Information, Perceptions and Exporting – Evidence from a Randomized Controlled Trial*

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Abstract

We present novel evidence from the results of a randomized controlled trial on the role that information plays in the perceptions of the benefits and costs of exporting as well as actual export behavior. We first present results from a baseline survey of approximately 1,000 UK manufacturing firms to show that non-exporters hold substantially more negative beliefs about the costs and benefits of exporting relative to exporters. We then explore the extent to which these differences in perceptions are due to a biased understanding of the true costs and benefits of exporting on the part of non-exporters, or are instead a reflection of underlying differences in performance characteristics across firms. To do this, we make targeted information available to a randomly selected subset of these firms in the form of information from the UK's export promotion agency about the benefits and costs of exporting. The results of our intervention reveal a surprising, asymmetric response on the part of exporters and non-exporters. Instead of revising their negative perceptions upward, treated non-exporters become more likely to report *lower* perceived benefits and *higher* perceived barriers compared to non-treated non-exporters. In contrast, the attitudes of existing exporters improve. We find a similar, albeit smaller differential impact when we match our survey sample to UK firm-level customs statistics to study actual export behavior. We discuss different behavioral and non-behavioral explanations for this result and highlight possible implications for export promotion policies.

KEY WORDS: Exporting, Information, Perceptions, RCTs
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1 Introduction

A large proportion of firms do not export, even in industries whose products are, in principle, easily traded. For example, only around 50 percent of UK manufacturing firms reported any export activity in 2006 (BIS, 2010). Trade theory has typically ascribed these differences to performance differences across firms, with exporting only being profitable for the more productive or innovative firms. There are several versions of this hypothesis – for instance, Melitz (2003) emphasizes a pure selection mechanism whereby *ex-ante* more productive firms select into export status. Alternatively, Iacovone and Javorcik (2012) and Molina and Muendler (2013) argue that firms that are preparing to export engage in productivity-enhancing activities, while another, smaller literature finds evidence in support of *ex-post* learning-by-exporting.[1]

Given the focus of the literature, it is unsurprising that the notion that exporting can be explained by firm performance measures is the view held by most economists. However, this view assumes full information and (usually) the absence of uncertainty. An alternative perspective is that the export decision is characterized by significant information frictions, in the sense that firms' understanding of how their capabilities map into export profitability is uncertain. As a result, some firms may not export, or may not expand their existing exports, due to the fact that they have overly pessimistic expectations about the benefits and costs of exporting. In this case, once these biased expectations are corrected, firms might be ready to take up exporting, or to export more. This is a view (implicitly or explicitly) held by many export promotion agencies, and is the view that we address in this paper.

To do this, we implement a randomized controlled trial (RCT) with U.K. firms in order to address whether the provision of information changes the attitudes of firms regarding the costs and benefits of exporting. As a first step, we demonstrate that perceptions are indeed strongly correlated with export status, such that exporters perceive lower costs and greater benefits to exporting relative to non-exporters. Next, we show that perceptions and, to a lesser extent, actual export behavior can be changed by the provision of information, albeit in unexpected ways. In particular, we show that information provision leads to a significant *worsening* of the attitudes of non-exporters. At the same time, information provision makes exporters more likely to report plans to increase the value of their exports, report lower perceived barriers to exporting and larger benefits from exporting.

We also study actual export behaviour by matching our RCT sample to UK firm-level customs statistics. Although the impact of our intervention is less pronounced here, it is consistent with the findings for perceptions. Existing exporters increased the overall value of exports as well as exports per destination country and product in response to the provision of information. By contrast, firms which initially did not export saw slightly weaker subsequent export growth if they received our information treatment.

These findings contribute to the literature in three primary ways. First, we provide the first systematic evaluation of the differences in attitudes toward exporting between exporters and non-exporters. Second, using an RCT research design we evaluate whether the provision of

[1] See Crespi, Criscuolo and Haskel (2008) or De Loecker (2007) for examples. Note that even among papers which find evidence against pure selection, the consensus is that new and existing exporters are more productive to begin with than firms which remain non-exporters.

information can change firms' attitudes regarding exporting, as well as their export behavior. We note that this research design also provides a useful evaluation of policy due to the fact that our intervention uses common and well-established marketing material used by UK Trade and Investment (UKTI, the UK's export promotion agency) in a variety of contexts.[2] Third, we are among the first to apply an RCT research design in the context of international trade (also see Atkin, Khandelwal and Osman, 2017).

The novelty of our research design places us within a very small literature, though we address questions relevant to several literatures within international trade. For instance, our paper is related to the literature on the role of uncertainty in exporting, a topic explored by Roberts and Tybout (1997), Das, Roberts and Tybout (2007), Handley (2014) and Novy and Taylor (2014), among others. We also contribute to the literature on the characteristics of exporters and non-exporters, important examples of which include Bernard and Jensen (1995) and Bernard, et. al. (2007).[3] Here we introduce a new dimension of firm heterogeneity in the form of perceptions regarding the costs and benefits of exporting. Finally, there is a policy literature that includes survey-based research by export promotion agencies such as UKTI, and which asks firms about the costs and benefits of exporting (e.g., BIS, 2010). So far, this research has not attempted to systematically measure differences in perceptions across exporters and non-exporters and to link these differences to export performance, nor has it used rigorous evaluation techniques such as RCTs.

2 RCT Research Design

Our research design proceeded in three steps: first, we sent a baseline survey to a representative sample of UK firms asking them a range of questions about the costs and benefits of exporting (see Appendix A). Next, we sent a subsample of these firms a cover letter and a UKTI brochure outlining the benefits and costs of exporting.[4] Finally, we sent a follow-up survey to the initial set of firms. The timeline was the following:

- **July 2013:** Sent surveys to a random sample of 6,015 UK manufacturing firms.
- **Early August 2013:** Sent a cover letter and UKTI brochure outlining the benefits of exporting to a 50 percent subsample of the firms contacted in July.
- **February 2014:** Repeated the July survey in order to track changes in firm perceptions due to the August treatment.

We also linked the firms in our sample to the UK's transaction-level customs data provided by HMRC which contains detailed information about the actual exports of individual firms. This data is currently available up to the end of 2015, yielding a post-treatment period of around 17 months.

[2] As we will describe below, the intervention is also very low-cost and so would be easy to scale up.

[3] See Greenaway and Kneller (2007) for a survey of the literature, including studies for the United Kingdom.

[4] We describe the content of the brochure in more detail in Section 2.2. A copy is available from the authors upon request.

2.1 Firm Sample

The population of firms from which we sampled comes from FAME, a dataset produced by Bureau van Dijk that contains the universe of all incorporated firms in the UK. More specifically, we began with all UK manufacturing firms with between 2 and 250 employees, a group of 37,922 firms as of July, 2013. In focusing on this group we set aside proprietors who are possibly self-employed as well as those above 250 employees, for whom UKTI support is not available. Our results are therefore representative of UK manufacturing SMEs.

From this population we randomly selected a sample of 6,015 firms to receive the initial survey sent in July. We then selected a 50 percent sample of these firms to receive the treatment (the UKTI brochure). Note that this second sample could have been drawn from the smaller set of firms who responded to the initial survey, rather from the entire initial sample. However, given our expected response rates – based on discussions with UKTI about similar surveys – this potentially would have reduced our final sample of firms, following the final survey sent in February 2014, to fewer than 100 firms.[5] Indeed, as we will show below, the number of firms that replied to the first and the second survey is substantially lower than the number of firms that replied to the second survey only.

Our sample was stratified in order to increase the power of the research design. We stratified by total assets and industry classification (UK SIC codes) since these are the only variables for which we have information for all firms in FAME. At the industry level we grouped firms by 3- or 4-digit codes (95 industries total) in order to ensure there were at least 120 firms in each industry.[6] We then broke each of the industries into asset quartiles, giving us $95 \times 4 = 380$ industry-asset bins. Within each bin we randomly assigned firms to one of three groups: those receiving the initial questionnaire as well as the brochure; a group receiving only the initial questionnaire; and a third group that received nothing. We chose an equal number of firms for the first two groups so that the total number of firms was 6,015 (3,007 received the brochure and questionnaire and 3,008 received the questionnaire only). This allocation was ultimately determined according to our budget constraints.

We also linked our data to the HMRC transaction level data to obtain more detailed information about actual export behaviour, as well as to reduce problems arising from survey non-response (see below). The linking procedure was done by HMRC staff due to confidentiality reasons, using tax reference numbers present in both the FAME and HMRC data. Since the HMRC data represent, in principle, the universe of export transactions of UK manufacturing firms but do not contain non-exporters, we assign an export value of zero to firms that could not be matched.[7]

[5] UKTI experience indicated a potential response rate of between 10 and 20 percent. At the lower bound, this would have implied a final sample of firms – those responding to the February 2014 survey – of $6015 \times 0.1 \times 0.1 \approx 60$.

