to report projective currency barriers as a critical issue. In the 2009 results we now see that those firms aged 1 to 5 years old (compared to new firms), and those that are highly innovative firms (across all 4 models) are more likely to report this as a severe barrier. However firms with medium levels of international market experience (see model 2) are less likely to report this as a significant barrier, compared to firms with high levels of international market experience.

Overall, the impact of experience on the perceptions of the severity of projective barriers is greater in 2009, compared to 2008.

Table 15: Severity of Barriers: Ordered Probit Model: 2008

	Barriers to obtaining info				**Barriers to making contact**				**Barriers to initial dialogue**			
	Market Type	Experience	Experience factor	non_lin_exp	Market Type	Experience	Experience factor	non_lin_exp	Market Type	Experience	Experience factor	non_lin_exp
No. employees(ln)	0.006	0.003	0.03	0.008	-0.045*	-0.059**	-0.031	-0.043*	-0.024	-0.028	-0.036	-0.023
	0.32	0.14	1.17	0.41	-2.5	-2.86	-1.32	-2.38	-1.24	-1.3	-1.54	-1.22
age1_5	0.513*	0.884***	0.683**	0.516*	0.657**	0.844**	0.637*	0.66**	0.286	0.243	0.209	0.289
	2.3	3.76	3.02	2.32	2.8	3.22	2.38	2.76	1.32	0.92	0.58	1.32
age6_10	0.501*	0.915***	0.777***	0.503*	0.714**	0.997***	0.758**	0.722**	0.359	0.379	0.432	0.365
	2.26	3.44	3.43	2.28	3.08	3.44	2.82	3.06	1.67	1.29	1.21	1.69
age11_20	0.251	0.64*	0.453	0.259	0.462	0.765*	0.552	0.476	0.096	0.147	0.118	0.105
	1.11	2.1	1.89	1.14	1.92	2.41	1.95	1.95	0.43	0.45	0.32	0.47
age20plus	0.386	0.852	0.705	0.399	0.693**	1.038**	0.731**	0.7**	0.322	0.472	0.396	0.323
	1.68	2.47	2.87	1.73	2.88	2.94	2.59	2.85	1.43	1.28	1.07	1.42
superinnovator	0.216**	0.238**	0.217*	0.217**	0.204**	0.243**	0.223**	0.209**	0.313***	0.33***	0.326***	0.316***
	2.89	3.05	2.54	2.9	2.71	3.09	2.58	2.77	4.2	4.22	3.81	4.23
downturn	0.104	0.086	0.15	0.105	0	-0.003	0.027	-0.008	-0.045	-0.046	-0.014	-0.052
	1.36	1.09	1.74	1.39	0	-0.04	0.31	-0.1	-0.6	-0.6	-0.17	-0.7
Born global	-0.057	-0.005	-0.024	-0.05	0.071	0.135	0.009	0.082	-0.011	0.06	0	-0.005
	-0.75	-0.04	-0.24	-0.66	0.92	1.19	0.08	1.07	-0.14	0.52	0	-0.07
UKTI user	-0.037	-0.045	-0.035	-0.036	0.011	0.022	0.025	0.018	0.097	0.099	0.109	0.101
	-0.48	-0.56	-0.39	-0.47	0.14	0.27	0.28	0.23	1.27	1.25	1.25	1.33
No_em	0.001				-0.118				-0.1			
	0.01				-0.75				-0.71			
BRICS	-0.008				-0.019				-0.024			
	-0.05				-0.12				-0.16			
export<1yr		0.338				0.224				0.178		
		1.11				0.78				0.59		
export2_5yr		0.013				0.177				0.249		

		0.05				0.72				0.94		
export5_10		0.123				0.107				0.249		
		0.56				0.52				1.12		
export10_20yr		0.126				0.169				0.195		
		0.62				0.89				0.97		
market1_10		-0.38				-0.514**				-0.263		
		-1.94				-2.9				-1.7		
market11_50		-0.48*				-0.398*				-0.171		
		-2.44				-2.21				-1.07		
experience			-0.054				0.067				0.042	
			-0.94				1.23				0.77	
EM_tot_sqd				-0.002				0.001				0.001
				-0.62				0.39				0.65
N	842	795	643	842	836	787	636	836	853	802	650	853
Pseudo R Squared	0.008	0.015	0.012	0.009	0.011	0.017	0.009	0.01	0.012	0.016	0.016	0.012
chi2	25.661	41.809	32.512	26.177	30.093	45.884	22.517	27.887	32.465	41.037	28.996	32.151

	Barriers to building relationships				**Cultural Barriers**				**Not having own office or site**			
	Market Type	Experience	Experience factor	non_lin_exp	Market Type	Experience	Experience factor	non_lin_exp	Market Type	Experience	Experience factor	non_lin_exp
No. employees(ln)	-0.036*	-0.045*	-0.013	-0.036	0.009	0.015	0.032	0.009	0.043*	0.047*	0.055*	0.042*
	-1.96	-2.13	-0.55	-1.95	0.44	0.69	1.3	0.45	2.24	2.25	2.35	2.18
age1_5	0.237	0.335	0.098	0.243	0.313	0.454	0.584	0.315	0.459	0.317	0.571	0.472
	0.94	1.06	0.28	0.96	0.98	1.31	0.95	0.98	1.59	0.92	1.01	1.63
age6_10	0.333	0.569	0.327	0.341	0.345	0.467	0.556	0.358	0.406	0.298	0.55	0.414
	1.32	1.66	0.91	1.35	1.08	1.28	0.9	1.12	1.39	0.81	0.96	1.42
age11_20	-0.003	0.26	-0.036	0.009	0.121	0.31	0.284	0.138	0.185	0.115	0.214	0.198
	-0.01	0.69	-0.1	0.03	0.38	0.81	0.45	0.42	0.62	0.29	0.37	0.67
age20plus	0.2	0.521	0.18	0.2	0.259	0.399	0.415	0.257	0.346	0.258	0.456	0.35

	0.77	1.27	0.49	0.76	0.8	1.01	0.66	0.79	1.16	0.62	0.79	1.17
superinnovator	0.297***	0.309***	0.299***	0.299***	0.149	0.124	0.106	0.154*	0.116	0.11	0.107	0.116
	3.92	3.88	3.43	3.95	1.95	1.57	1.22	2.01	1.44	1.33	1.19	1.43
downturn	0.091	0.077	0.122	0.085	0.031	0.041	0.032	0.013	0.167*	0.187*	0.202*	0.162*
	1.22	0.99	1.42	1.13	0.41	0.52	0.37	0.18	2.12	2.28	2.28	2.06
Born global	0.031	0.135	0.032	0.032	-0.02	0.021	-0.086	-0.005	-0.03	0.021	-0.063	-0.037
	0.41	1.17	0.3	0.42	-0.26	0.21	-0.83	-0.07	-0.38	0.2	-0.56	-0.47
UKTI_user	0.082	0.089	0.11	0.087	0.052	0.075	0.046	0.061	0.185*	0.16	0.162	0.185*
	1.07	1.11	1.24	1.15	0.67	0.94	0.53	0.8	2.27	1.89	1.75	2.28
No_em	-0.187				-0.105				-0.243			
	-1.4				-0.76				-1.67			
BRICS	-0.115				0.094				-0.218			
	-0.84				0.68				-1.45			
export<1yr		0.271				-0.043				0.003		
		0.88				-0.18				0.01		
export2_5yr		0.192				-0.08				-0.022		
		0.73				-0.39				-0.09		
export5_10yr		0.122				0.018				-0.007		
		0.57				0.1				-0.04		
export10_20yr		0.109				-0.135				0.01		
		0.56				-0.73				0.05		
market1_10		-0.381*				-0.15				-0.291		
		-2.33				-0.86				-1.48		
market11_50		-0.271				0.019				-0.392*		
		-1.66				0.11				-1.98		
experience			0.022				0.166**				0.066	
			0.39				2.98				1.06	
EM_tot_sqd				0.002				0.003				0.003
				1.12				1.59				1.19
N	852	801	647	852	857	807	652	857	811	768	620	811
Pseudo R Squared	0.014	0.018	0.015	0.014	0.007	0.008	0.011	0.006	0.013	0.012	0.015	0.012

chi2	41.153	48.949	30.666	39.816	17.017	20.86	19.935	14.514	33.067	31.717	30.059	32.36

	Barriers relating to bias				**Cost Barriers**				**Management Time Barriers**			
	Market Type	Experience	Experience factor	non_lin_exp	Market Type	Experience	Experience factor	non_lin_exp	Market Type	Experience	Experience factor	non_lin_exp
No. employees(ln)	0.035	0.027	0.018	0.033	0.003	0.013	0.019	0.002	0.03	0.039	0.081**	0.029
	1.91	1.32	0.94	1.75	0.15	0.61	0.8	0.09	1.59	1.89	3.37	1.54
age1_5	0.178	0.148	0.112	0.182	0.535*	0.67*	1.33**	0.535*	0.32	0.58	0.967	0.307
	0.65	0.46	0.23	0.67	2.13	2.17	2.97	2.12	1.06	1.65	1.62	1.03
age6_10	0.12	0.082	0.091	0.118	0.47	0.587	1.209**	0.474	0.327	0.704	0.998	0.317
	0.44	0.24	0.19	0.43	1.87	1.78	2.7	1.88	1.09	1.92	1.66	1.06
age11_20	0.071	0.016	0.025	0.064	0.357	0.373	1.005*	0.361	0.11	0.458	0.774	0.095
	0.25	0.04	0.05	0.23	1.38	1.02	2.19	1.39	0.36	1.18	1.27	0.31
age20plus	0.09	0.101	0.059	0.086	0.411	0.513	1.106*	0.403	0.195	0.551	0.784	0.186
	0.31	0.25	0.12	0.3	1.57	1.31	2.41	1.54	0.64	1.38	1.29	0.61
superinnovator	0.131	0.12	0.101	0.127	0.079	0.107	0.115	0.082	0.144	0.115	0.165	0.142
	1.69	1.49	1.16	1.64	1.03	1.34	1.32	1.07	1.91	1.47	1.93	1.89
downturn	0.035	0.025	0.072	0.043	0.147	0.113	0.159	0.14	0.067	0.081	0.08	0.069
	0.45	0.32	0.83	0.56	1.95	1.46	1.87	1.87	0.9	1.05	0.94	0.93
Born global	-0.116	-0.133	-0.205	-0.133	0.021	0.001	-0.017	0.021	-0.028	0.087	0.017	-0.029
	-1.5	-1.22	-1.88	-1.72	0.27	0.01	-0.16	0.27	-0.38	0.87	0.17	-0.39
UKTI user	0.129	0.118	0.092	0.122	0.175*	0.172*	0.143	0.179*	0.072	0.072	-0.043	0.069
	1.61	1.42	1	1.52	2.26	2.14	1.61	2.3	0.94	0.9	-0.49	0.9
No_em	-0.007				-0.092				0.202			
	-0.05				-0.63				1.55			
BRICS	-0.119				-0.021				0.173			
	-0.82				-0.15				1.29			
export<1yr		0.047				-0.013				0.174		
		0.17				-0.05				0.73		

export2_5yr		-0.023				0.048				0.076		
		-0.09				0.2				0.39		
export5_10yr		0.139				0.047				0.015		
		0.64				0.22				0.08		
export10_20yr		0.075				0.208				0.137		
		0.36				1.04				0.74		
market1_10		-0.113				-0.073				-0.336		
		-0.67				-0.45				-1.7		
market11_50		-0.049				-0.107				-0.432*		
		-0.28				-0.64				-2.15		
experience			0.096				0.06				0.003	
			1.68				1.06				0.05	
EM_tot_sqd				0				0.002				-0.001
				0.05				1.08				-0.41
N	827	779	631	827	849	798	649	849	855	804	652	855
Pseudo R Squared	0.006	0.006	0.005	0.006	0.008	0.009	0.013	0.008	0.007	0.01	0.012	0.006
chi2	16.675	13.514	11.046	14.123	20.565	23.803	25.702	20.957	16.645	21.67	24.408	15.355

	Barriers relating to exchange rates and currency			
	Market Type	Experience	Experience factor	non_lin_exp
No. employees(ln)	0.026	0.033	0.062*	0.029
	1.27	1.53	2.28	1.39
age1_5	0.179	0.332	0.476	0.181
	0.74	1.01	0.93	0.75
age6_10	0.106	0.222	0.313	0.099
	0.43	0.65	0.6	0.4
age11_20	0.038	0	0.237	0.035
	0.15	0	0.45	0.14
age20plus	0.106	0.07	0.308	0.13
	0.42	0.18	0.59	0.52

superinnovator	0.122***	0.119***	0.111***	0.118***
	1.56	1.47	1.25	1.51
downturn	0.244	0.257	0.267	0.263
	3.2	3.24	3.09	3.44
Born global	-0.019	-0.091	-0.03	-0.02
	-0.25	-0.92	-0.28	-0.27
UKTI user	0.005	-0.023	-0.055	-0.003
	0.06	-0.28	-0.62	-0.04
No_em	0.13			
	0.94			
BRICS	-0.069			
	-0.49			
export<1yr		-0.042		
		-0.18		
export2_5yr		-0.197		
		-0.97		
export5_10yr		-0.128		
		-0.68		
export10_20yr		0.114		
		0.59		
market1_10		0.036		
		0.2		
market11_50		-0.008		
		-0.04		
experience			-0.018	
			-0.31	
EM_tot_sqd				-0.006*
				-2.54
N	846	797	647	846
Pseudo R Squared	0.009	0.01	0.012	0.009
chi2	25.129	24.933	23.394	25.759

Table 15b: Severity of Barriers: 2009

	Barriers to obtaining info				**Barriers to making contact**				**Barriers to initial dialogue**			
	Market Type	Experience	Experience factor	non_lin_exp	Market Type	Experience	Experience factor	non_lin_exp	Market Type	Experience	Experience factor	non_lin_exp
No. employees(ln)	-0.042	-0.029	-0.037	-0.046	-0.021	-0.027	-0.015	-0.028	0.019	0.031	0.021	0.02
	-1.77	-1.11	-1.47	-1.91	-0.89	-1.12	-0.59	-1.14	0.83	1.24	0.84	0.82
age1_5	-0.161	-0.183	-0.145	-0.159	0.43	0.402	0.418	0.43	0.406	0.273	0.374	0.404
	-0.55	-0.52	-0.45	-0.52	1.52	1.26	1.4	1.55	1.52	0.9	1.33	1.56
age6_10	-0.115	-0.097	-0.14	-0.119	0.562*	0.264	0.493	0.557*	0.563*	0.497	0.51	0.557*
	-0.4	-0.25	-0.44	-0.4	2.01	0.69	1.65	2.02	2.14	1.38	1.83	2.18
age11_20	-0.164	-0.186	-0.194	-0.151	0.686*	0.403	0.609	0.685*	0.446	0.425	0.396	0.46
	-0.52	-0.41	-0.56	-0.47	2.24	0.85	1.87	2.26	1.54	1.04	1.31	1.62
age20plus	-0.157	-0.219	-0.28	-0.152	0.657*	0.56	0.539	0.654*	0.49	0.541	0.365	0.496
	-0.53	-0.46	-0.85	-0.5	2.31	1.04	1.74	2.33	1.85	1.24	1.29	1.93
superinnovator	0.095	0.117	0.097	0.095	0.159	0.18	0.172	0.159	0.23*	0.239*	0.213*	0.232*
	1.04	1.26	1.02	1.04	1.65	1.83	1.73	1.64	2.39	2.44	2.14	2.41
downturn	0.118	0.125	0.11	0.117	0.04	0.042	0.048	0.037	0.047	0.043	0.042	0.048
	1.41	1.5	1.29	1.4	0.48	0.5	0.55	0.44	0.57	0.52	0.49	0.58
Born global	0.136	0.166	0.086	0.153	0.103	0.121	0.056	0.112	0.037	0.167	0.025	0.056
	1.42	1.15	0.78	1.65	1.05	0.76	0.5	1.15	0.36	1.08	0.21	0.55
UKTI user	-0.026	0.001	-0.005	-0.02	0.123	0.115	0.144	0.123	0.089	0.118	0.115	0.099
	-0.31	0.01	-0.05	-0.23	1.48	1.35	1.66	1.46	1.08	1.39	1.34	1.2
No_em	-0.277*				-0.171				-0.293*			
	-2.11				-1.27				-2.15			
BRICS	-0.081				0.005				-0.173			
	-0.68				0.04				-1.39			
export<1yr		-0.138				-0.003				0.041		
		-0.39				-0.01				0.12		
export2_5yr		-0.071				0.015				0.19		

		-0.22				0.04				0.6		
export5_10yr		-0.141				0.312				0.091		
		-0.6				1.07				0.38		
export10_20yr		-0.047				0.257				0.1		
		-0.24				1.21				0.51		
market1_10		0.118				-0.216				0.108		
		0.89				-1.57				0.82		
market11_50		0.137				-0.112				0.035		
		1.19				-0.96				0.31		
experience			0.126*				0.083				0.088	
			2.55				1.64				1.77	
EM_tot_sqd				0.004				0.005*				0.001
				1.85				2.04				0.47
N	809	802	763	809	789	782	745	789	806	799	760	806
Pseudo R Squared	0.006	0.004	0.006	0.005	0.01	0.012	0.01	0.01	0.01	0.009	0.01	0.008
chi2	14.887	11.936	15.872	12.671	24.809	32.853	22.1	25.481	24.223	23.101	22.996	19.53

	Barriers to building relationships				**Cultural Barriers**				**Not having own office or site**			
	Market Type	Experience	Experience factor	non_lin_exp	Market Type	Experience	Experience factor	non_lin_exp	Market Type	Experience	Experience factor	non_lin_exp
No. employees(ln)	0.066	0.084	0.089	0.075	0.043	0.046	0.1*	0.045	0.045	0.037	0.039	0.044
	1.21	1.58	1.62	1.43	0.85	0.92	2.03	0.93	1.79	1.44	1.47	1.71
age1_5	0.24	-0.167	0.143	0.276	0.406	-0.159	0.288	0.436	0.104	0.002	-0.009	0.115
	0.63	-0.36	0.31	0.74	0.93	-0.31	0.64	1.04	0.38	0.01	-0.03	0.41
age6_10	0.369	0.013	0.17	0.409	0.407	-0.545	0.197	0.431	0.125	0.292	-0.016	0.128
	0.98	0.03	0.38	1.13	0.96	-0.89	0.45	1.06	0.46	0.78	-0.06	0.46
age11_20	0.253	0.078	-0.074	0.33	0.287	-0.776	0.026	0.367	0.231	0.509	0.078	0.254
	0.63	0.13	-0.16	0.85	0.66	-1.02	0.06	0.88	0.77	1.1	0.26	0.84
age20plus	0.136	-0.194	-0.306	0.203	0.427	-1.356	-0.005	0.48	0.107	0.382	-0.091	0.13
	0.35	-0.27	-0.62	0.53	0.98	-1.51	-0.01	1.14	0.38	0.73	-0.32	0.46

superinnovator	0.214	0.22	0.207	0.208	0.229	0.261	0.155	0.208	0.354*	0.372*	0.334*	0.363*
	1.43	1.4	1.37	1.38	1.49	1.8	0.99	1.34	3.54	3.74	3.33	3.62
downturn	0.17	0.149	0.15	0.169	0.078	0.085	0.025	0.077	0.088	0.102	0.09	0.082
	1.18	1.01	1.03	1.17	0.52	0.6	0.16	0.52	0.99	1.14	0.99	0.93
Born global	-0.013	0.009	-0.187	0.03	0.254	-0.247	0.109	0.297	0.068	0.248	0.011	0.096
	-0.08	0.03	-0.88	0.16	1.59	-0.87	0.66	1.81	0.62	1.39	0.09	0.88
UKTI user	0.054	0.033	0.016	0.043	0.172	0.138	0.132	0.147	0.048	0.046	0.06	0.055
	0.4	0.24	0.11	0.31	1.24	0.98	0.87	1.02	0.53	0.5	0.66	0.61
No_em	-0.207				-0.308				-0.217			
	-0.83				-1.37				-1.61			
BRICS	0.009				0.123				-0.018			
	0.04				0.61				-0.15			
export<1yr		-0.378				-1.721*				0.352		
		-0.63				-2.12				0.77		
export2_5yr		0.052				-1.259				0.399		
		0.08				-1.72				0.94		
export5_10yr		-0.054				-0.934				0.071		
		-0.11				-1.83				0.24		
export10_20yr		-0.251				-0.879*				0.013		
		-0.66				-2.57				0.06		
market1_10		0.045				-0.449				-0.234		
		0.21				-1.49				-1.58		
market11_50		0.073				-0.19				-0.095		
		0.38				-0.66				-0.71		
experience			0.263**				0.189*				0.126*	
			2.65				2.29				2.38	
EM_tot_sqd				0.001				0.007				0.003
				0.26				1.82				1.02
N	794	787	750	794	812	806	768	812	761	756	727	761
Pseudo R Squared	0.013	0.013	0.021	0.01	0.026	0.031	0.019	0.018	0.015	0.016	0.015	0.013
chi2	10.586	20.258	17.445	8.664	27.76	30.664	19.275	21.267	31.465	35.872	31.473	27.937

	Barriers relating to bias				**Cost Barriers**				**Management Time Barriers**			
	Market Type	Experience	Experience factor	non_lin_exp	Market Type	Experience	Experience factor	non_lin_exp	Market Type	Experience	Experience factor	non_lin_exp
No. employees(ln)	0.013	0.022	0.02	0.021	0.015	0.012	0.016	0.015	0.031	0.042	0.039	0.036
	0.5	0.83	0.74	0.82	0.62	0.49	0.65	0.64	1.31	1.71	1.53	1.47
age1_5	0.701**	0.713**	0.629**	0.718**	0.34	0.534	0.337	0.348	0.196	0.504	0.165	0.204
	2.83	2.58	2.61	2.93	1.19	1.66	1.08	1.21	0.65	1.43	0.52	0.68
age6_10	0.766**	0.755*	0.702**	0.777**	0.439	0.663	0.379	0.439	0.148	0.613	0.107	0.156
	3.17	2.22	2.98	3.24	1.55	1.72	1.23	1.53	0.5	1.52	0.34	0.52
age11_20	0.749**	0.786*	0.638*	0.774**	0.405	0.644	0.324	0.421	0.168	0.516	0.155	0.183
	2.74	1.98	2.37	2.85	1.29	1.4	0.97	1.34	0.52	1.1	0.46	0.57
age20plus	0.656**	0.731	0.596*	0.69**	0.387	0.704	0.242	0.408	0.121	0.753	0.129	0.139
	2.66	1.74	2.43	2.82	1.36	1.35	0.78	1.43	0.4	1.49	0.41	0.46
superinnovator	0.322**	0.34***	0.299**	0.334***	0.24*	0.258*	0.219*	0.253*	0.288**	0.297**	0.268**	0.295**
	3.26	3.41	2.95	3.39	2.41	2.56	2.13	2.54	2.99	3.09	2.67	3.06
downturn	0.113	0.128	0.108	0.115	0.098	0.112	0.085	0.094	-0.031	-0.025	-0.049	-0.029
	1.32	1.48	1.23	1.34	1.22	1.37	1.03	1.17	-0.39	-0.31	-0.6	-0.37
Born global	-0.012	0.035	0.039	0.013	0.111	0.202	0.03	0.141	0.034	0.238	0.085	0.046
	-0.11	0.22	0.32	0.12	1.19	1.29	0.29	1.51	0.35	1.5	0.76	0.47
UKTI user	0.066	0.085	0.084	0.073	0.068	0.058	0.065	0.068	0.223**	0.238**	0.247**	0.227**
	0.8	1.02	0.99	0.88	0.81	0.69	0.75	0.81	2.66	2.8	2.87	2.7
No_em	0.056				-0.045				0			
	0.44				-0.33				0			
BRICS	0.1				0.173				0.002			
	0.84				1.39				0.01			
export<1yr		0.135				0.348				0.68		
		0.38				0.8				1.7		
export2_5yr		0.028				0.107				0.257		

		0.09				0.27				0.66		
export5_10yr		0.085				0.108				0.181		
		0.34				0.37				0.63		
export10_20yr		0.019				0.107				0.372		
		0.09				0.54				1.86		
market1_10		0.139				-0.165				0.265*		
		0.96				-1.25				2.06		
market11_50		0.197				0.005				0.223*		
		1.51				0.04				1.96		
experience			-0.011				0.132**				-0.05	
			-0.2				2.73				-1.01	
EM_tot_sqd				-0.002				0.003				-0.002
				-1				1.41				-0.86
N	771	765	730	771	818	813	774	818	824	817	779	824
Pseudo R Squared	0.011	0.012	0.009	0.011	0.012	0.012	0.011	0.01	0.01	0.015	0.01	0.01
chi2	26.99	30.757	23.629	27.656	27.319	24.14	23.002	22.012	24.848	37.08	24.57	25.188

	Barriers relating to exchange rates and currency			
	Market Type	Experience	Experience factor	non_lin_exp
No. employees(ln)	0.033	0.048	0.037	0.045
	1.43	1.95	1.54	1.94
age1_5	0.566*	0.634	0.48*	0.583*
	2.07	2.06	1.67	2.1
age6_10	0.515	0.235	0.476	0.527
	1.91	0.63	1.67	1.91
age11_20	0.399	0.238	0.428	0.432
	1.32	0.52	1.34	1.41
age20plus	0.559*	0.099	0.612*	0.602*
	2.03	0.19	2.06	2.14
superinnovator	0.325**	0.36***	0.37***	0.344***

	3.26	3.6	3.58	3.43
downturn	0.113	0.105	0.092	0.116
	1.36	1.27	1.07	1.4
Born global	0.035	-0.201	0.14	0.071
	0.37	-1.06	1.28	0.76
UKTI user	-0.115	-0.09	-0.131	-0.101
	-1.33	-1.03	-1.48	-1.16
No_em	-0.025			
	-0.19			
BRICS	0.041			
	0.34			
export<1yr		-0.47		
		-1.02		
export2_5yr		-0.731		
		-1.65		
export5_10		-0.234		
		-0.8		
export10_20yr		-0.448*		
		-1.98		
market1_10		0.221		
		1.66		
market11_50		0.1		
		0.86		
experience			-0.083	
			-1.67	
EM_tot_sqd				-0.004
				-1.65
N	807	800	761	807
Pseudo R Squared	0.012	0.016	0.013	0.012
chi2	31.467	40.872	30.431	32.35

* p<0.05; ** p<0.01; *** p<0.001. Z scores shown below coefficient

When we compare these un-weighted results with the weighted regressions for 2008 the main differences appear in the 'office' and 'management costs' barriers. Firstly in the weighted results younger and older firms are likely to report not having their own office or site as an extremely critical barrier. In addition, innovation activities are no longer significantly associated with citing management costs as a critical barrier in the weighted results. These weighted regressions are shown in Tables 3a and 3b in Appendix B. Comparing the un-weighted results with the weighted regressions for 2009 reveal the following differences: the weighted results suggest that being born global is positively, albeit weakly, associated with the likelihood of a firm reporting severe barriers to accessing information in Model 4, in Model 2 those firms with operations in 11 to 50 markets are more likely to perceive this barrier as crucial. As for cultural barriers high levels of emerging market experience become insignificant in the weighted results, but the number of years exporting become weakly significant. Concerning barriers to making initial contact in Model 3 we see that those firms that are born globals are less likely to cite this as a severe barrier. These tables are shown in Appendix B (Tables 4a-c).