[6] Some 4-digit SICs needed to be grouped into 3-digit SICs because of the small number of firms at the 4-digit level.

[7] According to HMRC, the use of common tax reference numbers ensures a high degree of accuracy, so that non-matches due to faulty firm identifiers are extremely rare. However, firms are not legally obliged to report intra-EU export transactions if they do not surpass an annual threshold value (£250,000 in 2015) although in practice many do. In our sample, 20% of all exporters to the EU report exports below the intrastat threshold and export density plots only show a slight discontinuity around the threshold (see Figure 1).

2.2 The RCT

The questionnaire asked firms a range of questions, targeted separately to non-exporters and exporters, in order to elicit their perceptions of the costs and benefits of exporting.[8] The information treatment then consisted of a cover letter and a standard marketing brochure used by UKTI to advertise the benefits of exporting along with UKTI services. The brochure has three main sections: the first section lists the benefits from exporting, as reported by other UK firms, and has a number of case studies describing the experience of firms who successfully exported their products, or successfully expanded into new markets. The benefits of exporting listed in the brochure are very similar to the potential benefits that we inquire about in our questionnaire. The second section then discusses potential barriers to exporting (again similar to those that we inquire about in the questionnaire) and directs firms to the UKTI program most relevant to overcoming these barriers. The third section then explains the different UKTI programs available to firms.[9] Since existing research shows that only around half of eligible firms are aware of the existence of UKTI's export promotion services (UKTI, 2014), the brochure should contain new and valuable information for a significant fraction of the firms in our treatment group.

Of the 6,015 baseline questionnaires sent out, 50 came back as undeliverable and 934 surveys (16 percent) were returned, most by mail though we offered a web-based option that was used by 7 percent of the 934 firms. We discarded 7 surveys as unusable due to incomplete or incorrect entries, leaving a baseline sample of 927. For the endline questionnaire we again sent out 6,015 surveys, 100 of which came back as undeliverable and 630 (10 percent) of which were returned. We had to discard 3 surveys, leaving a useable endline sample of 627. Again, only a small proportion of firms chose the online option. These survey response rate are in line with previous UKTI experience from surveying the same group of firms.

2.3 Sample Representativeness

The sample of firms which replied to our survey seems to be representative of the UKTI target population. To see this, we regressed the variables available in FAME for all firms in the population (i.e., the value of total assets and industry affiliation) on a dummy for whether a firm replied to the survey. Table 1 displays results for the asset variable for both the baseline and the endline survey. As we can see, survey firms are slightly overrepresented in the middle-two quartiles of the asset distribution. However, these differences seem to even out so that mean (log) assets are the same in the survey sample and the population. We repeated this analysis for the 95 industry dummies used to stratify the firms. For the baseline survey, we found statistically significant differences (at the 10 percent level) between survey and population firms in 7 out of 95 industries, slightly less than one would expect on the basis of pure chance. For the online survey, this figure rose to 14 out of 95, slightly more than one would expect.

[8] See Appendix A for a copy of the questionnaire. The survey questions were drawn from existing UKTI surveys which were produced by survey professionals and have been implemented in a variety of contexts by UKTI. We refined these questions through a series of discussions with members of UKTI's research and marketing division.

[9] A copy of the brochure is available from the authors upon request.

2.4 Balance Checks

Note that the original 6,015 firms were balanced on total assets and industry by design. However, selective responses by the surveyed firms could alter this balance. Since firms responded to the questionnaire *before* they received a UKTI brochure this should not happen in expectation, but nevertheless might be observed for any given realization of survey responses. In addition, treatment and control groups may not be balanced in their initial perceptions of the costs and benefits of exporting. Again, this should not happen in expectation, but could happen in practice due to the fact that we are unable to stratify on perceptions, or as the result of selective firm responses.

To evaluate the balance of our survey sample, we regress observables from the first survey round on the treatment dummy. These observables include all variables captured in the questionnaire, plus dummies for the industry-assets bins. Since out of the 380 original bins there are 149 in which no firm replied to the questionnaire, we have to work at a more aggregate level. By construction, the original research design was also balanced at the 1-digit industry and asset-quartile level, and so we use these more aggregate cells, of which there are $3 \times 4 = 12$.[10] Overall, Table 2a shows that even with a low response rate, there is no significant difference between the treatment and control firms. More specifically, in Table 2a we regress our newly constructed industry-by-asset-quartile dummies and all responses from the baseline survey on the treatment dummy. We find statistically significant differences between treatment and control groups for only two out of 35 questions or question group averages.[11] Again, this is roughly what one would expect on the basis of chance. Thus, going forward we use 1-digit-industry-by-asset-quartile dummies throughout the analysis of firm perceptions in order to increase the power of the research design.

Table 2b presents balance checks for our HMRC sample. The table shows that our design is balanced across a range of variables commonly used in transaction-level studies of export behaviour, such as export status, total firm exports, the number of destinations served and the number of products exported. Note that there are no issues of non-response here, so treatment and control samples are balanced within asset-industry bins by construction.

Overall it thus seems that our research design is balanced on pre-treatment observables and that our samples are representative of the UKTI target population – i.e., UK manufacturing firms with 2 to 250 employees. We next turn to the results.

3 RCT Results

There are three main sets of findings that come out of the RCT, and we discuss these in turn. First, we document the differences in the perceptions of the costs and benefits of exporting

[10] We merged the third and fourth asset quartiles for UKSIC 3 to ensure that we have at least one observation from both treatment and control group in each bin. So in practice we work with 11 bins only.

[11] The variables Q2.3 (Mean), Q2.4 (Mean), Q3.4 (Mean) and Q3.5 (Mean) are computed as simple arithmetic averages of the answers to questions in their respective question groups. Question groups 2.3 and 2.4 measure perceived benefits and costs of exporting for non-exporters, and question group 3.4 and 3.5 for exporters (see below for details, and Appendix A for a copy of the questionnaire). The variables "Mean Q2.3 - Mean Q2.4" and "Mean Q3.4- Mean Q3.5" are "total impact" measures, calculated as the difference between mean reported benefits and cost. See below for further explanations regarding these summary measures.

between exporters and non-exporters. Second, we estimate the impact of information provision on these perceptions. Finally, we look at the effect of our treatment on actual export behaviour using the HMRC customs data.

3.1 Differences in Perceptions

In the baseline survey, 73 percent of firms report positive goods exports, and this group of firms overwhelmingly reports that they will continue to export. On a scale of 1 to 5, where 1 is "very likely" and 5 is "very unlikely", existing exporters' average response to the question "How likely are you to continue exporting your products over the next 3 years?" was 1.15. These firms also report a high likelihood of increasing the total value of their exports (an average response of 1.29, where 1 is "increase the total value", 2 is "stay the same" and 3 is "decrease the total value") as well as increasing the number of markets they export to (average response of 1.4 on an analogous scale). On the other hand, non-exporters' average response to the question "How likely are you to start exporting some or all of your products within the next 3 years?" was 4.27, where 1 is "very likely" and 5 is "very unlikely".

Table 3a looks at the perceptions of the benefits of, and barriers to, exporting as reported by the firms in our baseline sample. We compute means for current exporters and non-exporters and report the difference between the two means, together with the associated standard error. Exporters state substantially higher benefits from exporting than non-exporters, and barriers are considered to be much less difficult to overcome. While the fact that exporter and non-exporter perceptions differ is perhaps not surprising, the magnitude of the differences is nevertheless striking in our mind. To the best of our knowledge, this is also the first time these differences have been described in a systematic fashion. Note that controlling for observable firm characteristics leaves these perception differences essentially unaffected. To illustrate this, in Table 3b we control for the 1-digit industry-by-asset-quartile dummies discussed above.[12] The differences across exporters and non-exporters are very close to the differences reported in Table 3a.

This then brings us back to our initial question: Are the differences in perceptions between exporters and non-exporters due to fundamentals, and therefore "unbiased"? Or do non-exporters have a biased view of the costs and benefits of exporting? In the next section we provide information regarding the potential benefits of exporting to a random sample of exporters and non-exporters. To the extent that firms are overly pessimistic, this "information bias" can explain the differences in perceptions the provision of information should reduce the perception gap between exporters and non-exporters – i.e., it should bring non-exporters' views more in line with exporters' views.

[12] Industry affiliation and the value of total assets are the only variables from FAME which we observe for all firms in our sample. Controlling for more detailed sets of fixed effects (e.g., 2-digit-by-asset-quartile) yields similar results although we end up with many bins in which we only have either exporters or non-exporters, making comparisons less informative.