Where possible we also attempt to replicate the Kneller and Pisu (2006 and 2008) studies although as mentioned earlier in the report it should be noted that some questions have since been deleted from the 2005 survey. In particular these relate to barriers on logistic problems, dealing with legal/financial standards and language barriers, trade association, R&D intensity and subsidiary dummies.

In Table 16 below we show both Kneller and Pisu's results from their 2006[20] study with our results from 2008 data.

The KP study concluded that export experience is an important variable affecting how firms perceive obstacles to exporting. Firms with more experience shipping goods overseas are less likely to face severe barriers, compared to firms with less experience. They also report an important change in the importance of barriers and the role of experience around the middle of the distribution of whether a barrier is critical or not. Both studies found that experience does not affect the perceptions on severity of barriers relating to identifying initial contact and exchange rates and currency. It is also noteworthy that the results from the current study showed that firm size, foreign ownership and R&D activities impact on the severity of the perceptions of barriers.

Our results using the 2008 survey differ from those of the KP study in several places, for example in outcome 3, where businesses report accessing information as a mid critical barrier we find that experience has a positive impact, while the KP study reports an insignificant impact of experience. Of course these differences may be caused by the different time frames (the KP study uses data collected in 2005) but also may reflect differences in the design of the survey. In 2005 the OMB survey asks firms about specific barriers to exports they face. In contrast the 2008 survey asks

[20] Note we are unable to compare our results with the Kneller and Pisu (2008) study due to differences in variables and techniques. The Kneller and Pisu (2008) study uses multivariate probit techniques to study the severity of barriers (we use ordered probit) and also examines the impact of a firm trying to enter its first export market (we only have information on the number of export markets a firm actually does business in).

firms about *projective* barriers i.e. difficulties or problems that a firm in a similar position to itself in terms of size, sector and structure might face when doing business overseas.

Table 16: Summary of Marginal effects from the RKP study and the 2010 NIESR study for each predicted outcome

Barrier	**Variable**	**Outcome score 1-5**									
		Not critical (1)		Med-low (2)		Mid critical (3)		Med-high (4)		Critical (5)	
		RKP	NIESR	RKP	NIESR	RKP	NIESR	RKP	NIESR	RKP	NIESR
Info	Non exporter	-		-			+	+			
	<2 years	-		-				+		+	
	2-5 years	-	-	-			+	+			
	5-10 years	-		-				+			
	10-20 years										
Contact	Non exporter										
	<2 years										
	2-5 years										
	5-10 years										
	10-20 years										
Relationships	Non exporter			-		-				+	
	<2 years			-		-		+		+	
	2-5 years										
	5-10 years			-				+			
	10-20 years				+						-
Culture	Non exporter		+				-		-		-
	<2 years										
	2-5 years										
	5-10 years						-		-		-
	10-20 years										
Office	Non exporter	-		-				+			
	<2 years										
	2-5 years	-						+			
	5-10 years							+			
	10-20 years										
Bias	Non exporter			-							-
	<2 years			-						+	
	2-5 years					-		+		+	
	5-10 years					-					
	10-20 years										
Initial dialogue	Non exporter							+			
	<2 years			-				+			
	2-5 years							+			
	5-10 years			-							
	10-20 years										
Exchange rates	Non exporter										
	<2 years										
	2-5 years										
	5-10 years										
	10-20 years										

-negative significant relationship, + positive significant relationship
Where a cell is blank there are no significant relationships

Summary Research Questions 3 and 4.

Innovation was again the most significant influence on barriers, with innovative firms more likely to report more severe barriers, particularly with respect to contacts, establishing an initial dialogue, costs and building relationships.

In 2008 UKTI users are more likely to report barriers relating to cost as severe. In addition larger firms are more likely to report establishing contacts and relationships as a critical barrier.

In 2009 it is those firms with international market experience that are more likely to report cost and relationship building barriers as severe problems.

Research Question 5

In this section we determine whether there are there any firm characteristics which appear to be significantly associated with lack of awareness of UKTI and its services which help UK firms do business overseas. To address this question we will make use of Section F of the survey which asks firms if they are aware of UKTI and some of its services such as Passport to Export, International Trade Advisors (ITAs), Export Marketing Research Scheme (EMRS), Export Communications Review (ECR), Tradeshow Access Programme (TAP) and Overseas Market Information Service (OMIS). Again we will use a count model to ascertain whether certain firm level characteristics are associated with *unawareness* of the UKTI's services and thus we will estimate:

Equation 6:

$$NON\_Aware = \beta_1 FIRM + \beta_2 INN + \beta_3 MGT + \beta_4 EM + \varepsilon$$

Where NON_aware is the number of UKTI and other information sources the firm is unaware of, FIRM is observable firm level characteristics such as age and size, INN captures innovation activities, MGT depicts managerial level characteristics such as strategy and objectives, and EM is a variable to capture the propensity to enter emerging markets

As some services may not be relevant to all of the firms we will also run separate probit equations for individual services. The Table below provides some background information to the use and awareness of the services we consider in the analysis.

Table 17: Awareness of information and advice

			Size distribution of firms that had heard of the programme			
	% of firms that had heard of the services prior to the survey	% of firms that had used any of the services prior to the survey	Micro firms (<5)	5-9 employees	10-19 employees	20+employees
UKTI	50	43	30	25	18	27
British Embassies overseas	54		28	25	21	26
ITAs based in Business Links/RDAs	59		32	26	18	24
Passport to Export	34		30	22	21	27
EMRS	31		31	18	20	31
ECR	18		30	19	16	35

TAP	25		28	23	20	29
OMIS	26		27	24	19	30

From Table 17 above it is apparent that over half of the firms were aware of ITAs and the advice provided by British Embassies overseas, while exactly half of the firms had heard of UKTI prior to the interview. As for use of the actual services some 43% of the firms had used any of the services prior to the interview. For those firms that are aware of the services micro firms appear to be the most aware e.g. UKTI, British Embassies, ITAs and Passport to Export, while some 35% of firms with 20 employees are aware of the ECR. We also look at awareness by size of the firm, so for example we can see that of those firms that heard of UKTI, 30% were micro firms.

Table 18 reports the results from estimating equation 6. Here two models are estimated. Model 1 includes firm age as a proxy of experience and in model 2 we use the 'experience' factor scores from factor analysis (based on turnover from overseas, years exporting, self reported exporting and the number of emerging markets a firm operates in). In both models firms that are highly innovative are aware of a higher number of sources of information and advice. In model 1 we also see that those firms that have a business plan and are operating in one of the BRICS markets are aware of a higher number of information services. The age variables in model 1 are insignificant throughout. However in model 2 we find that experienced firms are aware of a higher number of information services.

As for the weighted results the only differences occur in the BRICs and business plan variables: these now lose significance values but their sign and magnitude remain the same.

Table 18: Negative binomial model to determine unawareness of UKTI and other services: 2008

	Model1RQ5	Model2RQ5
No. employees(ln)	0.007	0.008
	0.96	0.82
superinnovator	-0.073*	-0.086*
	-2.48	-2.54
High growth objective	-0.012	-0.015
	-0.37	-0.42
Business plan	-0.086**	-0.057
	-2.84	-1.64
downturn	0.034	0.046
	1.19	1.42
BRICS	-0.06*	-0.04
	-1.99	-1
new_firm	0.004	
	0.04	
age1_5	0.032	
	0.7	
age6_10	0.025	

	0.54	
age11_20	-0.002	
	-0.04	
experience		-0.044**
		-2.17
_cons	1.565	1.55
	34.71	38.04
lnalpha		
_cons	-66.596	-66.635
N	843	651
Pseudo R Squared	0.005	0.007
chi2	25.899	28.813
alpha	0	0

* p<0.05; ** p<0.01; *** p<0.001
We report coefficients and Z statistics, reference category is over 20 years old (firm age)

We then estimate the determinants of non awareness of each programme using the probit model. Results are shown below in Table 19. Here we can see that highly innovative firms are between 9 and 16% less likely to be unaware of the UKTI, commercial services provided by embassies, ITAs and the Passport to Export service. However highly innovative firms are almost 10% more likely to be unaware of the Export Communications Review. As for the other services those firms with a business plan are 8% less likely to be unaware of the OMIS programme. Other interesting findings relate to the experience variable: firms with international market experience are between 4 and 8% less likely to be unaware of the UKTI, Embassies and TAP services. Finally the downturn variable is significant in the case of the ECR service: firms that have been negatively affected by the downturn are 7% more likely to be unaware of this programme.

Table 19: Determinants of Non Awareness of Individual Programmes: 2008

	UKTI	Embassies	ITAs	Passport	EMRS	ECR	TAP	OMIS
No. employees(ln)	0.016	-0.001	0.004	0.006	0	0.004	0.004	0.003
	0.013	0.013	0.012	0.012	0.012	0.012	0.011	0.011
superinnovator	-0.156***	-0.094**	-0.116***	-0.113***	0.057	0.097**	-0.013	-0.052
	0.04	-0.04	0.039	-0.038	-0.04	0.039	0.036	0.036
High growth objective	0.056	0.026	0.037	0.031	0.059	-0.023	-0.012	-0.007
	0.043	-0.042	0.042	-0.041	-0.043	0.042	0.039	0.038
Business plan	-0.067	0.008	-0.045	0.035	0.005	0.002	-0.036	-0.078**
	0.044	-0.043	0.043	-0.042	-0.044	0.043	0.039	0.038
downturn	0.021	0.048	0.002	0.027	0.03	0.065*	0.014	0.054
	-0.04	-0.04	0.039	-0.038	0.04	0.039	0.036	0.036
BRICS	-0.028	0.037	-0.01	0.049	-0.013	-0.02	-0.031	0.01
	0.048	0.047	0.046	-0.046	0.047	0.046	0.043	0.042
experience	-0.072***	-0.080***	-0.009	0.015	0.004	0.019	-0.041*	-0.034

	0.023	0.023	0.023	0.022	0.023	0.023	0.021	0.021
Observations	651	651	651	651	651	651	651	651
Pseudo R Squared	0.04	0.04	0.01	0.02	0.005	0.01	0.01	0.02

* p<0.05; ** p<0.01; *** p<0.001. Reported coefficients are all estimated marginal effects, robust standard errors shown in cell below.

We also ran these specifications for the individual programmes with the cell weights which revealed the following differences: for the 'Passport' programme having a high growth objective becomes significant, but for the 'ECR' programme the impact of the downturn becomes insignificant and for OMIS the business plan variable becomes insignificant. These results are shown in Table 5 in Appendix B.

Table 20 below reports awareness statistics for 2009 and we can see that compared to 2008 a smaller percentage of firms are aware of special programmes such as the Export Marketing Research Scheme and the Export Communication Review. In 2009 it is those firms that have 20 or more employees that tend to be aware of sources of information and advice.

Table 20: Awareness of information and advice: 2009

		Size distribution of firms that had heard of the programme			
	% of firms that had heard of the programme prior to the survey	Micro firms (<5)	5-9 employees	10-19 employees	20+ employees
UKTI	79	14	15	15	55
British Embassies overseas	72	15	14	14	57
ITAs based in Business Links/RDAs	61	16	17	15	53
Passport to Export	41	16	15	17	52
EMRS	14	12	14	15	59
ECR	14	18	12	20	51
TAP	37	12	15	15	58
OMIS	41	14	14	15	57

Table 21: Negative binomial model to determine unawareness of UKTI and other services: 2009

	Model1RQ5	Model2RQ5
No. employees(ln)	0.009	0.002
	0.84	0.2
superinnovator	-0.114**	-0.122**
	-3.08	-3.15
High growth objective	0.004	0.016
	0.11	0.42
Business plan	-0.09*	-0.08*
	-2.34	-2.01
downturn	-0.022	-0.016
	-0.61	-0.43
BRICS	-0.082*	-0.034
	-2.35	-0.89
new_firm	0.326**	
	3.05	
age1_5	0.213***	
	4.46	
age6_10	0.188***	
	4.13	
age11_20	0.086	
	1.05	
experience		-0.074***
		-3.59
_cons	1.401***	1.513***
	22.31	29.81
lnalpha		
_cons	-54.78	-27.895
N	838	790
Pseudo R Squared	0.016	0.012
chi2	67.959	48.371
alpha	0	0

* p<0.05; ** p<0.01; *** p<0.001*
We report coefficients and Z statistics, reference category is over 20 years old (firm age)

In Table 21 we see that in 2009 in both models firms that are highly innovative are aware of a higher number of sources of information and advice, as in 2008, but in 2009 in both models 1 and 2 we also see that those firms that have a business plan are aware of a higher number of information services. In model 1 operating in at least 1 BRICS economy is associated with awareness of sources of information and advice and again in model 2 we find that experienced firms are aware of a higher number of information services. One clear difference between the 2008 and 2009 results relates to the age variables: in Model 1 we now see that younger firms are more likely to be unaware of information sources. In the weighted results the age variables dominate in model 1.

Finally we examined the determinants of non awareness of the programmes individually for 2009. As for the 2008 results, innovation activities are still an important factor in determining unawareness. In addition, experience is now a negative significant factor in determining unawareness of services provided by UKTI, ITAs, OMIS Embassies and TAP. Firms with a business plan are between 9 and 10% less likely to be unaware of ITAs and UKTI respectively in 2009. Finally in the 2008 results firm size was an insignificant factor for all programmes, however in 2009 larger firms are less likely to be unaware of the ITAs and Passport to Export. When we apply the cell weights (as shown in Table 6, Appendix B) to these estimations one key difference arises: experience and innovation lose some of its significance for some of the services.

Table 21b: Determinants of Non Awareness of Individual Programmes: 2009

	UKTI	Embassies	ITAs	Passport	EMRS	ECR	TAP	OMIS
No. employees(ln)	-0.001	-0.006	0.024**	0.026**	-0.019	0.005	-0.004	-0.015
	0.01	0.011	0.012	0.012	0.012	0.011	0.012	0.012
superinnovator	-0.070*	-0.078*	-0.062	-0.132***	-0.028	0.035	-0.110***	-0.052
	0.036	0.04	0.043	0.041	0.044	0.039	0.042	0.043
High growth objective	0.013	0.016	0.021	0.021	-0.032	0	0.034	-0.007
	0.032	0.037	0.039	0.039	0.04	0.035	0.039	0.04
Business plan	-0.115***	-0.054	-0.085**	-0.027	0.01	0.046	-0.059	-0.036
	0.035	0.038	0.041	0.041	0.042	0.038	0.041	0.041
downturn	0.025	0.013	-0.036	-0.039	-0.04	-0.025	0.035	0.006
	0.029	0.035	0.039	0.039	0.039	0.034	0.039	0.039
BRICS	-0.014	-0.001	-0.027	-0.038	-0.039	0.002	-0.034	0.015
	0.032	0.037	0.041	0.041	0.042	0.036	0.041	0.041
experience	-0.047***	-0.080***	-0.053**	0.004	-0.001	0	-0.058***	-0.055***
	0.017	0.019	0.021	0.021	0.021	0.019	0.021	0.021
Observations	790	790	790	790	790	790	790	790
Pseudo R squared	0.05	0.04	0.01	0.01	0.008	0.005	0.03	0.02

* p<0.05; ** p<0.01; *** p<0.001. Reported coefficients are all estimated marginal effects, robust standard errors shown in cell below.

Summary Research Questions 5

In the 2008 survey highly innovative firms are less likely to be unaware of the UKTI, commercial services from the embassies, ITAs and the Passport to Export programmes. Firms with international market experience are less likely to be unaware of UKTI, embassy services and TAP.

In the 2009 survey larger firms are also more likely to be unaware of the ITAs and Passport to Export services. Firms with international market experience are less likely to be unaware of UKTI, ITAs, OMIS, embassy services and TAP.
As for 2008, innovation activities significantly impact on awareness of various information and advice sources.

Research Question 6

This final section determines if there are any firm characteristics which appear to be associated with export diversification as measured by: (a) number of markets, or (b) number of regions? Again, there will also be some potential causality problems in determining whether innovation and management variables are significant determinants of diversification; so it is important to highlight we will only be able to model significant associations.

To address these issues we run a count model using the number of markets and regions as dependent variables and firm size, age, managerial strategy, and innovation activity as independent variables.

Equation 6

$$No.MKT = \beta_1 FIRM + \beta_2 INN + \beta_3 MGT + \beta_4 DOWN + \varepsilon$$

Equation 7

$$No.REG = \beta_1 FIRM + \beta_2 INN + \beta_3 MGT + \beta_4 DOWN + \varepsilon$$

Where No.MKT represents the number of markets the firm is involved in, NO. Reg is the number of regions the firm operates within, FIRM is observable firm level characteristics such as age and size, INN captures innovation activities, MGT depicts managerial level characteristics, and DOWN is a dichotomous variable which takes the value of 1 if the firm has experienced negative effects of the economic downturn, and zero otherwise. In the case of the 2008 dataset we are only able to estimate the determinants of entry into high growth or emerging markets, we do this both with a count model and a probit model.

In Table 22 below we look at three different groupings of emerging markets. In models 1 and 2 we estimate a count model to account for the number of emerging markets a firm does business in (EM_tot). In models 3 and 4 we estimate the determinants of a firm operating within any emerging market (EM) and for models 5 and 6 the determinants of operating in one of the BRICS economies. We estimate all of the models firstly with the number of employees entered in log form and secondly with employment band dummies.

Table 22: Determinants of entering emerging markets: 2008

	Model1: EM_tot	Model 2: EM_tot	Model 3: EM	Model 4: EM	Model 5: BRICS1	Model 6: BRICS2
new_firm	-0.994*	-0.987*	-0.065	-0.146	-0.065	-0.059
	-2.57	-2.51	0.111	0.112	0.111	0.112
age1_5	-0.762***	-0.743***	-0.124*	-0.123*	-0.124*	-0.116*
	-4.17	-4.14	0.048	0.053	0.048	0.049
age6_10	-0.612***	-0.596***	-0.048	-0.081	-0.048	-0.045
	-3.66	-3.61	0.050	0.053	0.050	0.050
age11_20	-0.208	-0.199	-0.016	-0.009	-0.016	-0.014
	-1.15	-1.12	0.054	0.058	0.054	0.054

superinnovator	-0.019	-0.034	0.003	0.016	0.003	0.000
	-0.14	-0.26	0.036	0.038	0.036	0.036
patents	0.402**	0.385**	0.124*	0.088*	0.124*	0.122*
	3.04	2.95	0.039	0.041	0.039	0.040
UKTI user	0.092	0.084	0.034	0.051	0.034	0.028
	0.75	0.67	0.036	0.038	0.036	0.036
High growth objective	0.169	0.168	0.023	0.052	0.023	0.023
	1.27	1.29	0.038	0.040	0.038	0.038
Business plan	0.385**	0.355*	0.089	0.065	0.089*	0.084*
	2.79	2.56	0.036	0.039	0.036	0.037
downturn	-0.235	-0.217	-0.106**	-0.111**	-0.106**	-0.103**
	-1.84	-1.72	0.034	0.036	0.034	0.034
Born global	0.791***	0.824***	0.176***	0.194***	0.176***	0.178***
	6.32	6.73	0.033	0.035	0.033	0.033
No. employees(ln)	0.079*		0.008*		0.008	
	2.42		0.009		0.009	
emp10_under		-0.532*		-0.058		-0.019
		-2.04		0.090		0.082
emp10_49		-0.204		0.054		0.046
		-0.78		0.091		0.084
emp50_249		-0.159		0.026		0.042
		-0.5		0.112		0.105
_cons	-0.51	0.046				
	-2.6	0.15				
lnalpha						
_cons	0.651***	0.639***				
	6.5	6.37				
N	828	830	828	830	828	830
Pseudo R Squared	0.042	0.043	0.06	0.07	0.07	0.07
chi2	134.517	139.382	68.64	73.37	68.64	70.3
alpha	1.917	1.895				

* p<0.05; ** p<0.01; *** p<0.001. For models 1-2 we report coefficients and Z statistics. For models 3-6 we report estimated marginal effects, and robust standard errors. Reference categories are over 20 years old (firm age)

In Models 1 and 2 new firms and firms aged 1-10 years are less likely to report doing business in a higher number of emerging markets as compared to firms aged over 20 years, as are firms aged 1-10 years old. Firms with a business plan and firms who have born global status are more likely to report doing business in a higher number of emerging markets. Concerning firm size larger firms are more likely to do business in a higher number of emerging markets. However size is not a significant determinant in models 3-6. Firms with patents are more likely to report doing business in a higher number of markets in both models. When we consider entering emerging markets more generally in models 3 and 4, firms aged 1-10 are less likely to operate in an emerging market and again being a born global is positively associated with operations in emerging markets. Patents are again positively associated with

diversification. However, those firms that report a negative impact from the downturn are less likely to operate in an emerging market. Finally we consider the determinants of operating in a BRICS economy. Here young firms aged 1-5 are less likely, when compared to their older counterparts, to have operations in the BRICS. Those firms with a business plan, patents and born global status are more likely to do business in one of the BRIC economies, while those firms who have suffered from the downturn are less likely to operate within these high growth economies.

When we consider the weighted results for Models 1 and 2 (count models for the number of emerging markets a firm does business in) size becomes insignificant in Model 1(log of employees) and in Model 2 (dummy variable for firms with less than 10 employees). More interesting differences occur for Models 3-6, as shown in Table 7, Appendix B. Here, for entry into the emerging markets the weighted results show that UKTI users are more likely to operate in emerging markets. As for the BRICS, age now becomes an insignificant factor.

In the 2009 survey we have 2 additional variables to account for diversification. Firstly there is a question which asks firms about the number of regions that the business is active[21] in and secondly there is a follow up question which asks if the number of countries in which the firm does overseas business has increased over the last 3 years. Results from these questions are reported in Models 2 and 5 respectively.

Table 23: Determinants of Diversification: 2009

	Model1: EM_tot	Model 2: No. of Regions	Model 3: EM	Model 4: BRICS	Model 5: No. of countries firm does overseas business in increased in last 3 years
No. employees(ln)	0.139***	0.058***	0.039**	0.036**	0.017
	5.27	6.2	0.013	0.013	0.013
new_firm	-0.755**	-0.438**	-0.215	-0.269*	-0.054
	-3.11	-2.9	0.123	0.117	0.138
age1_5	-0.396***	-0.259***	-0.155**	-0.161**	0.053
	-4.16	-6.1	0.052	0.052	0.048
age6_10	-0.387	-0.184***	-0.173**	-0.193**	0.077
	-4.4	-5.51	0.045	0.046	0.045
age11_20	-0.097***	-0.092	-0.016	-0.070	0.231**
	-0.69	-1.74	0.078	0.080	0.057
superinnovator	0.225*	0.111**	0.075	0.118*	0.047
	2.29	2.61	0.042	0.045	0.044
patents	0.136	0.106**	0.045	-0.004	0.058

[21] These are European Economic Area, Russia and Eastern Europe, outside of the EEA, USA/Canada, Latin America and the Caribbean, Africa, Middle East, Asia and Australia/New Zealand.

	1.75	3.22	0.036	0.040	0.039
UKTI user	0.179*	0.072*	0.071*	0.043	0.074
	2.18	2.11	0.036	0.040	0.040
High growth objective	0.117	0.076*	0.030	0.067	0.127**
	1.51	2.58	0.037	0.040	0.038
Business plan	0.044	-0.029	-0.045	0.022	0.074
	0.51	-0.79	0.038	0.042	0.041
downturn	0.04	0.003	-0.008	-0.006	-0.089*
	0.52	0.1	0.036	0.039	0.037
Born global	0.538***	0.259***	0.227***	0.247**	-0.069
	4.83	5.59	0.049	0.048	0.047
_cons	-0.387	1.174			
	-2.39	17.45			
lnalpha					
_cons	-0.564	-17.609			
	-5.44	-339.29			
N	822	822	822	822	811
Pseudo R Squared	0.048	0.061	0.09	0.09	0.05
chi2	185.72	252.956	81	73.84	52.4
alpha	0.569	0			

* p<0.05; ** p<0.01; *** p<0.001. For models 1-2 we report coefficients and Z statistics. For models 3-5 we report estimated marginal effects, and robust standard errors. Reference categories are over 20 years old (firm age).

Beginning with the count models for the number of emerging markets and general regions a firm is active in we can see that larger firms and UKTI service users are more likely to do business in more emerging markets and regions, in addition younger firms are less likely to do business in a high number of these emerging economies and high growth economies, reflecting the importance of experience. Those firms that are born global and highly innovative are also more likely to be operating in more of these markets, suggesting that these firms have experience and competencies to positively influence the number of international markets they do business in. Finally in the more general regions model we see that a high growth objective and patents are positively related to doing business in a greater number of regions.

In models 3 and 4 we deal with entry into the emerging markets and BRICS respectively. Here we see that larger, UKTI users and older firms are more likely to enter these emerging economies. Also both highly innovative and born global businesses are more likely to have operations in these high growth economies. It is also worth noting that the strong born global effect is also present in the 2008 results.