3.2 Impact of Information Provision on Perceptions

We begin with a discussion of the results from the endline survey only, and then later incorporate the first round survey results. Throughout, we report results from all individual questions but focus the discussion on indices constructed from results across groups of comparable questions. We do so in order to facilitate the exposition and to avoid discussion of potentially spurious results arising from the analysis of a large range of outcome variables. Specifically, we follow Kling, Liebman and Katz (2007) in constructing summary indices based on equally weighted averages of z-scores of their component questions. This aggregation improves statistical power to detect effects that go in the same direction within a domain (see O'Brien (1984) and Kling, Liebman and Katz (2004)). For each question, the z-score is calculated by subtracting the control group mean and dividing by the control group standard deviation.[13]

We construct four group averages in this manner, one for perceived benefits and one for perceived barriers, separately for exporters and non-exporters. We also compute a "total effect index" for each firm group as the difference between the benefits index and the barriers index. A positive treatment effect for this total effect index indicates that the provision of information has improved the overall perceptions of benefits and exporting.

3.2.1 Endline-only

The estimates presented here are the result of a regression of reported firm perceptions from the endline survey on a treatment dummy variable along with asset-quartile-industry dummy variables.[14] To begin, we note that although the treatment was randomly assigned among the firms we surveyed in the second round, not all firms replied to the second round survey. As a result, there is a potential attrition problem, and we explore this in more detail below.

As reported in Table 4, treatment seems to have made non-exporters more pessimistic about the benefits of exporting, while increasing the perceived costs.[15] This effect is statistically significant for both question group indices, and is particularly pronounced for barriers. The total effect index is also substantially lower in the treatment group, with the estimated coefficient significant at the 1% level. This indicates that the balance between perceived benefits and costs has deteriorated for the group of treated non-exporting firms.

In contrast, the treatment seems to have made current exporters more optimistic: the differences in treatment versus control groups for the "benefits of exporting" index is positive and significant. The perception of barriers also has improved (see the negative coefficient on the summary index for Q3.5 questions), although the effect is not statistically significant. Again, improved perceptions of benefits and barriers also result in a positive and significant treatment effect for the total effect index.

The changes in perceptions also seem to have filtered through to firms' export intentions

[13] Our results for individual questions are also based on z-score-standardized responses. Note that standardization does not change the t-statistics and significance levels of the treatment-control group comparison. Results for group means based on non-standardized responses to individual questions can be different, in principle, but are almost exactly identical in practice. This is because individual question means and standard deviations within groups are similar in our data.

[14] Our reported standard errors are robust to heteroskedasticity.

[15] The reader should refer to the questionnaire in Appendix A for the exact questions asked in each case.

(Table 5). On average, treated non-exporters are less likely to report wanting to start exporting (Q2.1), though the difference is not statistically significant. At the same time, treated exporters are more likely to want to continue exporting over the next three years (Q3.1), to expect the value of exports to increase (Q3.2), and to expect the number of markets they are doing business in to increase (Q3.3). The effect is particularly pronounced for q32 where it is also highly statistically significant.

3.2.2 Difference-in-Differences

We next incorporate the responses from the initial survey round by applying a difference-in-differences strategy to the unbalanced panel of firms, comparing the treatment and control groups across the pre- and post-treatment periods. Formally, we run the following regression:

$$y_{it} = \beta_0 + dt_{endline} + \beta_1 brochure + \beta_2 \left(dt_{endline} \times brochure\right) + d_{IA} + \varepsilon_{it}$$

where $dt_{endline}$ is a time dummy for the second-round (endline) period, $brochure$ is a dummy equal to 1 if the firm was treated, and d_{IA} are the same industry-asset-quartile dummies as before. The coefficient on $(dt_{endline} \times brochure)$, β_2, gives us our treatment estimate – i.e., $\beta_2 = (E[y_{treat,1}] - E[y_{control,1}]) - (E[y_{treat,0}] - E[y_{control,0}])$.

Asymptotically (for large samples) this approach should yield identical results to our approach above in which we use the endline sample only. This follows from the fact that our sample is balanced, so that $plim_{N\to\infty}(E[y_{treat,0}] - E[y_{control,0}]) = 0$. However, in practice the difference in pre-treatment expected perceptions will not be exactly zero, even if it is statistically insignificant. As a result, to the extent that there are small deviations from perfect balance in the pre-treatment sample, applying the difference-in-differences strategy will correct for these and could yield different estimates relative to the endline-only results.

Tables 6 and 7 present the results. For non-exporters the results are qualitatively identical and quantitatively very similar – i.e., the perceived benefits of exporting go down for all questions, while the perceived barriers go up for all questions. With respect to exporters, the results are also very close to the endline-only results in the case of perceived benefits and barriers. As before, the treatment effect on perceived barriers is less pronounced but the total effect (benefits-barriers) is positive and statistically significant. Finally, the results with respect to export intentions are similar to before (Table 7).

3.2.3 Controlling for Baseline Outcomes

Here, we again exploit the first-round survey responses but now we focus only on the balanced panel of firms that replied to both survey rounds. This allows us to control for baseline covariates but, at the same time, reduces our sample size. With perfect response rates in both rounds and balance in the baseline, controlling for baseline covariates should not change the coefficient estimates, but should lower standard errors. In practice, however, the estimates based on this approach may differ for several reasons. First, the number of observations may fall enough so that there is no overall efficiency gain from using the panel. Second, similar to the difference-in-differences strategy, the baseline sample will not be exactly balanced, such that the coefficient

estimates may change when the first-round survey is included. And third, by altering the sample in this way we also change the nature of the selection and attrition biases compared to the endline-only results.

Tables 8 and 9 present the results, which we compare with the endline estimates in Section 3.2.1. Results for non-exporters are again very similar to the endline regression. In contrast, there is now a less positive impact of the treatment on the perceived benefits of exporters (smaller coefficients that are less significant). Beyond these differences the results are nearly identical, suggesting that the results are, overall, quite robust.

3.2.4 Attrition Analysis

As noted above, our estimates may be biased due to the fact that only a subset of surveyed firms responded in each of the rounds (16% in the first round and 10% in the second round). If this attrition is differentially correlated with firm perceptions across the treatment and control groups, then this will lead to biased estimates of the impact of the treatment on perceptions.

To test whether this is the case or not, we start with the sample of firms that responded to the first-round survey and regress (via OLS) a dummy variable indicating whether the firm is also present in the second-round survey on the outcome variables previously analyzed. We run one regression for each outcome variable and present the results in Table 10. As discussed, what matters is whether attrition is differentially correlated with firm perceptions across the treatment and control groups. We thus estimate equations of the form:

$$d_{inround2,i} = \beta_0 + \beta_1 perc_i + \beta_2 brochure_i + \beta_3 \left(perc_i \times brochure_i\right) + d_{IA} + \varepsilon_{it}$$

where $d_{inround2,i}$ is the dummy variable indicating presence in the second round, and $perc_i$ is the outcome variable in question.

The coefficient of interest is the interaction between the outcome variable and the treatment dummy, β_3. For the case in which a higher value for $perc_i$ reflects more positive perceptions (as is the case for reported benefits), $\beta_3 > 0$ implies that receiving the brochure makes firms more likely to reply to our survey when the perceived benefits from exporting are larger. This would bias results towards finding a positive treatment effect for reported benefits from exporting. Likewise, $\beta_3 < 0$ would imply bias towards finding a negative treatment effect for the case of export barriers, where a higher value for $perc_i$ reflects more negative perceptions. As Table 10 shows, however, β_3 is never significantly different from zero for all our question group indices. We conclude that attrition bias is unlikely to explain our results.

3.2.5 IV/LATE Estimates

So far, we have defined our treatment as having received the UKTI marketing brochure. This of course raises the question of whether firms read the material we provide them with and, if they did, what their reaction was. This section exploits responses to an additional survey question in the end-line questionnaire to address these issues. Specifically, the additional question is: "Have you received and read a copy of UK Trade and Investment's (UKTI) brochure Bringing Home the Benefits: How to Grow through Exporting? (Answer yes/no)".

Whether a firm decides to read the brochure or not is of course an endogenous outcome, and we cannot directly regress perceptions on this binary variable. Instead, we estimate the following instrumental variables/2SLS system of equations:

$$\begin{aligned} d_{read,i} &= \beta_0 + \beta_1 broch_i + d_{IA} + \mu_{it} \\ perc_i &= \gamma_0 + \gamma_1 \widehat{d_{read_i}} + d_{IA} + \omega_{it}, \end{aligned}$$

where $\widehat{d_{read_i}}$ is the predicted value from the first stage. As shown by Angrist and Imbens (1994), the coefficient on γ_1 gives us the effect of the treatment on those whose treatment status was affected by the instrument, or the local average treatment effect (LATE).[16]

Table 11 shows results for the second stage estimate of γ_1, with first-stage F-stats reported in the last column.[17] Among the firms that received the brochure and replied to our endline survey, 16% stated that they read the brochure. Exporters are slightly more likely to have read the brochure (17%) compared to non-exporters (13%) which, together with the higher number of observations, explains the higher first-stage F-statistics for the former group.

Firms that were pushed by our intervention into studying the UKTI information on the benefits and costs of exporting report strong changes in perceptions. The sign and significance patterns are again similar to our baseline (intention-to-treat) results, but the coefficient magnitudes are substantially larger than before, especially for non-exporters. The estimates for this latter group indicate that the exposure to the new information triggered a 2.1-standard-deviations increase in perceived barriers, and a 1.6-standard-deviations decrease in perceived benefits, compared to changes of +0.35 and -0.24 standard deviations in our baseline results, respectively.[18] For exporters, this effect is somewhat weaker (although still statistically significant overall), with treated firms reporting a 0.9 standard deviation increase in perceived benefits, and -0.4 standard deviations drop in perceived barriers. Thus, while only a fraction of firms studied the material we provided them with, the firms that did read the brochure experienced substantial changes in perceptions, with the effect particularly pronounced for non-exporters.

3.3 Impact of Information Provision on Exports

We next move on to the impact of our information provision on actual export behaviour. As described above, we match our initial survey sample of 6,015 firms to the HMRC customs data

[16] This requires independence and monotonicity of the instrument, both of which are likely to be fulfilled in our context. Independence is fulfilled because our instrument is randomly assigned and can only impact the outcome indirectly (a firm cannot be affected by the brochure if no one reads it). Monotonicity will be fulfilled because, in principle, our mailing action is one of the few ways in which firms can obtain our brochure; receiving it will thus make firms more likely to read it by design.

[17] So far, we have assumed that receiving the UKTI brochure from us is the only way of obtaining it. In practice, firms can also get a copy by attending a UKTI trade fair. In this case, they will have to register with UKTI and will show up in UKTI's client records. We have recently obtained these data and are currently calculating the fraction of firms that received the brochure through channels other than our mailing action. Note that UKTI does not send out the brochure (or other materials) as part of standard marketing campaigns, as there are tight restrictions on what UKTI (as a public body) can do in such campaigns.

[18] Recall that our standardised variables can be interpreted as showing treatment effects expressed as standard deviations of the control group. (Note that this only holds in approximation for the group-mean variables.)

which contain information about the exports of individual firms.[19]

We regress four variables commonly used in transaction-level studies of export behaviour (export status, export value, number of destinations served and number of products exported) on our treatment dummy, controlling for the full set of 380 asset-quartile-by-industry fixed effects as well as baseline values of the dependent variable.[20] Table 12 reports the results. Given the relatively small scale of our intervention, it is perhaps not surprising that the provision of information did not have significant effects on any of our aggregate outcome variables. However, these findings hide interesting treatment effect heterogeneity across time and initial export status.

Figure 2 decomposes the aggregate treatment impact by showing its cumulative effect on export values over time for the 17 months following the intervention (up to the end of 2015). This is done by running a series of regressions similar to the ones underlying Table 12 but with the dependent variable computed as the cumulative total of export values over the n months following the intervention. That is, for the n^{th} regression we use $X_{in} = \sum_{m=1}^{n} x_{im}$ as the dependent variable where x_{im} are firm i's exports in the m^{th} month following the intervention. These regressions provide a more precise picture of how the impact of the treatment unfolded over time. Interestingly, Figure 1 shows that the effect of the treatment is more significant in the cumulative results and builds up over time until it reaches a peak of around £50,000 eight months after the intervention. After that, the effect again decreases slightly and becomes insignificant.[21]

Figure 3 further breaks down the cumulative results by initial export status by including interaction terms between the treatment dummy and a binary indicator of whether the firm exported at some point during the 12 months preceding our treatment.[22] Figures 3 displays three types of treatment effects constructed from these regressions: the impact of the treatment on initial non-exporters, initial exporters, as well as the difference in the treatment impact across these two groups.[23] The results indicate that the treatment effect is positive for existing exporters and slightly negative for initial non-exporters. The total differential effect builds up gradually in the months after the intervention and reaches its full strength after around nine months, although it is statistically most significant at around 4-7 months post-intervention. Overall,

[19] For around 5% of firms, two or more firm identifiers mapped into the same trade data (VAT) identifier. This situation arises when different subsidiaries of a company are listed as separate entities in FAME but report exports jointly using the same VAT identifier. To avoid assigning both treated and control firms to the same reporting unit for exports we drop all non-unique matches, resulting in a final sample size of 5,647 firms. We note that the likelihood of a non-unique match is not correlated with treatment status.

[20] We measure export value as the combined value of all export transactions over the 12 month window following our intervention. If this value is larger than zero, we categorise the firm as an exporter. The number of products is measured as the count of distinct HS 8-digit categories exported by the firm during the same period, and the number of destinations is the count of countries the firm exported to. The baseline controls are calculated in the same fashion for the 12 months preceding our intervention.

[21] We do not present analogous figures for export status, the number of products and destination countries as the corresponding cumulative regression estimates were small and insignificant, yielding no further insights over and above the baseline results reported in Table 12.

[22] That is, we run a series of regressions of the form $X_{in} = \beta_1 brochure_i + \beta_2 EXP_i + \beta_3 (brochure_i \times EXP_i) + \beta_4 X_{i,base} + d_{IA} + \varepsilon_{it}$, where EXP_i denotes initial export status and d_{IA} is the full set of 380 asset-quartile-by-industry fixed effects.

[23] In terms of the regressors from Footnote 22, these impacts correspond to β_1 (treatment effect for non-exporters), $\beta_1 + \beta_3$ (treatment effect for exporters) and β_3 (the difference between the treatment effects for exporters and non-exporters).

the information provision seems to have reduced cumulative exports by initial non-exporters by around £26,000 after 12 months, and increased cumulative exports by initial exporters by around £165,000. For comparison, average exports of existing exporters in the pre-intervention year were around £4.75 million, so the treatment-induced increase is small in relative terms (around 3.5%).[24] Interestingly, in unreported results we found that average exports per product and destination follow a similar pattern for initial exporters. By regressing average exports per product and destination on the treatment dummy we obtained a marginally statistically significant effect of around £10,000 after 12 months. Hence, it seems that existing exporters slightly increased overall exports but did so mainly for existing destinations and products.

In our view, these findings are broadly in line with our results on firm perceptions. Among the non-exporters that commenced exporting, the treated firms began with smaller export values than the non-treated firms. This is consistent with an intervention impact that made non-exporters more pessimistic, or perhaps simply more cautious. Likewise, existing exporters that were treated saw a small increase in the value of their exports so that, overall, the treatment increased pre-existing differences between the two groups.

3.4 Interpretation of Results

Our results hold fairly consistently across specifications, indicating that the provision of information about the benefits of exporting leads non-exporters to revise their perceptions of the benefits of exporting downward, and to revise their perceptions of the barriers to exporting upward. In short, they become less inclined to export, a result that is new to the literature. In contrast, for exporters, information provision reinforces their positive perceptions of exporting. These changes are also reflected in the cumulative value of subsequent exports, as discussed in the previous section.

One possible explanation for the result for non-exporters is that the information provides them with a new set of facts that allows them to more accurately map their firm characteristics into potential export market profitability. In this case, the results suggest that for the average firm these new facts indicated that the potential profit from exporting was less than they previously believed, which therefore led to a more negative perception of exporting and, eventually, to a more cautious export market entry.

An alternative interpretation of the findings is that non-exporters are displaying confirmation bias in their responses. This would be the case if they are incorporating the new information selectively, or else combining it with existing information in a selective way in order to affirm their existing beliefs. The literature on confirmation bias tends to find that this effect is strongest when the information provided is ambiguous which, in our case, could be the case if the UKTI brochure does not directly address firms' concerns regarding exporting. To the extent that this is true, a firm's true export profit potential will remain unknown to both the firm and the econometrician. Ultimately, knowing whether the firm's perceptions are changing due to confirmation bias or as the result of an accurate weighing of the costs and benefits from exporting cannot be ascertained in the context of our current research design, and so we leave this for

[24] By definition, pre-intervention exports of initial non-exporters were zero.

future work.

4 Conclusion

We presented the results of a randomized controlled trial designed to elicit, and then potentially alter, firms' perceptions of the costs and benefits of exporting. Interestingly, when provided with information about the benefits of exporting, firms responded asymmetrically. Whereas exporters reported lower barriers to exporting and higher perceived benefits following the receipt of the information, non-exporters became more pessimistic regarding the benefits and perceived larger barriers to exporting. These findings are also consistent with the actual changes in export behaviour following the intervention. While these were small, they also suggested that the treatment effect for initial non-exporters was negative whereas information provision seems to have increased export shipments by existing exporters.