Finally model 5 examines the determinants of an increase in the number of countries a firm does business in. Size is now insignificant although those firms aged 11-20 are more likely to report an increase in the number of countries they do business in, compared to their older counterparts. Those firms with a high growth objective are also more likely to experience an increase in the number of countries they do business in over the last 3 years. In contrast to Models 1-4 the downturn now appears to be

significantly and negatively associated with any potential increases in the number of countries a firm operates in.

Table 8 in Appendix B shows the weighted regression analysis for 2009. For the count models (Models 1 and 2) we see that innovation, UKTI user and strategy variables become insignificant in the weighted results. In Model 3 for entry into emerging markets we see that the UKTI user variable becomes insignificant and for Model 4 (entry into BRICS) the age variables become insignificant.

Summary Research Questions 6

In 2008 new firms are less likely to report doing business in a higher number of emerging markets as compared to firms aged over 20 years. Firms with a business plan, patents, and those firms who have born global status are more likely to report doing business in a higher number of emerging markets. Young firms aged 1-5 are less likely, when compared to their older counterparts, to have operations in the BRICS.

In 2009 larger firms and those that are UKTI users are more likely to do business in more emerging markets and regions, and younger firms are less likely to do business in a high number of these emerging economies and high growth economies.

Larger, older firms are more likely to enter BRICS and emerging markets in general. Also highly innovative, born global businesses are more likely to have operations in these high growth economies.

5. Conclusions

In this research report for the UKTI we have been able to shed light on a number of interesting issues such as the determinants of UKTI service usage, barriers to exporting, awareness of UKTI services and export diversification.

In order to investigate these research questions we have used two surveys specifically commissioned by UKTI, which provide an excellent source of data on previously under researched topics such as barriers to exporting and diversification at the firm level.

Our study has revealed a number of interesting findings. Firstly, firms which are highly innovative and have a business plan are more likely to be UKTI users. When we look at the determinants of UKTI service usage by size groups we see some interesting results: for small firms experience, patents and innovation activities are an important factor, while for larger firms the impact of the downturn is a significant and negative factor. We also carried out some formal testing to reveal any potential significant differences in regression coefficients across the 2 size groups. In both surveys the relationship between patents and the likelihood of being a UKTI user is significantly different across size groups.

Barriers to establishing initial dialogue with a potential partner and relationship building are the most serious projective barriers to doing international business in both 2008 and 2009. We attempt to extend earlier studies for the UKTI (Kneller and Pisu, 2006, 2008) by examining the impact of market type on the number of barriers perceived by the firm. However, the type of market a firm operates within does not influence the perceptions of barriers to doing international business, possibly as the innovation variable is driving the results and the fact that innovative firms are more likely be operating in BRICs and other high growth economies.

One consistent result from this analysis revealed that highly innovative firms are more likely to perceive a greater number of barriers, compared to non innovative firms. Furthermore, in 2008 it is the younger firms that are more likely to perceive more barriers. We also find some evidence that suggests those firms which conduct business in more than 50 overseas markets are likely to encounter more barriers than those in only 1-50 markets.

We also investigate the determinants of individual barriers. Innovation is again an important determinant, in particular with respect to cost, relationship, dialogue and contact barriers. In 2008 another key result relates to UKTI users- these are more likely to perceive cost as a serious barrier. As for 2009 it is experienced firms that report cost and relationship building to be severe barriers.

Innovation activities are also important in determining the awareness of individual UKTI services: highly innovative firms are less likely to be unaware of the UKTI, commercial services from the embassies, ITAs and the Passport to Export programmes. When we consider overall awareness of UKTI services we find that for

both surveys firms with a business plan and those firms with experience in international markets are less likely to be unaware.

Finally we considered the determinants of export diversification by analysing the number of markets and regions a firm does business in. Innovation is again a significant factor in 2008. In 2009 we find that it is the larger firms which are more likely to diversify. A consistent result across 2008 and 2009 relates to the 'Born Global' status- these firms are more likely to operate in BRICS or emerging market economies, reflecting the importance of experience in international operations. Also in both 2008 and 2009 it is the younger firms which are less likely to enter high growth and emerging economies, relative to their older counterparts which have been operating for more than 20 years.

6. References

Accent (2009) *Methodology* document from their Survey Research Report.

Andersson, S. and Wictor, I. (2003), 'Innovative internationalisation in new firms: Born Globals- the Swedish Case', *Journal of International Entrepreneurship*, 1, pp249-276.

Axinn, C. and Matthyssens, P. (2002), 'Limits of internationalisation theories in an unlimted world,' *International Marketing Review*, 19(5), pp436-449.

Autio, E., Lummaa, H., and Arenius, P. (2002) 'Emergent Born Globals: crafting early and rapid internationalisation: strategies in technology based, new firms,' Working Paper 91, Helsinki University of Technology.

Bernard, A. and B. Jensen (1999), 'Exceptional export performance- cause, effect or both?' *Journal of International Economics*, 47(1) pp1-25.

Bishop, K. (2003), 'The Internationalisation Process of Manufacturing Firms in the Former Soviet Union.' PhD Thesis, SSEES, University College London.

Bishop, K. (2008), 'Internationalisation and Cooperation Strategies in Knowledge Based Ventures,' *International Journal of Entrepreneurship and Innovation*, 9(3), pp199-207.

Coviello, N. and H. Munro (1997), 'Network relationships and the internationalisation process of small software firms,' *International Business Review*, 6 (4), pp361-386,

Czinkota, M. (1993), *International Marketing Strategy*, Dryden Press.

Driffield, N., Du, J., Hart, M., Love, J., Tapinos, S. (forthcoming) A Comparative Evaluation of the Impact of UK Trade and Investment's R&D Programme and Other UKTI Support that Impacts R&D. Final report submitted to UKTI.

Erikkson, R. Johanson, J. Majkgard, A. Sharma, D. (1997), 'Experential knowledge and cost in internationalisation process,' *Journal of International Business Studies*, 28(2), pp337-360.

Girma, S. Görg, H. Pisu, M. (2005), Quantitative analysis and linked micro data study of UKTI Services, Repprt for UKTI.

Goldman Sachs (2005), 'How Solid are the BRICs?' Global EconomicsPaper No: 134. Available at: http://www2.goldmansachs.com/hkchina/insight/research/pdf/BRICs_3_12-1-05.pdf

Greenway, D. and Kneller, R. (2007), 'Firm heterogeneity, exporting and FDI,' *Economic Journal*, 117(517), F134-F161.

Harris, R. and Li, C. (2005), 'Establishment level empirical study of links between exporting, innovation and productivity,' UKTI Report.

Harris, R. and Li, C. (2006), 'Establishment level empirical study of links between exporting, innovation and productivity-CIS4,' Final UKTI Report.

Harris, R. and Li, C. (2007), 'Born Global Companies: evidence from FAME and CIS,' UKTI Report.

Harris, R. (2008), 'An empirical study of respective contributions of exporting and FDI to UK R&D,' Report for the UKTI.

Harris, R. and Li, C. (2009), 'Exporting, R&D, and absorptive capacity in UK establishments,' *Oxford Economic Papers*, 61, pp74-103.

Hitt M. Ireland, D. Camp S. and Sexton D. (2002). *Strategic Entrepreneurship: creating a new mindset*. Blackwell Publishing Oxford, UK.

Johanson J. and Vahlne J. (1977). The Internationalisation Process of the firm: a model of knowledge development and increasing foreign commitments. *Journal of International Business Studies*, 8, pp23-32.

Kneller, R. and Pisu, M. (2006, 2008), 'Export market entry, sunk costs and firms' performance,' UKTI Report.
London Economics (2009) *Evaluation of UKTI High Growth Market Programme Pilot*, Interim Report.
Lu, J. and Beamish, P. (2001), 'The internationalisation and performance of SMEs,' *Strategic Management Journal*, 22(6/7), pp565-586.
Madsen T. and Servais P. (1997). The internationalisation of Born Globals: an evolutionary process? *International Business Review*, 6(6), pp561:583.
Musteen, M., Datta, D. and Zahra, S. (2007), 'International networks, foreign market knowledge and internationalisation of Czech SMEs,' paper presented at Academy of Management Conference, 3-8 August, Philadelphia, PA.
OMB (2007) Internationalisation, Growth and Novel Product Development in Young Innovative Businesses, Report for UKTI.
OMB (2008) Research Report for the UKTI: International Business Strategies, Awareness Monitoring Survey, October.
OMB (2009) Overseas Business Development Strategies for a stormy economic climate, Report for the UKTI.
Pla-Barber, J. and Alegre, J. (2007), 'Analysing the link between export intensity, innovation and firm size in a science based industry,' *International Business Review*, 16, pp275-293.
Rennie, M.W. (1993), 'Born Global,' *McKinsey Quarterly*, 4, pp45-52.
Rogers, M. and Helmers, C. (2008), 'Intellectual Property and UKTI Passport firms', Stage 2 Report for the UKTI and UK IP Office.
Sapienza H. Autio E. George G. and Zahra S. (2006). 'A capabilities perspective on the effect of early internationalisation on firm survival and growth,' *Academy of Management Review*, 31(4), pp914-933.
Shaw, V. and J. Darroch. (2004), 'Barriers to internationalisation: a study of entrepreneurial new ventures in New Zealand," *Journal of International Entrepreneurship*, 2(4), pp327-343.
Tidd, J., Bessant, J. and Pavitt, K. (1997), *Managing Innovation*, Chichester; Whiley.
Vernon, R. (1966), 'International investment and international trade in the product life cycle,' *Quarterly Journal of Economics*, 80, pp190-207.
Ylirenko H, Autio E, and Sapienza H. 2001. "Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms", *Strategic Management* Journal, Special Issue**:** Strategic Entrepreneurship: Entrepreneurial Strategies for Wealth Creation, 22(6/7): 587-613.
Wakelin, K. (1998), 'Innovation and export behaviour at the firm level,' *Research Policy*, 26, pp829-841.
Wolfe, R and W. Gould. (1998), 'An approximate likelihood ratio test for ordinal response models,' *Stata Technical Bulletin*, 42: 199-204.
Zahra S. and George G. (2002), 'International entrepreneurship: the current status of the field and future research agenda,' in Hitt et al. *Strategic Entrepreneurship: creating a new mindset*.
Zahra S. (2005), 'A theory of international ventures: a decade of research,' *Journal of International Business Studies*, 36, pp20-38.

7. Appendix

Descriptive Statistics

The Tables below provide some background information for our sample in terms of size, sector, age, turnover and turnover from overseas business, based on the unweighted data.

Table 1: Firm Size across Users and Non Users of UKTI services (2008).

Firm size	Non User	UKTI USER	TOTAL
No employees	3	0	3
	100	0	100
1 to 4	187	84	271
	69	31	100
5 to 9	157	71	228
	68.86	31.14	100
10 to 19	97	64	161
	60.25	39.75	100
20-49	85	54	139
	61.15	38.85	100
50-99	22	23	45
	48.89	51.11	100
100-199	8	5	13
	61.54	38.46	100
200-249	2	3	5
	40	60	100
250-499	11	5	16
	68.75	31.25	100
500 or more	10	2	12
	83.33	16.67	100
Don't know	3	0	3
	100	0	100
Refused	4	0	4
	100	0	100

Total	589	311	900
	65.44	34.56	100

(row percentages)

Table 2: Firm Age across Users and Non Users of UKTI services (2008)

FIRM WAS ESTABLISHED:	NON USER	UKTI USER	TOTAL
Within the last year	18	5	23
	78.26	21.74	100
Over 1, up to 2 years	22	9	31
	70.97	29.03	100
Over 2, up to 3 years	54	23	77
	70.13	29.87	100
Over 3, up to 4 years	44	27	71
	61.97	38.03	100
Over 4, up to 5 years	50	31	81
	61.73	38.27	100
Over 5, up to 10 years	186	100	286
	65.03	34.97	100
Over 10, up to 20 years	112	56	168
	66.67	33.33	100
Over 20 years ago	103	60	163
	63.19	36.81	100
Total	589	311	900
	65.44	34.56	100

(row percentages)

Table 3: Sectoral Breakdown across Users and Non Users of UKTI services (2008)

	Non User	UKTI USER	TOTAL
Agriculture	1	1	2
	50	50	100
Fishing	1	0	1
	100	0	100
Mining & quarrying	5	0	5

	100	0	100
Manufacturing	223	149	372
	59.95	40.05	100
Construction	12	3	15
	80	20	100
Retail, wholesale	104	47	151
	68.87	31.13	100
Transport, storage	27	6	33
	81.82	18.18	100
Financial intermediation	14	5	19
	73.68	26.32	100
Real estate, rent	181	87	268
	67.54	32.46	100
Public administration	4	2	6
	66.67	33.33	100
Education	0	1	1
	0	100	100
Health and social	9	7	16
	56.25	43.75	100
Other community	8	3	11
	72.73	27.27	100
Total	589	311	900
	65.44	34.56	100

(row percentages)

Table 4: Other Sample Characteristics across Users and Non Users of UKTI services (2008)

Non UKTI User	Obs.	Mean	s.d	Min	Max
Employees (ln)	586	2.371704	1.988587	0	11.51291
Turnover (ln)	589	17.11627	3.73496	9.21034	20.72327
% of turnover derived from overseas business	423	32.07565	32.10703	0	100
UKTI User					
Employees (ln)	311	2.496236	1.749135	0	11.5129

Turnover (ln)	311	16.59205	3.565558	10.12663	20.72327
% of turnover derived from overseas business	251	36.54183	31.51878	0	100

Table 5: UKTI Service Users (2008/9)

UKTI_user	Frequency	Percent
Non UKTI User_08	589	65.44
UKTI User_08	311	34.56
Total	900	100
Non UKTI User_09	283	32
UKTI User_09	606	68
Total	889	100

We also replicate some of these tables for the 2009 data on size, turnover, age and sector as shown below.