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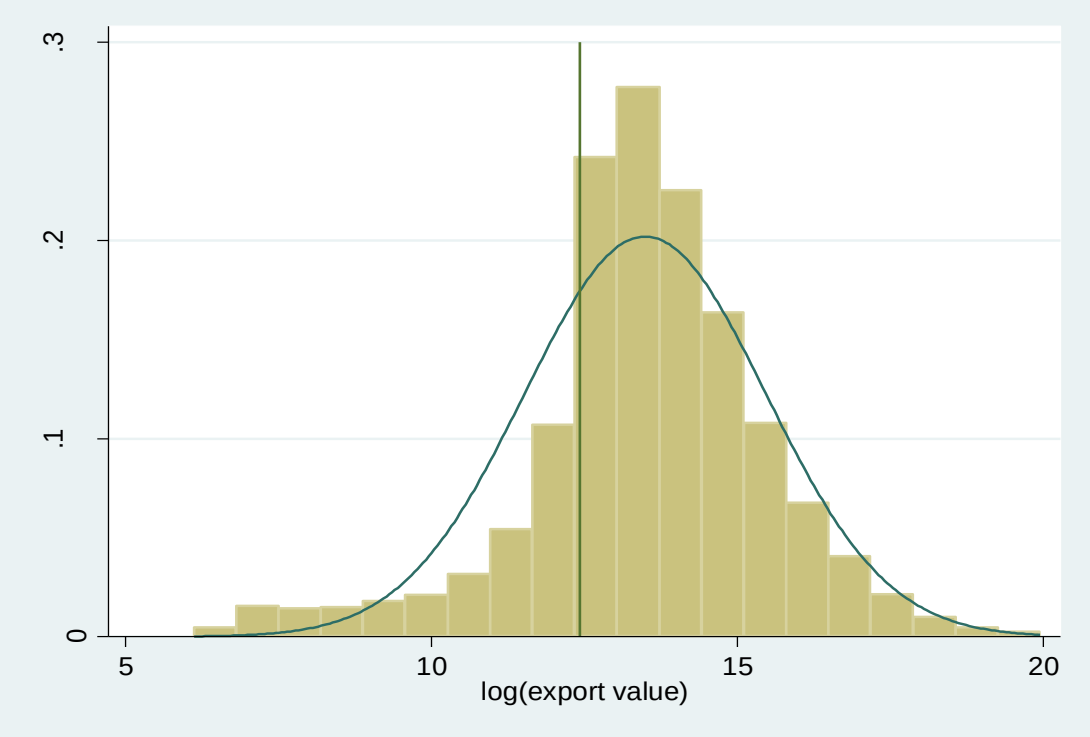
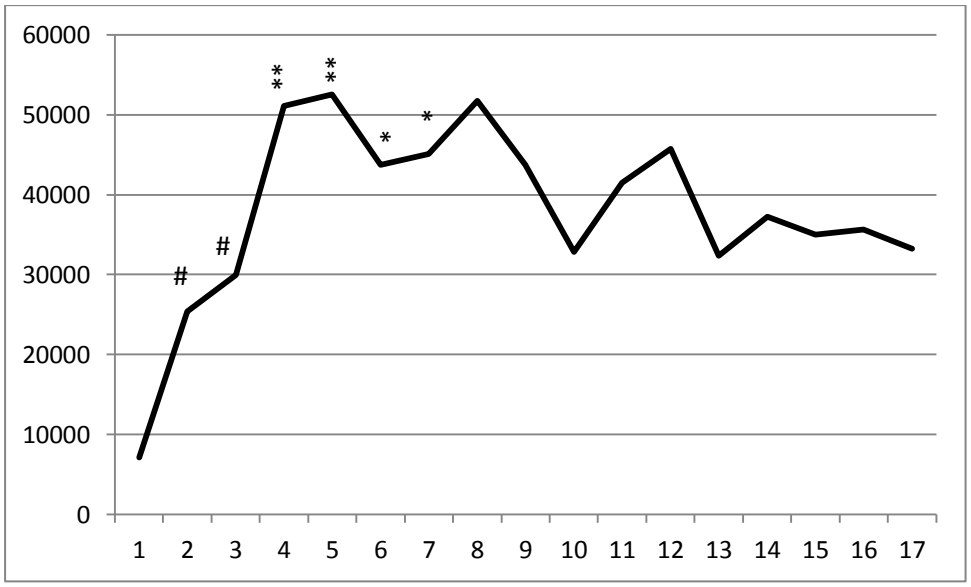
Figure 1 – Reporting of Exports below the Intrastat Threshold



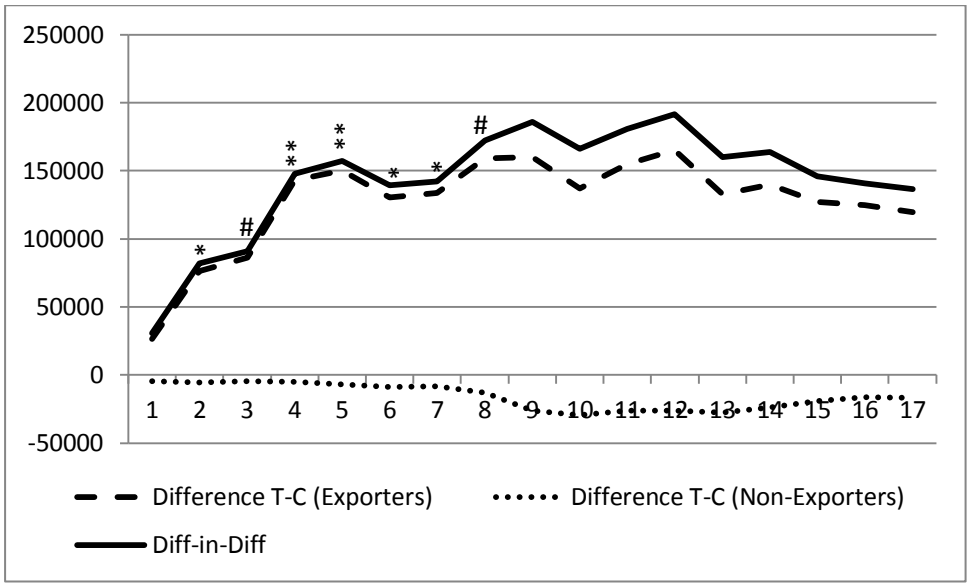
Notes: Figure shows the density plot of UK firm-level exports to the European Union in 2014. The vertical line denotes the Intrastat threshold (£250,000 in 2014).

Figure 2 - Cumulative Effects: Export Value



Notes: Table shows cumulative treatment effects over time (in GBP). The horizontal axis denotes months since the intervention. **, * and # denote statistical significance at the 1%, 5% and 10% level, respectively.

Figure 3 - Cumulative Effects: Initial Exporters vs Non-Exporters (Export Value)



Notes: Table shows cumulative treatment effects over time and by initial export status (in GBP). The horizontal axis denotes months since the intervention. **, * and # denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 1: Representativeneess of Survey Samples

Panel A: Baseline Survey

Variable	Mean	Mean (Sample)	Difference
Log(assets)	7.07	7.14	-0.06
% in 1st asset quartile	0.25	0.21	0.04**
% in 2nd asset quartile	0.25	0.27	-0.02
% in 3rd asset quartile	0.25	0.28	-0.04*
% in 4th asset quartile	0.25	0.24	0.01

Panel B: Endline Survey

Variable	Mean	Mean (Sample)	Difference
Log(assets)	7.07	7.00	0.07
% in 1st asset quartile	0.25	0.20	0.05**
% in 2nd asset quartile	0.25	0.31	-0.06**
% in 3rd asset quartile	0.25	0.31	-0.06**
% in 4th asset quartile	0.25	0.19	0.07**

Notes : Table shows mean log assets and the percentage of firms in each asset quartile in the population and in our survey sample. **, * and # denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 2a: Balance Checks on Baseline Sample

Variable	Mean Treatment	Mean Control	Difference	Standard Error	N
Panel A: Industry-Asset Bins					
Bin 1	0.032	0.028	0.004	0.011	927
Bin 2	0.095	0.105	-0.01	0.02	927
Bin 3	0.079	0.073	0.006	0.017	927
Bin 4	0.044	0.042	0.002	0.013	927
Bin 5	0.144	0.172	-0.028	0.024	927
Bin 6	0.053	0.075	-0.022	0.016	927
Bin 7	0.076	0.059	0.018	0.017	927
Bin 8	0.174	0.141	0.032	0.024	927
Bin 9	0.12	0.105	0.015	0.021	927
Bin 10	0.049	0.065	-0.016	0.015	927
Bin 11	0.134	0.135	-0.001	0.023	927
Panel B: Survey Variables					
Question 1	0.749	0.721	0.028	0.029	926
Question 2.1	4.212	4.301	-0.089	0.157	237
Question 2.3a)	2.058	1.821	0.237	0.173	198
Question 2.3b)	2.035	1.857	0.178	0.177	198
Question 2.3c)	2.122	1.856	0.266	0.166	197
Question 2.3d)	1.655	1.532	0.123	0.146	195
Question 2.3e)	2.23	1.982	0.248	0.183	199
Mean of all Q2.3 Questions	2.011	1.798	0.213	0.149	195
Question 2.4a)	2.774	2.761	0.012	0.241	193
Question 2.4b)	3.232	3.355	-0.123	0.179	192
Question 2.4c)	3.329	3.278	0.051	0.179	190
Question 2.4d)	3.768	3.589	0.18	0.167	189
Question 2.4e)	3.537	3.598	-0.062	0.186	189
Question 2.4f)	3.593	3.757	-0.164	0.175	188
Question 2.4g)	3.679	3.72	-0.041	0.181	188
Mean of all Q2.4 Questions	3.405	3.422	-0.017	0.129	187
Question 3.1	1.143	1.16	-0.017	0.037	679
Question 3.2	1.282	1.289	-0.008	0.039	679
Question 3.3	1.393	1.401	-0.007	0.039	680
Question 3.4a)	3.461	3.458	0.003	0.083	677
Question 3.4b)	3.477	3.515	-0.039	0.095	678
Question 3.4c)	2.994	2.966	0.027	0.09	677
Question 3.4d)	2.682	2.808	-0.126	0.105	676
Question 3.4e)	3.567	3.58	-0.013	0.086	678
Mean of all Q3.4 Questions	3.235	3.264	-0.029	0.076	674
Question 3.5a)	1.737	1.895	-0.159	0.075*	672
Question 3.5b)	2.522	2.661	-0.139	0.087	672
Question 3.5c)	2.693	2.797	-0.104	0.084	674
Question 3.5d)	2.549	2.58	-0.032	0.085	674
Question 3.5e)	2.48	2.565	-0.085	0.087	674
Question 3.5f)	2.972	2.776	0.195	0.091*	670
Question 3.5g)	2.528	2.463	0.065	0.081	672
Mean of all Q3.5 Questions	2.504	2.535	-0.031	0.057	668
Mean Q2.3 - Mean Q2.4	-1.306	-1.642	0.337	0.222	179
Mean Q3.4 - Mean Q3.5	0.734	0.728	0.006	0.086	666

Note: **, * and # denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 2b: Balance Checks on HMRC Sample

Variable	Difference Treatment - Control	Standard Error	N
Export Status (0/1)	-0.011	0.013	5652
Number of countries	-0.148	0.316	5652
Number of products	-0.270	0.393	5652
log(export value)	0.020	0.112	2271
log(export value per country and product)	-0.005	0.070	2271

Note: **, * and # denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 3a: Differences in Perception at Baseline

Question	Mean Exporters	Mean Non-Exporters	Difference Exp. – Non-Exp.	S.E. of difference
Benefits from Exporting: Extent Firm could/has Benefit(ed) in the Following Areas from Exporting (1: No Extent, 5: Critical Extent)				
Profitability (Q2.3a, Q3.4)	3.459	1.918	1.541***	0.093
Sales Growth (Q2.3b, Q3.4b)	3.497	1.923	1.574***	0.098
New Ideas (Q2.3c, Q3.4c)	2.979	1.972	1.008***	0.093
Increased Product Life (Q2.3d, Q3.4d)	2.749	1.585	1.163***	0.088
Improved Profile (Q2.3e, Q3.4e (Improve Profile)	3.574	2.081	1.493***	0.099
Average Score (Avg of all parts of Q2.3, Q3.4)	3.25	1.884	1.366***	0.081
Barriers to Exporting: How difficult would/has the following be(en) in trying to export? (1: Not difficult at all, 5: Very Difficult)				
Adapting products (Q2.4a, Q3.5a)	1.82	2.772	-0.953***	0.126
Legal/Tax Regulations (Q2.4b, Q3.5b)	2.595	3.303	-0.708***	0.099
Customs Procedures and Paperwork (Q2.4c, Q3.5c)	2.748	3.29	-0.543***	0.098
Enforcing Contracts (Q2.4d, Q3.5d)	2.565	3.692	-1.127***	0.091
Management Time (Q2.4e, Q3.5e)	2.524	3.578	-1.054***	0.103
Contacts (Q2.4f, Q3.5f)	2.869	3.69	-0.822***	0.099
Language/Culture (Q2.4g, Q3.5g)	2.494	3.712	-1.218***	0.097
Average Score (Avg of all parts of Q2.4, Q3.5)	2.52	3.429	-0.909***	0.07

Note: ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 3b: Differences in Perception at Baseline (Controlling for Industry-Asset Bins)

Question	Mean Exporters	Mean Non-Exporters	Difference Exp. – Non-Exp.	S.E. of difference
Benefits from Exporting: Extent Firm could/has Benefit(ed) in the Following Areas from Exporting (1: No Extent, 5: Critical Extent)				
Profitability (Q2.3a, Q3.4)	3.312	1.826	1.486***	0.095
Sales Growth (Q2.3b, Q3.4b)	3.012	1.544	1.468***	0.101
New Ideas (Q2.3c, Q3.4c)	2.770	1.813	0.957***	0.096
Increased Product Life (Q2.3d, Q3.4d)	2.668	1.555	1.113***	0.092
Improved Profile (Q2.3e, Q3.4e (Improve Profile)	3.375	1.958	1.417***	0.103
Average Score (Avg of all parts of Q2.3, Q3.4)	3.055	1.757	1.298***	0.084
Barriers to Exporting: How difficult would/has the following be(en) in trying to export? (1: Not difficult at all, 5: Very Difficult)				
Adapting products (Q2.4a, Q3.5a)	2.073	3.077	-1.004***	0.129
Legal/Tax Regulations (Q2.4b, Q3.5b)	2.592	3.353	-0.761***	0.104
Customs Procedures and Paperwork (Q2.4c, Q3.5c)	2.934	3.511	-0.577***	0.103
Enforcing Contracts (Q2.4d, Q3.5d)	2.718	3.886	-1.168***	0.096
Management Time (Q2.4e, Q3.5e)	2.669	3.704	-1.035***	0.107
Contacts (Q2.4f, Q3.5f)	3.000	3.824	-0.824***	0.102
Language/Culture (Q2.4g, Q3.5g)	2.696	3.910	-1.214***	0.101
Average Score (Avg of all parts of Q2.4, Q3.5)	2.648	3.574	-0.926***	0.073

Note: ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 4: Difference in Perceptions (Endline sampe only, z-score normalization)

Question	Difference Treat-Control	S.E. of Difference
Benefits from Exporting: Non-Exporters		
Profitability (Q2.3a)	-0.191	0.166
Sales Growth (Q2.3b)	-0.294	0.163*
New Ideas (Q2.3c)	-0.200	0.173
Increased Product Life (Q2.3d)	-0.192	0.158
Improved Profile (Q2.3e)	-0.330	0.168*
Average (of all parts of Q2.3)	-0.240	0.143*
Barriers to Exporting: Non-Exporters		
Adapting products (Q2.4a)	0.440	0.188**
Legal/Tax Regulations (Q2.4b)	0.130	0.192
Customs Procedures and Paperwork (Q2.4c)	0.358	0.187*
Enforcing Contracts (Q2.4d)	0.524	0.183***
Management Time (Q2.4e)	0.341	0.177*
Contacts (Q2.4f)	0.302	0.181*
Language/Culture (Q2.4g)	0.320	0.188*
Average (of all parts of Q2.4)	0.351	0.142**
Difference in Benefits-Barriers (Avg Q2.3 - Avg Q2.4)	**-0.539**	**0.205*** **
Benefits from Exporting: Exporters		
Profitability (Q3.4a)	0.152	0.093
Sales Growth (Q3.4b)	0.052	0.099
New Ideas (Q3.4c)	0.164	0.098*
Increased Product Life (Q3.4d)	0.211	0.098**
Improved Profile (Q3.4e)	0.152	0.094
Average (of all parts of Q3.4)	0.150	0.080*
Barriers to Exporting: Exporters		
Adapting products (Q3.5a)	-0.075	0.098
Legal/Tax Regulations (Q3.5b)	-0.041	0.099
Customs Procedures and Paperwork (Q3.5c)	-0.185	0.100*
Enforcing Contracts (Q3.5d)	0.082	0.100
Management Time (Q3.5e)	-0.093	0.100
Contacts (Q3.5f)	-0.046	0.098
Language/Culture (Q3.5g)	-0.059	0.098
Average (of all parts of Q3.5)	-0.063	0.070
Difference in Benefits-Barriers (Avg Q3.4 - Q3.5)	**0.218**	**0.098****

Note: ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 5: Differences in Export Intentions (Endline sample only, z-score

Question	Difference Treat-Control	S.E. of Difference
Non-Exporters		
Likely to Start Exporting (Q2.1)	0.162	0.133
Exporters		
Likely to Continue Exporting (Q3.1)	-0.103	0.085
Likely to Increase Value of Exports (Q3.2)	-0.301	0.089***
Likely to Enter New Overseas Markets (Q3.3)	-0.091	0.098