Table 6: UKTI Service Users, by Size (2009)

SIZE_BAND	NON USER	UKTI USER	TOTAL
Micro (0-4)	56	89	145
	39	61	100
5 to 9	50	91	141
	35	64	100
10 to 19	58	81	139
	42	58	100
20 plus	117	331	448
	26	74	100
Total	281	592	873
	32	68	100

(row percentages)

Table 7: UKTI Service Users, by Age (2009)

	Non UKTI Service	UKTI Service	Total

	User	User	
Within the last year	12	10	22
%	55	45	100
Over 1, up to 2 years	22	29	51
%	43	57	100
Over 2, up to 3 years	13	29	42
	31	69	100
Over 3, up to 4 years	18	24	42
	43	57	100
Over 4, up to 5 years	35	37	72
	49	51	100
Over 5, up to 10 years	120	185	305
	39	61	100
Over 10, up to 20 yeas	17	45	62
	27	73	100
Over 20 years ago	46	247	293
	16	84	100
Total	283	606	889
	32	68	100

(row percentages)

Table 8: UKTI Service Users, by sector (2009)

	Non UKTI Service User	UKTI Service User	Total
Agriculture, hunting	4	6	10
%	40	60	100
Fishing	1	0	1
%	100	0	100
Mining & quarrying	5	9	14
%	36	64	100
Manufacturing	143	412	555
%	26	74	100
Electricity, gas	2	6	8

%	26	74	100
Construction	5	18	23
%	22	78.26	100
Retail, wholesale	55	82	137
%	40	60	100
Hotels and catering	2	0	2
%	100	0	100
Transport, storage	23	22	45
%	51	49	100
Financial intermediation	5	2	7
%	71	29	100
Real estate, renting	13	17	30
%	43	57	100
Public administration	3	5	8
%	38	63	100
Education	2	5	7
%	29	71	100
Health and social work	1	6	7
%	14	86	100
Other community	13	11	24
%	54	46	100
Other	6	5	11
%	55	45	100
Total	283	606	889
%	32	68	100

(row percentages)

Table 9: Other Sample Characteristics across Users and Non Users of UKTI services (2009)

Non UKTI_user	Obs	Mean	Std. Dev.	Min	Max
Employees (ln)	281	2.8	1.5	0	8
Turnover (ln)	229	14.9	2.4	10	30
% of turnover derived from	266	36	31.6	0	100

overseas business					
UKTI User					
Employees (ln)	592	3.2	1.7	0	8.7
Turnover (ln)	488	15.4	2.41	9.9	32.9
% of turnover derived from overseas business	567	43.8	30.45	0	100

Table 10: Variable Codes

	Variable Description
UKTI_user	Dummy variable equals 1 if the firm is a UKTI service user, zero otherwise
micro	Dummy variable equals 1 if the firm has 0 to 4 employees
Size5_9	Dummy variable equals 1 if the firm has 5- 9 employees
Size10_19	Dummy variable equals 1 if the firm has 10-19 employees
Emp10_49	Dummy variable equals 1 if the firm has 10 to 49 employees
Emp50_249	Dummy variable equals 1 if the firm has 50 to 249 employees
Emp250	Dummy variable equals 1 if the firm has more than 250 employees
new_firm	Dummy variable equals 1 if the firm was established in the last year, zero otherwise
age1_5	Dummy variable equals 1 if the firm is aged over 1 to under 5 years, zero otherwise
age6_10	Dummy variable equals 1 if the firm is aged over 5 years to under 10 years, zero otherwise
age11_20	Dummy variable equals 1 if the firm is aged over 10 to under 20 years, zero otherwise
age20plus	Dummy variable equals 1 if the firm is aged over 20, zero otherwise
Selldirect	Dummy variable equals 1 if the firm sells directly to individuals or businesses, zero otherwise
superinn	Dummy variable equals 1 if the firm has more than one employee engaged in R&D activity and more than one employee engaged in new product or service development and at least some R&D employees are engaged in the 'development of scientific or technical knowledge that is not commonly available'. Or, have employed someone external to conduct new product or service development in the last year. Or, derive at least some turnover from products & services introduced in the last 3 years except firms established in the last 2 years and these products & services are either 'new to the world' or 'new to the industry/sector', zero otherwise
patents	Dummy variable equals 1 if the firm currently holds any patents or trademarks in the UK or overseas, zero otherwise
Innovator	Dummy variable equals 1 if the firm has more than one employee engaged in R&D activity and more than one employee engaged in new product or service development, Or, has employed someone external to

	conduct new product or service development in the last year, Or, derive at least some turnover from products & services introduced in the last 3 years *except firms established in the last 2 years*, zero otherwise.
Born global	Dummy variable equals 1 if the firm has 'born global' status
Business plan	Dummy variable equals 1 if the firm currently has a written business plan, zero otherwise
HG_obj	Dummy variable equals 1 if the firm currently has a high business growth objective
barr_info	Dummy variable equals 1 if the firm rates obtaining basic information on doing international business as a problem (a score of 2 or greater on the Likert Scale), zero otherwise
barr_contact	Dummy variable equals 1 if the firm rates identifying a partner or a contact as a problem (a score of 2 or greater on the Likert Scale), zero otherwise
barr_part	Dummy variable equals 1 if the firm rates establishing an initial dialogue with a partner as a problem (a score of 2 or greater on the Likert Scale), zero otherwise
barr_relat	Dummy variable equals 1 if the firm rates building relationships with key decision makers as a problem (a score of 2 or greater on the Likert Scale), zero otherwise
barr_cult	Dummy variable equals 1 if the firm rates cultural barriers as a problem (a score of 2 or greater on the Likert Scale), zero otherwise
barr_office	Dummy variable equals 1 if the firm rates not having their own office or site as a problem (a score of 2 or greater on the Likert Scale), zero otherwise
barr_bias	Dummy variable equals 1 if the firm rates customer bias (a score of 2 or greater on the Likert Scale), zero otherwise
barr_cost	Dummy variable equals 1 if the firm rates the cost of doing business in overseas markets as a problem (a score of 2 or greater on the Likert Scale), zero otherwise
barr_time	Dummy variable equals 1 if the firm rates finding the managerial time a problem (a score of 2 or greater on the Likert Scale), zero otherwise
barr_er	Dummy variable equals 1 if the firm rates dealing with exchange rates and currency a problem (a score of 2 or greater on the Likert Scale), zero otherwise
barr_visa	Dummy variable equals 1 if the firm rates obtaining a visa or work permits for staff as a problem (a score

	of 2 or greater on the Likert Scale), zero otherwise
Barrier_ec_mgt	Factor scores from retained factor on economic and management barriers
Barrier_soc_cap	Factor scores from retained factor on social capital, culture and relationship barriers
Experience	Factor scores from retained factor on experience in doing business overseas (variables included in the factor analysis are % of turnover from overseas business, years exporting, self reported experience and no. of emerging markets that a firm does business in).
EM	Dummy variable equals 1 if the firm does business in at least 1 emerging market, zero otherwise
EM_tot	Total number of emerging markets a firm does business in
EM_tot_sqd	Non linear term for total number of emerging markets a firm does business in
EM_Turk	Dummy variable equals 1 if the firm does business in Turkey
EM_SA	Dummy variable equals 1 if the firm does business in South Africa
EM_Qat	Dummy variable equals 1 if the firm does business in Qatar
EM_Saudi	Dummy variable equals 1 if the firm does business in Saudi Arabia
EM_Braz	Dummy variable equals 1 if the firm does business in Brazil
EM_Mex	Dummy variable equals 1 if the firm does business in Mexcio
EM_oth	Dummy variable equals 1 if the firm does business in other emerging markets
EM_Chin	Dummy variable equals 1 if the firm does business in China
EM_Ind	Dummy variable equals 1 if the firm does business in India
downturn	Dummy variable equals 1 if the firm has been hit the current economic downturn, zero otherwise.
No_em	Dummy variable equals 1 if the firm does not do business in any emerging markets, zero otherwise
BRICS	Dummy variable equals 1 if the firm does business in at least 1 of the BRICS(Brazil, Russia, India, China, South Africa), zero otherwise
LATIN	Dummy variable equals 1 if the firm does business in Mexico or Brazil, zero otherwise
RICS	Dummy variable equals 1 if the firm does business in at least 1 of the following (Russia, India, China, South Africa), zero otherwise
GULF	Dummy variable equals 1 if the firm does business in Saudi Arabia or Qata, zero otherwise
HGM	Dummy variable equals 1 if the firm does business in Brazil, Russia, India, China, Saudi Arabia or Qatar, zero otherwise

Export<1yr	Dummy variable equals 1 if the firm has experience of less than 1 year in international markets, zero otherwise
Export2_5yr	Dummy variable equals 1 if the firm has experience of 2 to 5 years in international markets, zero otherwise
Export10_20yr	Dummy variable equals 1 if the firm has experience of 10 to 20 years in international markets, zero otherwise
Market1_10	Dummy variable equals 1 if the firm operates in 1 to 10 international markets, zero otherwise
Market11_50	Dummy variable equals 1 if the firm operates in 11 to 50 international markets, zero otherwise
T_oseas	% of turnover from overseas sales
V_exp	Dummy variable equals 1 if the firm is very experienced in international markets, zero otherwise
Quite_exp	Dummy variable equals 1 if the firm is quite experienced in international markets, zero otherwise
Not_expd	Dummy variable equals 1 if the firm is not experienced in international markets, zero otherwise
Exp1_5	Dummy variable equals 1 if the firm has exported for 1-5 years, zero otherwise
Exp6_19	Dummy variable equals 1 if the firm has exported for 6-19 years, zero otherwise
Exp20_plus	Dummy variable equals 1 if the firm has exported for 20 years or more, zero otherwise
Manuf	Dummy variable equals 1 if the firm is engaged in manufacturing activities, zero otherwise
R&D intensity	R&D employees/no. of employees (note R&D employees information is represented in bands and therefore we use mid points).
FO	Dummy variable equals 1 if the firm is foreign owned, zero otherwise

Table 11: Correlation Matrix

	UKTI_user	ln_emps	new_firm	age1_5	age6_10	age11_20	age20plus	superinn	patents	busplan	HG_obj	barr_info	barr_contact	barr_part
UKTI_user	1													
ln_emps	0.0311	1												
new_firm	-0.0436	-0.0840*	1											
age1_5	0.0008	-0.1301*	-0.1032*	1										
age6_10	0.0059	-0.0355	-0.1105*	-0.4350*	1									
age11_20	-0.0123	0.032	-0.0776*	-0.3053*	-0.3270*	1								
age20plus	0.0223	0.1977*	-0.0762*	-0.2997*	-0.3210*	-0.2253*	1							
superinn	-0.1760*	-0.0508	0.0802*	0.048	-0.0582	-0.017	-0.0017	1						
patents	-0.1455*	-0.1694*	0.0623	0.0317	0.0146	-0.008	-0.0739*	0.2394*	1					
busplan	-0.0598	-0.2255*	0.0514	-0.023	-0.0083	-0.0218	0.0388	0.1318*	0.1844*	1				
HG_obj	0.1167*	0.0337	-0.0473	0.1060*	0.0858*	-0.0461	-0.1635*	-0.1970*	-0.1700*	-0.1974*	1			
barr_info	0.0414	0.0407	-0.0477	0.0265	0.0299	-0.0305	-0.0168	-0.0831*	-0.0730*	-0.0028	0.0206	1		
barr_contact	0.0559	0.0006	-0.0788*	-0.0123	0.0703*	-0.0672*	0.0297	-0.0970*	-0.0274	-0.0638	0.044	0.4966*	1	
barr_part	0.0645	0.0126	-0.0357	-0.0017	0.0591	-0.0508	-0.0035	-0.1260*	-0.0613	-0.1015*	0.0283	0.4610*	0.6823*	1
barr_relat	0.0716*	-0.0263	-0.0406	0.0192	0.0732*	-0.0709*	-0.0228	-0.1171*	-0.0013	-0.0413	0.0295	0.4813*	0.6061*	0.6977*
barr_cult	0.0668*	0.0312	-0.0730*	0.0156	0.05	-0.039	-0.0095	-0.0665*	-0.1305*	-0.0729*	0.0363	0.4401*	0.3355*	0.4019*
barr_office	0.0953*	0.0759*	-0.0687*	0.0770*	-0.0082	-0.0562	0.005	-0.0616	-0.1281*	-0.1008*	0.0594	0.3977*	0.3673*	0.3986*
barr_bias	0.0238	0.0527	-0.0285	0.0601	-0.0089	-0.0006	-0.0477	-0.0545	-0.0695*	-0.0514	0.0109	0.4008*	0.3803*	0.4370*
barr_cost	0.0777*	0.0154	-0.0837*	0.0528	0.0228	-0.0407	-0.0142	-0.0674*	-0.0724*	-0.0722*	0.0163	0.4385*	0.3478*	0.4041*
barr_time	0.0661*	0.0394	-0.0774*	0.0084	0.0594	-0.0076	-0.0423	-0.055	-0.0903*	-0.0453	0.0458	0.4131*	0.4266*	0.4305*
barr_er	0.0288	0.0178	-0.0423	0.0660*	-0.0097	-0.0217	-0.0266	-0.0685*	-0.0488	-0.0855*	-0.0162	0.3695*	0.3044*	0.2887*
barr_visa	0.1286	0.1178	-0.1557	-0.2624	0.0596	0.0547	0.2528	0.0038	0.3313*	0.0258	-0.0077	0.3125*	0.2179	0.1774
EM	0.0931*	0.1270*	-0.0244	-0.0882*	-0.0085	0.0408	0.0828*	-0.0655*	-0.1157*	-0.0936*	0.0424	-0.0011	0.0225	0.0377
downturn	0.031	0.0385	0.0635	-0.0017	0.0122	-0.0119	-0.0245	0.0686*	0.053	0.0022	0.0158	-0.0485	-0.0098	0.0264