Note: ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 6: Difference in Preferences (DD estimates, z-score normalization)

Question	Treat - Control (Before)	Treat - Control (After)	After - Before (DD)
Benefits from Exporting: Non-Exporters			
Profitability (Q2.3a)	0.214	-0.194	-0.408*
Sales Growth (Q2.3b)	0.161	-0.259*	-0.420*
New Ideas (Q2.3c)	0.219	-0.209	-0.428*
Increased Product Life (Q2.3d)	0.130	-0.177	-0.307
Improved Profile (Q2.3e)	0.179	-0.343**	-0.522**
Average (of all parts of Q2.3)	0.186	-0.240*	-0.426**
Barriers to Exporting: Non-Exporters			
Adapting products (Q2.4a)	0.022	0.405**	0.384*
Legal/Tax Regulations (Q2.4b)	-0.083	0.062	0.145
Customs Procedures and Paperwork (Q2.4c)	0.065	0.306	0.241
Enforcing Contracts (Q2.4d)	0.171	0.447**	0.276
Management Time (Q2.4e)	-0.015	0.287*	0.302
Contacts (Q2.4f)	-0.113	0.296*	0.409*
Language/Culture (Q2.4g)	0.021	0.310*	0.289
Average (of all parts of Q2.4)	0.015	0.312**	0.297*
Difference in Benefits-Barriers (Avg Q2.3 - Avg Q2.4)	***0.270***	***-0.517*****	***-0.787******
Benefits from Exporting: Exporters			
Profitability (Q3.4a)	-0.008	0.168*	0.176
Sales Growth (Q3.4b)	-0.041	0.063	0.105
New Ideas (Q3.4c)	0.006	0.177*	0.171
Increased Product Life (Q3.4d)	-0.107	0.227**	0.334***
Improved Profile (Q3.4e)	-0.024	0.163*	0.186
Average (of all parts of Q3.4)	-0.037	0.164**	0.201**
Barriers to Exporting: Exporters			
Adapting products (Q3.5a)	-0.172**	-0.083	0.089
Legal/Tax Regulations (Q3.5b)	-0.134*	-0.041	0.093
Customs Procedures and Paperwork (Q3.5c)	-0.103	-0.176*	-0.073
Enforcing Contracts (Q3.5d)	-0.034	0.075	0.109
Management Time (Q3.5e)	-0.077	-0.098**	-0.021
Contacts (Q3.5f)	0.162**	-0.049	-0.212*
Language/Culture (Q3.5g)	0.054	-0.071	-0.125
Average (of all parts of Q3.5)	-0.038	-0.066	-0.029
Difference in Benefits-Barriers (Avg Q3.4 - Q3.5)	***0.005***	***0.232*****	***0.226****

Note: ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 7: Differences in Export Intentions (DD estimates, z-score normalization)

Question	Treat - Control (Before)	Treat - Control (After)	After - Before (DD)
Non-Exporters			
Likely to Start Exporting (Q2.1)	-0.085	0.140	0.225
Exporters			
Likely to Continue Exporting (Q3.1)	-0.034	-0.100	-0.065
Likely to Increase Value of Exports (Q3.2)	-0.014	-0.295***	-0.281**
Likely to Enter New Overseas Markets (Q3.3)	-0.010	-0.088	-0.078

Note: ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 8: Difference in Perceptions (Controling for Baseline Covariates, z-score normalization)

Question	Difference Treat-Control	S.E. of Difference
Benefits from Exporting: Non-Exporters		
Profitability (Q2.3a)	-0.334	0.343
Sales Growth (Q2.3b)	-0.502	0.274*
New Ideas (Q2.3c)	-0.548	0.248**
Increased Product Life (Q2.3d)	-0.295	0.287
Improved Profile (Q2.3e)	-0.259	0.241
Average (of all parts of Q2.3)	-0.377	0.220*
Barriers to Exporting: Non-Exporters		
Adapting products (Q2.4a)	1.072	0.412**
Legal/Tax Regulations (Q2.4b)	0.078	0.471
Customs Procedures and Paperwork (Q2.4c)	0.329	0.444
Enforcing Contracts (Q2.4d)	0.224	0.305
Management Time (Q2.4e)	0.883	0.300***
Contacts (Q2.4f)	-0.033	0.303
Language/Culture (Q2.4g)	0.199	0.365
Average (of all parts of Q2.4)	0.506	0.227**
Difference in Benefits-Barriers (Avg Q2.3 - Avg Q2.4)	**-0.883**	**0.278*** **
Benefits from Exporting: Exporters		
Profitability (Q3.4a)	-0.013	0.096
Sales Growth (Q3.4b)	-0.073	0.099
New Ideas (Q3.4c)	0.005	0.099
Increased Product Life (Q3.4d)	0.215	0.120*
Improved Profile (Q3.4e)	-0.018	0.100
Average (of all parts of Q3.4)	0.001	0.075
Barriers to Exporting: Exporters		
Adapting products (Q3.5a)	0.029	0.109
Legal/Tax Regulations (Q3.5b)	-0.206	0.121*
Customs Procedures and Paperwork (Q3.5c)	-0.319	0.115***
Enforcing Contracts (Q3.5d)	0.106	0.125
Management Time (Q3.5e)	-0.130	0.126
Contacts (Q3.5f)	-0.082	0.119
Language/Culture (Q3.5g)	-0.181	0.127
Average (of all parts of Q3.5)	-0.111	0.080
Difference in Benefits-Barriers (Avg Q3.4 - Q3.5)	**0.098**	**0.104**

Note: ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 9: Differences in Export Intentions (Controling for Baseline Covariates, z-score normalization)

Question	Difference Treat-Control	S.E. of Difference
Non-Exporters		
Likely to Start Exporting (Q2.1)	-0.085	0.166
Exporters		
Likely to Continue Exporting (Q3.1)	0.027	0.101
Likely to Increase Value of Exports (Q3.2)	-0.301***	0.106
Likely to Enter New Overseas Markets (Q3.3)	-0.086	0.114

Note: ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Table 10: Attrition Probability Regressions (OLS, z-score normalisation)

Question	Coefficient Interaction	S.E. of Interaction
Non-Exporters		
Likely to Start Exporting (Q2.1)	0.078	0.055
Benefits from Exporting		
Profitability (Q2.3a)	-0.058	0.058
Sales Growth (Q2.3b)	-0.083	0.057
New Ideas (Q2.3c)	-0.010	0.056
Increased Product Life (Q2.3d)	0.016	0.058
Improved Profile (Q2.3e)	0.030	0.060
Average (of all parts of Q2.3)	-0.008	0.068
Barriers to Exporting		
Adapting products (Q2.4a)	0.117*	0.064
Legal/Tax Regulations (Q2.4b)	0.051	0.063
Customs Procedures and Paperwork (Q2.4c)	-0.020	0.064
Enforcing Contracts (Q2.4d)	0.033	0.066
Management Time (Q2.4e)	0.060	0.067
Contacts (Q2.4f)	0.117*	0.061
Language/Culture (Q2.4g)	0.005	0.066
Average (of all parts of Q2.4)	0.113	0.093
Difference in Benefits-Barriers (Avg Q2.3 - Avg Q2.4)	*-0.019*	*0.054*
Exporters		
Likely to Continue Exporting (Q3.1)	-0.054	0.034
Likely to Increase Value of Exports (Q3.2)	-0.054	0.035
Likely to Enter New Overseas Markets (Q3.3)	-0.033	0.036
Benefits from Exporting		
Profitability (Q3.4a)	0.027	0.037
Sales Growth (Q3.4b)	0.022	0.036
New Ideas (Q3.4c)	0.080**	0.037
Increased Product Life (Q3.4d)	-0.002	0.036
Improved Profile (Q3.4e)	0.067*	0.038
Average (of all parts of Q3.4)	0.058	0.045
Barriers to Exporting		
Adapting products (Q3.5a)	0.043	0.037
Legal/Tax Regulations (Q3.5b)	0.004	0.037
Customs Procedures and Paperwork (Q3.5c)	-0.012	0.038
Enforcing Contracts (Q3.5d)	0.020	0.036
Management Time (Q3.5e)	0.038	0.036
Contacts (Q3.5f)	-0.007	0.037
Language/Culture (Q3.5g)	0.009	0.036
Average (of all parts of Q3.5)	0.024	0.056
Difference in Benefits-Barriers (Avg Q3.4 - Q3.5)	*0.023*	*0.039*

Table 11: IV/LATE Results (z-score normalisation)