	barr_relat	barr_~cult	barr_office	barr_bias	barr_cost	barr_time	barr_er	barr_visa	EM	downturn
barr_relat	1									
barr_cult	0.4137*	1								
barr_office	0.4232*	0.4673*	1							
barr_bias	0.4037*	0.3582*	0.4303*	1						
barr_cost	0.4335*	0.3841*	0.3874*	0.4713*	1					
barr_time	0.4486*	0.3684*	0.3799*	0.4228*	0.5020*	1				
barr_er	0.2815*	0.2495*	0.2601*	0.2917*	0.3736*	0.3740*	1			
barr_visa	0.186	0.3232*	.*	0.0382	0.1234	0.2496	0.3656*	1		
EM	0.045	0.0820*	0.0425	-0.0136	0.0282	0.0041	-0.0364	-0.126	1	
downturn	-0.038	-0.0118	-0.0482	0.0066	-0.0566	-0.0094	-0.0697*	-0.0782	0.0811*	1

* Significant at 5% level or higher

Table 12: Variance Inflating Factor Matrix[22]

Variable	VIF	1/VIF
age6_10	11.1	0.090069
age1_5	10.53	0.094981
age11_20	8.32	0.12016
age20plus	7.76	0.128796
barr_part	2.62	0.381215
barr_relat	2.37	0.422548
barr_contact	2.18	0.45933
EM_Braz	1.91	0.522518
EM_Saudi	1.88	0.532641
EM_Mex	1.8	0.556687
EM_Qat	1.75	0.571271
barr_cost	1.73	0.579589
barr_time	1.7	0.587624
barr_info	1.69	0.591609
EM_Ind	1.62	0.616192
EM_oth	1.62	0.618568
barr_office	1.58	0.632093
barr_bias	1.57	0.638895
barr_cult	1.53	0.654253
EM_SA	1.51	0.661907
EM_Turk	1.42	0.702124

[22] Variance inflating factors measure the severity of multicollinearity in a regression model. It is an index which measures how much the variance of an estimated regression coefficient is increased by because of collinearity.

barr_er	1.37	0.729654
EM_China	1.36	0.73493
patents	1.19	0.840296
Business plan	1.17	0.85532
No. employees(ln)	1.17	0.858297
HG_obj	1.16	0.860408
superinn	1.14	0.876763
downturn	1.05	0.953847
Mean VIF	2.68	

Table 13: Negative Binomial Regression for the Number of Barriers (Different types of market)

	Model1RQ3	Model2RQ3	Model3RQ3
emp10_49	-0.015	-0.013	-0.013
	-0.41	-0.35	-0.35
emp50_249	0.159**	0.162**	0.184**
	2.9	2.94	3.25
emp250	0.054	0.056	0.073
	0.73	0.74	0.93
age1_5	0.308*	0.307*	0.304*
	2.04	2.03	2.02
age6_10	0.295*	0.295	0.29
	1.96	1.96	1.92
age11_20	0.203	0.205	0.204
	1.32	1.33	1.32
age20plus	0.229	0.23	0.233

	1.49	1.49	1.51
superinnovator	0.11***	0.112***	0.114***
	3.4	3.44	3.48
EM	0.023		
	0.7		
EM_tot		0	
		0.05	
EM_Turk			0.006
			0.1
EM_SA			0.076
			1.39
EM_Qat			-0.202*
			-2.18
EM_Saudi			0.039
			0.65
EM_Braz			0.008
			0.09
EM_Mex			-0.004
			-0.04
EM_oth			-0.057
			-0.85
EM_China			-0.012
			-0.23
EM_Ind			0.072
			1.43
_cons	1.551***	1.559***	1.551***
	10.41	10.46	10.4

lnalpha			
_cons	-1.96***	-1.958***	-1.985***
	-11.16	-11.17	-11.17
N	900	900	900
Pseudo R Squared	0.005	0.005	0.007
chi2	28.944	28.566	39.075
alpha	0.141	0.141	0.137

* p<0.05; ** p<0.01; *** p<0.001
Reference categories include newly established firms, firms with less than 10 employees. Z statistics shown below coefficient

Table 14: Factor Analysis for Experience

	Factor Loadings	**Kaiser-Meyer-Olkin measure of sampling adequacy**
T_oseas	0.69	0.91
V_exp	0.63	0.28
Quite_exp	0.08	0.23
Not_expd	-0.69	0.3
Exp1_5	-0.69	0.32
Exp6_19	0.45	0.28
Exp20_plus	0.37	0.15
EM_tot	0.56	0.87

Appendix B: Weighted Results

Table 1: Probit Regression Analysis of UKTI Service Users

	Model 1: 2008	Model 2: 2008	Model 1: 2009	Model 2: 2009
new_firm	-0.018	-0.034	-0.651***	-0.653***
	(0.172)	(0.166)	(0.137)	(0.138)
age1_5	0.105	0.094	-0.236*	-0.237**
	(0.088)	(0.088)	(0.121)	(0.120)
age6_10	0.137*	0.132*	-0.259***	-0.261***
	(0.072)	(0.073)	(0.090)	(0.090)
age11_20	0.047	0.044	-0.122	-0.119
	(0.074)	(0.075)	(0.100)	(0.098)
superinnovator	0.200***	0.201***	0.072	0.071
	(0.053)	(0.053)	(0.064)	(0.064)
patents	0.080	0.076	0.054	0.052
	(0.063)	(0.063)	(0.058)	(0.058)
busplan	0.025	0.025	0.268***	0.263***
	(0.057)	(0.057)	(0.061)	(0.060)
High Growth Objective	0.146**	0.147**	0.087	0.091*
	(0.063)	(0.063)	(0.055)	(0.055)
downturn	-0.049	-0.044	-0.165***	-0.163***
	(0.051)	(0.051)	(0.054)	(0.055)
BRICS	-0.042		-0.016	
	(0.060)		(0.059)	
experience	0.071**	0.060*	0.045	0.049
	(0.034)	(0.034)	(0.033)	(0.031)
FA_social_cap	-0.010	-0.011	-0.047	-0.046
	(0.026)	(0.027)	(0.029)	(0.029)
FA_Ec_mgt	0.031	0.032	-0.037	-0.037
	(0.027)	(0.027)	(0.029)	(0.030)
ln_emps	0.038**	0.037**	-0.052**	-0.052**
	(0.018)	(0.018)	(0.020)	(0.020)
HGM		0.004		-0.032
		(0.061)		(0.058)
Observations	614	614	572	572
Pseudo R squared	0.1	0.1	0.2	0.2

***p<0.01, **p<0.05, *p<0.1

Reported coefficients are all estimated marginal effects, robust standard errors in parentheses.
Reference categories are firms aged over 20 years.
See Table 10 in the Appendix for a full description of variable codes.

Table 2: Negative Binomial Regression for the Number of Barriers (Different types of market)

	Model1R Q3: 2008	Model2R Q4: 2008	Model3R Q4: 2008	Model1R Q3: 2009	Model2R Q4: 2009	Model3R Q4: 2009
ln_emps	0.019	0.012	0.054	0.002	0.005	0.042
	0.63	0.38	1.5	0.06	0.13	1.05
age1_5	0.733**	0.777**	0.787	0.566	-0.02	0.422
	2.18	2.19	1.74	1.2	-0.04	0.87
age6_10	0.681**	0.723**	0.751	0.712	-0.052	0.502
	2.03	1.99	1.67	1.53	-0.1	1.05
age11_20	0.414	0.354	0.448	0.728	0.105	0.429
	1.21	0.93	0.98	1.5	0.2	0.87
age20plus	0.706*	0.707	0.697	0.715	0.324	0.355
	2.06	1.83	1.52	1.5	0.61	0.72
superinnovator	0.428***	0.412***	0.372***	0.083	0.057	0.038
	4.67	4.47	3.58	0.65	0.45	0.32
RICS	-0.135	-0.171	-0.221	0.079	0.125	0.032
	-1.37	-1.61	-1.79	0.68	1.13	0.26
LATIN	0.03	0.007	0.02	-0.264*	-0.286*	-0.249*
	0.16	0.04	0.1	-2.44	-2.53	-2.3
GULF	-0.197	-0.202	-0.247	0.164	0.192	0.195
	-1.44	-1.45	-1.58	1.18	1.37	1.36
selldirect	-0.078	-0.206	-0.171	-0.035	-0.01	0.193
	-0.61	-1.43	-1.09	-0.15	-0.04	0.7
export<1yr		-0.134			-0.241	
		-0.51			-0.82	
export2_5yr		-0.045			0.273	
		-0.23			1.24	
export5_10yr		-0.001			0.431	
		-0.01			1.8	
export10_20yr		0.155			0.204	
		0.88			1.05	
market1_10		-0.213			0.236	
		-1.13			1.3	
market11_50		-0.239			0.163	
		-1.31			1.06	
experience			0.05			0.086
			0.74			1.19
_cons	0.187	0.545	0.284	0.376	0.5	0.376
	0.54	1.21	0.59	0.73	0.77	0.66
lnalpha						
_cons	-0.502	-0.519	-0.577	-1.488	-1.585	-1.692
	-4.21	-4.06	-4.15	-5.49	-5.47	-5.63
N	894	839	672	622	618	597
chi2	42.526	51.133	33.114	12.796	28.955	17.101
alpha	0.605	0.595	0.562	0.226	0.205	0.184

* p<0.05; ** p<0.01; *** p<0.001

Reference categories include newly established firms, firms with over 20 years experience, and those firms with operations in over 50 overseas markets. Z statistics shown below coefficient

Table 3a: Severity of Barriers: 2008

	Barriers relating to not having own office or site			
	Market Type	Experience	Experience factor	non_lin_exp
ln_emps	0.019	0.027	0.003	0.014
	0.59	0.79	0.08	0.43
age1_5	0.608*	0.334	1.009*	0.604*
	2.2	0.96	2.21	2.18
age6_10	0.487	0.321	0.916*	0.485
	1.75	0.83	1.98	1.74
age11_20	0.296	0.033	0.604	0.29
	1.03	0.08	1.27	1.01
age20plus	0.593*	0.306	1.042*	0.584*
	2.04	0.61	2.18	2.02
superinnovator	0.284*	0.29*	0.266*	0.284*
	2.54	2.55	2.14	2.57
downturn	0.121	0.134	0.182	0.111
	1.05	1.13	1.41	0.98
Born Global	0.003	-0.055	-0.098	-0.011
	0.03	-0.31	-0.61	-0.1
UKTI_user	0.102	0.075	0.16	0.106
	0.9	0.63	1.26	0.93
Non_em	-0.107			
	-0.58			
BRICS	-0.088			
	-0.45			
export<1yr		-0.223		
		-0.53		
export2_5yr		-0.094		
		-0.24		
export5_10		-0.24		
		-0.81		
export10_20yr		0.057		
		0.22		
market1_10		-0.044		
		-0.15		
market11_50		-0.099		
		-0.33		
experience			0.062	
			0.64	
EM_tot_sqd				0.004
				0.81
N	808	765	619	808
Pseudo R squared	0.014	0.017	0.02	0.015

chi2	22.883	21.668	25.404	23.464

Table 3b: Severity of Barriers: 2008

	Barriers relating to Management Time			
	Market Type	Experience	Experience factor	non_lin_exp
ln_emps	0.054	0.072*	0.101*	0.05
	1.62	2	2.56	1.49
age1_5	0.26	0.207	0.798	0.239
	0.84	0.55	1.31	0.78
age6_10	0.241	0.242	0.864	0.223
	0.79	0.59	1.41	0.74
age11_20	-0.053	-0.284	0.572	-0.092
	-0.17	-0.6	0.91	-0.3
age20plus	0.157	-0.149	0.675	0.114
	0.49	-0.29	1.08	0.36
superinnovator	0.182	0.129	0.141	0.172
	1.57	1.1	1.09	1.49
downturn	0.052	0.053	0.058	0.061
	0.47	0.47	0.46	0.55
Born Global	-0.025	-0.195	-0.031	-0.06
	-0.22	-1.14	-0.21	-0.54
UKTI_user	0.159	0.132	0.037	0.14
	1.4	1.13	0.29	1.23
Non_em	0.246			
	1.19			
BRICS	0.15			
	0.69			
export<1yr		-0.569		
		-1.37		
export2_5yr		-0.406		
		-1.12		
export5_10		-0.392		
		-1.34		
export10_20yr		0.011		
		0.04		
market1_10		0.157		
		0.47		
market11_50		-0.039		
		-0.12		
experience			-0.036	
			-0.41	
EM_tot_sqd				0.001
				0.19
N	852	801	651	852
Pseudo R Squared	0.012	0.015	0.01	0.01
chi2	17.547	21.432	15.739	16.354

Table 4a: Severity of Barriers: 2009

	Barriers to obtaining info			
	Market Type	Experience	Experience factor	non_lin_exp
ln_emps	0.013	0.051	0.064	0.021
	0.26	0.96	1.23	0.4
age1_5	0.175	0.157	0.335	0.221
	0.5	0.37	0.92	0.63
age6_10	0.404	0.552	0.542	0.456
	1.2	1.02	1.52	1.35
age11_20	0.3	0.441	0.471	0.394
	0.78	0.64	1.15	1.06
age20plus	0.348	0.122	0.352	0.432
	0.98	0.16	0.87	1.23
superinnovator	0.065	0.076	0.04	0.053
	0.41	0.49	0.25	0.34
downturn	-0.003	-0.034	-0.021	-0.001
	-0.02	-0.23	-0.14	-0.01
Born Global	0.32	0.172	0.272	0.359*
	1.95	0.6	1.29	2.15
UKTI_user	-0.194	-0.206	-0.217	-0.205
	-1.38	-1.45	-1.47	-1.46
Non_em	-0.294			
	-1.22			
BRICS	-0.074			
	-0.34			
export<1yr		-0.603		
		-0.84		
export2_5yr		-0.364		
		-0.62		
export5_10		-0.573		
		-1.41		
export10_20yr		-0.504		
		-1.51		
market1_10		0.42		
		1.88		
market11_50		0.403*		
		2.14		
experience			0.12	
			1.25	
EM_tot_sqd				0.001
				0.18
N	800	793	755	800
Pseudo R squared	0.014	0.017	0.016	0.01
chi2	14.874	20.439	17.714	12.088

Table 4b: Severity of Barriers: 2009

	Cultural Barriers			
	Market Type	Experience	Experience factor	non_lin_exp
ln_emps	0.043	0.046	0.1*	0.045
	0.85	0.92	2.03	0.93
age1_5	0.406	-0.159	0.288	0.436
	0.93	-0.31	0.64	1.04
age6_10	0.407	-0.545	0.197	0.431
	0.96	-0.89	0.45	1.06
age11_20	0.287	-0.776	0.026	0.367
	0.66	-1.02	0.06	0.88
age20plus	0.427	-1.356	-0.005	0.48
	0.98	-1.51	-0.01	1.14
superinnovator	0.229	0.261	0.155	0.208
	1.49	1.8	0.99	1.34
downturn	0.078	0.085	0.025	0.077
	0.52	0.6	0.16	0.52
Born Global	0.254	-0.247	0.109	0.297
	1.59	-0.87	0.66	1.81
UKTI_user	0.172	0.138	0.132	0.147
	1.24	0.98	0.87	1.02
Non_em	-0.308			
	-1.37			
BRICS	0.123			
	0.61			
export<1yr		-1.721*		
		-2.12		
export2_5yr		-1.259		
		-1.72		
export5_10		-0.934		
		-1.83		
export10_20yr		-0.879*		
		-2.57		
market1_10		-0.449		
		-1.49		
market11_50		-0.19		
		-0.66		
experience			0.189*	
			2.29	
EM_tot_sqd				0.007
				1.82
N	812	806	768	812
Pseudo R Squared	0.026	0.031	0.019	0.018
chi2	27.76	30.664	19.275	21.267

Table 4c: Severity of Barriers: 2009

	Barriers relating to making contact			
	Market Type	Experience	Experience factor	non_lin_exp
ln_emps	-0.011	-0.003	0.034	-0.005
	-0.23	-0.05	0.63	-0.09
age1_5	0.419	-0.165	0.412	0.453
	1.43	-0.35	1.16	1.58
age6_10	0.645*	-0.326	0.482	0.683*
	2.31	-0.51	1.39	2.51
age11_20	0.715*	0.092	0.513	0.78**
	2.36	0.11	1.4	2.65
age20plus	0.618	0.263	0.183	0.68*
	1.96	0.26	0.46	2.23
superinnovator	0.169	0.193	0.168	0.161
	1.04	1.2	1.01	0.98
downturn	-0.119	-0.147	-0.134	-0.127
	-0.74	-0.96	-0.82	-0.79
Born Global	-0.306	-0.118	-0.524**	-0.28
	-1.7	-0.31	-2.67	-1.52
UKTI_user	-0.168	-0.19	-0.177	-0.178
	-1.04	-1.17	-1.04	-1.1
Non_em	-0.185			
	-0.84			
BRICS	-0.019			
	-0.09			
export<1yr		-0.23		
		-0.23		
export2_5yr		0.508		
		0.59		
export5_10		0.8		
		1.44		
export10_20yr		0.269		
		0.63		
market1_10		0.119		
		0.36		
market11_50		0.415		
		1.3		
experience			0.228**	
			2.26	
EM_tot_sqd				0
				0.06
N	779	772	736	779
Pseudo R Squared	0.011	0.027	0.017	0.01
chi2	17.417	28.27	18.4	14.758

* p<0.05; ** p<0.01; *** p<0.001. Z scores shown below coefficient

Table 5: Determinants of Non Awareness of Individual Programmes, 2008.

	UKTI	Embassies	ITAs	Passport	EMRS	ECR	TAP	OMIS
superinnovator	-0.214***	-0.180***	-0.136**	-0.116**	0.029	0.120**	-0.007	-0.087*
	(0.055)	(0.055)	(0.054)	(0.052)	(0.057)	(0.055)	(0.051)	(0.050)
busplan	-0.081	0.026	-0.099*	-0.011	0.056	0.051	-0.047	-0.044
	(0.061)	(0.059)	(0.058)	(0.056)	(0.060)	(0.059)	(0.054)	(0.052)
HG_obj	-0.037	-0.086	-0.012	-0.115**	-0.016	0.031	-0.031	-0.055
	(0.059)	(0.058)	(0.057)	(0.058)	(0.061)	(0.058)	(0.054)	(0.054)
downturn	0.028	0.005	-0.055	-0.029	0.067	0.078	0.001	0.041
	(0.058)	(0.056)	(0.054)	(0.052)	(0.056)	(0.055)	(0.051)	(0.050)
BRICS	-0.013	-0.049	0.002	-0.025	0.018	-0.025	0.019	0.044
	(0.066)	(0.066)	(0.063)	(0.064)	(0.067)	(0.066)	(0.056)	(0.057)
Experience	-0.084**	-0.113***	-0.011	-0.001	0.008	0.019	-0.059*	-0.048
	(0.033)	(0.033)	(0.032)	(0.031)	(0.033)	(0.032)	(0.031)	(0.030)
ln_emps	-0.005	-0.016	-0.007	-0.002	0.000	0.006	-0.010	-0.017
	(0.018)	(0.019)	(0.018)	(0.017)	(0.018)	(0.018)	(0.016)	(0.015)
Observations	651	651	651	651	651	651	651	651
Pseudo R-squared	0.07	0.07	0.03	0.02	0.007	0.02	0.02	0.03

* p<0.05; ** p<0.01; *** p<0.001. Reported coefficients are all estimated marginal effects, robust standard errors shown in cell below.

Table 6: Determinants of Non Awareness of Individual Programmes, 2009.

	UKTI	Embassies	ITAs	Passport	EMRS	ECR	TAP	OMIS
superinnovator	-0.020	-0.117**	-0.071	-0.070	-0.074	0.018	-0.076	-0.048
	(0.054)	(0.057)	(0.068)	(0.072)	(0.071)	(0.061)	(0.076)	(0.075)
busplan	-0.080	-0.006	0.037	0.018	-0.052	-0.052	-0.027	-0.022
	(0.053)	(0.046)	(0.063)	(0.068)	(0.068)	(0.056)	(0.071)	(0.072)
HG_obj	-0.111***	-0.021	-0.054	-0.046	0.037	0.032	0.049	-0.151**
	(0.040)	(0.048)	(0.068)	(0.075)	(0.070)	(0.058)	(0.075)	(0.076)
downturn	-0.018	-0.000	0.010	-0.106	-0.032	-0.022	0.004	0.019
	(0.051)	(0.049)	(0.064)	(0.067)	(0.067)	(0.057)	(0.069)	(0.070)
BRICS	0.062	0.054	-0.062	0.061	-0.107	-0.043	-0.159**	-0.082
	(0.053)	(0.050)	(0.069)	(0.072)	(0.070)	(0.057)	(0.072)	(0.072)
experience	-0.039	-0.104***	-0.046	0.030	0.005	0.000	-0.013	-0.034
	(0.027)	(0.026)	(0.034)	(0.037)	(0.037)	(0.032)	(0.038)	(0.037)
ln_emps	-0.012	0.014	0.026	-0.013	-0.032	0.004	-0.025	-0.011
	(0.019)	(0.017)	(0.022)	(0.025)	(0.024)	(0.022)	(0.025)	(0.025)
Observations	779	779	779	779	779	779	779	779
Pseudo R-squared	0.05	0.07	0.02	0.02	0.02	0.006	0.03	0.03

* p<0.05; ** p<0.01; *** p<0.001. Reported coefficients are all estimated marginal effects, robust standard errors shown in cell below.

Table 7: Determinants of entering emerging markets and BRICS: 2008

	Model 3: EM	Model 4: EM	Model 5: BRICS1	Model 6: BRICS2
new_firm	-0.21	-0.22	-0.10	-0.10
	0.11	0.11	0.12	0.12
age1_5	-0.15*	-0.16*	-0.09	-0.09
	0.06	0.06	0.06	0.06
age6_10	-0.15*	-0.16*	-0.07	-0.07
	0.06	0.06	0.06	0.06
age11_20	-0.02	-0.03	0.00	0.00
	0.07	0.07	0.07	0.07
superinnovator	0.03	0.03	0.01	0.01
	0.05	0.05	0.05	0.05
patents	0.07	0.08	0.12*	0.128
	0.06	0.06	0.06	0.06
UKTI user	0.10*	0.11*	0.03	0.02
	0.05	0.05	0.05	0.05
High growth objective	0.04	0.04	0.01	0.01
	0.06	0.06	0.05	0.05
Business plan	0.06	0.07	0.10*	0.10
	0.05	0.05	0.05	0.05
downturn	-0.14**	-0.14**	-0.13**	-0.13**
	0.05	0.05	0.05	0.05
Born global	0.29***	0.28***	0.23***	0.24***
	0.05	0.05	0.05	0.05
No. employees(ln)	0.02		0.01	
	0.02		0.02	
emp10_under		-0.01		-0.03
		0.11		0.10
emp10_49		0.01		0.01
		0.11		0.10
emp50_249		0.04		0.05
		0.15		0.14
N	826	826	826	826
Chi Squared	66.73	63.23	46.51	47.32
Pseudo R Squared	0.09	0.09	0.08	0.08

* p<0.05; ** p<0.01; *** p<0.001. For models 3-6 we report estimated marginal effects, and robust standard errors. Reference categories are over 20 years old (firm age)

Table 8: Determinants of entering emerging markets and BRICS: 2009

	Model 1: EM_tot	Model 2: No. of regions	Model 3: EM	Model 4: BRICS
No. employees(ln)	0.193***	0.077***	0.071**	0.066*
	3.91	4.41	0.028	0.027
new_firm	-1.174**	-0.758*	-0.355*	-0.219
	-3.07	-2.28	0.165	0.159
age1_5	-0.483*	-0.394***	-0.192*	-0.070
	-2.48	-4.51	0.089	0.088
age6_10	-0.377*	-0.241***	-0.172*	-0.127
	-2.32	-4.14	0.075	0.076
age11_20	-0.083	-0.139	0.054	0.029
	-0.47	-1.79	0.096	0.101
superinnovator	0.164	0.082	-0.012	0.078
	1.12	1.28	0.065	0.074
patents	-0.026	0.025	-0.018	-0.044
	-0.19	0.42	0.070	0.073
UKTI user	0.014	-0.044	-0.072	-0.046
	0.12	-0.78	0.059	0.073
High growth objective	0.045	0.04	0.067	0.059
	0.26	0.59	0.072	0.080
Business plan	0.13	-0.016	-0.072	-0.002
	0.87	-0.26	0.067	0.071
downturn	-0.067	-0.105	-0.016	-0.025
	-0.49	-1.88	0.065	0.070
Born global	0.691***	0.241**	0.239**	0.227**
	3.87	3.15	0.081	0.078
cons	-0.367	1.405***		
	-1.33	12.24		
ln alpha	-0.487**	-22.266		
	-2.59			
N	810	810	810	810
Pseudo R Squared			0.07	0.05

* p<0.05; ** p<0.01; *** p<0.001.For Models 1 and 2 we report coefficients and Z scores and for Models 3-4 we report estimated marginal effects, and robust standard errors. Reference categories are over 20 years old (firm age)