Question	Difference Treat - Control	S.E. of Difference	1st Stage F-Stat
Non-Exporters			
Likely to Start Exporting (Q2.1)	1.22	1.07	7.70
Benefits from Exporting			
Profitability (Q2.3a)	-1.29	1.17	7.76
Sales Growth (Q2.3b)	-1.98	1.29	7.76
New Ideas (Q2.3c)	-1.36	1.35	7.73
Increased Product Life (Q2.3d)	-1.31	1.10	7.73
Improved Profile (Q2.3e)	-2.23*	1.32	7.73
Average (of all parts of Q2.3)	-1.61	1.10	7.76
Barriers to Exporting			
Adapting products (Q2.4a)	2.87*	1.56	7.95
Legal/Tax Regulations (Q2.4b)	0.82	1.18	8.02
Customs Procedures and Paperwork (Q2.4c)	2.24*	1.33	8.04
Enforcing Contracts (Q2.4d)	3.28**	1.53	8.02
Management Time (Q2.4e)	2.10*	1.21	8.06
Contacts (Q2.4f)	1.90	1.21	8.02
Language/Culture (Q2.4g)	2.01	1.30	8.02
Average (of all parts of Q2.4)	2.17**	1.09	8.06
Difference in Benefits-Barriers (Avg Q2.3 - Avg Q2.4)	*-3.19** *	*1.57*	*8.10*
Exporters			
Likely to Continue Exporting (Q3.1)	-0.59	0.50	36.25
Likely to Increase Value of Exports (Q3.2)	-1.69***	0.59	36.34
Likely to Enter New Overseas Markets (Q3.3)	-0.47	0.56	36.33
Benefits from Exporting			
Profitability (Q3.4a)	0.89*	0.53	36.05
Sales Growth (Q3.4b)	0.30	0.56	36.05
New Ideas (Q3.4c)	0.95*	0.57	36.08
Increased Product Life (Q3.4d)	1.18**	0.59	36.04
Improved Profile (Q3.4e)	0.86	0.54	36.05
Average (of all parts of Q3.4)	0.86*	0.47	36.04
Barriers to Exporting			
Adapting products (Q3.5a)	-0.47	0.56	36.02
Legal/Tax Regulations (Q3.5b)	-0.30	0.57	36.02
Customs Procedures and Paperwork (Q3.5c)	-1.15*	0.59	36.00
Enforcing Contracts (Q3.5d)	0.47	0.58	36.02
Management Time (Q3.5e)	-0.60	0.58	36.01
Contacts (Q3.5f)	-0.33	0.56	36.03
Language/Culture (Q3.5g)	-0.33	0.56	36.02
Average (of all parts of Q3.5)	-0.40	0.40	36.04
Difference in Benefits-Barriers (Avg Q3.4 - Q3.5)	*1.27** *	*0.58*	*36.10*

Table 12: Actual Export Behavior, Total Effects

Dependent Variable	Export Status	Export Value	Number of Countries	Number of Products
Sent a Brochure (=1)	-0.0045	45,697	-0.0373	-0.0880
	(0.0066)	(55812)	(0.0578)	(0.0878)
Number of Observations	5647	5647	5647	5647

Notes: All regressions contain the baseline dependent variable and industry-asset quartile fixed effects as additional control. Robust standard errors in brackets.

PLACE SURVEY NUMBER LABEL HERE

QUESTIONNAIRE

(1) **Has your company exported some or all of its products (excluding services) in either the current or the last financial year?**

Note: This survey is about exporting physical goods ('products'). If you are only exporting services, please answer 'NO' to this question.

Denote choice with an X	
YES	
NO	

If you answered YES to Question (1) go to SECTION 3 on page 5.

If you answered NO to Question (1) continue with SECTION 2 on the back of this page.

PLEASE TURN OVER

SECTION 2 If you answered NO to question (1) please begin here

(2.1) **How likely are you to start exporting some or all of your products within the next three years?**

Denote choice with an X	
Very Likely	
Likely	
Maybe	
Not Likely	
Very Unlikely	

(2.2) **Please indicate whether you have already undertaken any of the following activities in preparation for exporting.**

Put an X next to ANY that apply.

	We have made changes or modifications to existing products.
	We have researched the business environment and ways of working in the foreign market we are targeting.
	We have contacted an external organisation for information or assistance about the foreign market we are targeting.
	We have made a business plan that includes an overseas component.
	Any other preparations. Please specify:
	Does not apply, we are not planning to start exporting.

PLEASE GO TO NEXT PAGE

(2.3) **In your opinion, to what extent would the following benefits of exporting apply to your company?**

For each benefit (a) – (f), please place an X under the number associated with your answer to indicate the extent to which you feel your company would benefit.

a. Exporting would increase the profitability of my company.

To No Extent				To a Critical Extent
1	2	3	4	5

b. Exporting would help my company to achieve a level of sales growth otherwise not possible.

To No Extent				To a Critical Extent
1	2	3	4	5

c. Exporting would expose my company to new ideas.

To No Extent				To a Critical Extent
1	2	3	4	5

d. Exporting would increase the commercial life span of our products.

To No Extent				To a Critical Extent
1	2	3	4	5

e. Exporting would improve my company's profile or credibility.

To No Extent				To a Critical Extent
1	2	3	4	5

f. Other.
Please specify: _____

To No Extent				To a Critical Extent
1	2	3	4	5

PLEASE TURN OVER

(2.4) **In your opinion, how difficult would it be for your company to deal with the following issues when seeking to export your products?**

For each issue (a) – (h), please place an X under the number associated with your answer to indicate the extent to which you feel this would be difficult.

a. Adapting our products to be suitable for exporting.

Not Difficult At All				Very Difficult
1	2	3	4	5

b. Dealing with legal or tax regulations and standards.

Not Difficult At All				Very Difficult
1	2	3	4	5

c. Dealing with customs procedures and paperwork.

Not Difficult At All				Very Difficult
1	2	3	4	5

d. Ensuring you get paid and enforcing contracts.

Not Difficult At All				Very Difficult
1	2	3	4	5

e. Finding the necessary management time to do business.

Not Difficult At All				Very Difficult
1	2	3	4	5

f. Identifying whom to make contact with in the first instance.

Not Difficult At All				Very Difficult
1	2	3	4	5

g. Negotiating the language and culture of the foreign market(s).

Not Difficult At All				Very Difficult
1	2	3	4	5

h. Other.
Please specify: _____

Not Difficult At All				Very Difficult
1	2	3	4	5

STOP: YOU HAVE FINISHED THE QUESTIONNAIRE

SECTION 3 If you answered YES to question (1) please begin here

(3.1) **How likely are you to continue exporting your products over the next three years?**

Denote choice with an X	
Very Likely	
Likely	
Maybe	
Not Likely	
Very Unlikely	

(3.2) **Do you expect the value of your exports (excluding services) to increase, decrease or stay the same over the next three years?**

Denote choice with an X	
Increase	
Stay the Same	
Decrease	

(3.3) **Do you expect the number of markets you are doing business in to increase, decrease or stay the same over the next three years?**

Denote choice with an X	
Increase	
Stay the Same	
Decrease	

PLEASE TURN OVER

(3.4) **In your opinion, to what extent do the following benefits of exporting apply to your company?**

For each benefit (a) – (f), please place an X under the number associated with your answer to indicate the extent to which you feel your company has benefited.

a. Exporting has increased the profitability of my company.

To No Extent				To a Critical Extent
1	2	3	4	5

b. Exporting has helped my company to achieve a level of sales growth otherwise not possible.

To No Extent				To a Critical Extent
1	2	3	4	5

c. Exporting has exposed my company to new ideas.

To No Extent				To a Critical Extent
1	2	3	4	5

d. Exporting has increased the commercial life span of our products.

To No Extent				To a Critical Extent
1	2	3	4	5

e. Exporting has improved my company's profile or credibility.

To No Extent				To a Critical Extent
1	2	3	4	5

f. Other.
Please specify: _____

To No Extent				To a Critical Extent
1	2	3	4	5

PLEASE GO TO NEXT PAGE

(3.5) **In your opinion, how difficult has it been for your company to deal with the following issues related to exporting your products?**

For each issue (a) – (h), please place an X under the number associated with your answer to indicate the extent to which you feel this has been difficult.

a. Adapting our products to be suitable for exporting.

Not Difficult At All				Very Difficult
1	2	3	4	5

b. Dealing with legal or tax regulations and standards.

Not Difficult At All				Very Difficult
1	2	3	4	5

c. Dealing with customs procedures and paperwork.

Not Difficult At All				Very Difficult
1	2	3	4	5

d. Ensuring we were paid and enforcing contracts.

Not Difficult At All				Very Difficult
1	2	3	4	5

e. Finding the necessary management time to do business.

Not Difficult At All				Very Difficult
1	2	3	4	5

f. Identifying whom to make contact with in the first instance.

Not Difficult At All				Very Difficult
1	2	3	4	5

g. Negotiating the language and culture of the foreign market(s).

Not Difficult At All				Very Difficult
1	2	3	4	5

h. Other.
Please specify: _____

Not Difficult At All				Very Difficult
1	2	3	4	5

STOP: YOU HAVE FINISHED THE QUESTIONNAIRE