The impact of export promotion on export market entry

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by Annette Schminke and Johannes Van Biesebroeck

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Abstract

For small open economies, it is essential that many firms find their way to the export market and most governments provide some form of export promotion assistance. We use detailed firm-level data for Flanders, the largest region in Belgium, to evaluate whether its program raises firms' propensity to start exporting outside the EU single market. We find robust evidence for such an effect by relying on the selection-on-observables assumption which we implement using various estimators. Results remain positive and statistically signifcant, but are smaller in size, when we use two strategies to mitigate self-selection concerns: (i) focus on sub-samples of firms where endogenous selection into treatment is less likely, and (ii) use firms that receive the weakest form of support as controls for firms receiving more extensive support.

JEL classification: F13, F14
Keywords: International trade, trade policy, export market entry

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1 Introduction

For a small open economy, it is important that many of its firms become successful exporters. In the widely-used trade model with heterogeneous firms, see the review by Melitz and Redding (2014), firms choose to become exporters if their productivity is sufficiently high to cover a fixed cost. A public policy to help firms over this threshold can be justified in some circumstances.

Most countries operate an export promotion agency to help domestic firms succeed on export markets (Lederman, Olarreaga, and Payton 2010). These programs help firms to lower variable or fixed costs of trading, e.g. by assisting firms to find a distributor, navigate foreign customs and product regulations, or adapt products to foreign tastes. Many papers have evaluated the effectiveness of these programs and have consistently shown that they boost aggregate and firm-level exports (Volpe Martincus and Carballo 2008), in particular by helping existing exporters enter new product or destination markets (Volpe Martincus and Carballo 2010a). They also help firms survive on export markets, for example during a cyclical downturn (Van Biesebroeck, Konings, and Volpe Martincus 2016). However, Cadot et al. (2015) suggest that effects are not durable and ongoing support is needed to maintain the elevated exports. We review the evidence in greater detail below.

In contrast, few studies have looked at whether these programs are also effective in raising export market participation, often an explicit objective of the export promotion agency. We fill this hole in the literature and evaluate whether the program of *Flanders Investment and Trade* (FIT), operating in the largest region of Belgium, is able to help non-exporting firms make their first sale abroad. The marginal increase in total exports from such an effect at the extensive firm margin of exporting will undoubtedly be small in the short term, but the impact can accumulate over time as new exporters gain experience.

Two papers investigate the subsequent performance after firms start exporting, but in passing they mention the likelihood that firms enter the export market when they receive support to jumpstart this process. Munch and Schaur (2015) study the evolution of value added, productivity, and employment for firms that buy export promotion services of the Danish Trade Council using a difference-in-differences estimator. In a first step, they show that supported firms have a 6 percentage

point higher probability of entering export markets than control firms (8 percentage points for firms with 20 employees or less), but they do not report the unconditional probability. Atkin, Khandelwal, and Osman (2016) study quality and productivity growth for a sample of small rug makers in Egypt, some of which they randomly offer the option to fill part of a large order from a foreign buyer. As an intermediate result, they report that 19% of firms presented with this opportunity to enter the export market take up the offer. While this seems a low take-up rate for such a concrete form of export support, it is likely to be multitudes larger than the unconditional probability of exporting for these firms (which is not reported).[1]

A final paper by Cruz (2014) measures the impact of *Apex*, the Brazilian government's export support agency, on export market entry with a matching difference-in-differences estimator often used to estimate intensive margin effect for existing exporters. The estimated effects are very large: supported firms have a probability of export market entry almost 2.5 times as high as the average firm and the impact is even larger for micro and small firms. Such large causal effects are not impossible, but self-selection of firms into the program is a concern. Estimating a model with firm-fixed effects exacerbates the role of time-varying unobserved shocks that can be correlated with both treatment and export indicators.[2]

The primary reason for the lack of studies focusing on the firm extensive margin is the extremely demanding data requirements. One needs to observe three types of firm-level information: (1) the incidence and timing of support by the export promotion agency, (2) export status preferably by destination, as reported in trade transaction datasets, and (3) control variables commonly found in firm censuses or compilations of balance sheet information. All three information sources must record information for all firms, exporters and firms only selling domestically. Given that any effect at the extensive margin is likely to be concentrated among small non-exporters, it is important that all datasets cover the universe of active firms with no minimum size threshold. Moreover, firm-level matching of the three information sources needs to be extremely accurate and in particular cannot be more reliable for

[1] A caveat is that the offer to fulfill a one-off sales order is rather different from the more long-term oriented form of support offered by export promotion agencies aimed at identifying distributors and removing trade bottlenecks.

[2] Including firm-fixed effects focuses all identifying power on the timing dimension (Mairesse and Griliches 1998). Given that the dependent variable identifies an event that in principle only occurs once in a firm's lifetime, they do not help overcome the self-selection problem.

larger firms which are more likely to export.

The information we use for Belgium is especially well suited as all three data sources—the national business registry, the official trade-transactions database, and the export promotion agency's client database—cover the universe of firms and use the same official firm identifier. For example, we are able to match more than 99% of all recorded export transactions to a firm in the business registry. In terms of export volume the match rate exceeds even 99.9%. In comparison, the dataset for the United States used by Bernard, Jensen, and Schott (2009) which merges trade transactions to firms in the Longitudinal Business Database of the US Census, covers "more than three quarters of U.S. imports and exports in each year. (p. 520)"

One constraint imposed by the Belgian data is that we need to focus on extra-EU trade because intra-EU trade is only recorded when total export sales for a firm exceed a high threshold.[3] This export dimension is if more general interest anyway. The close integration of Belgian firms in EU production networks makes intra-EU trade more akin to within-country transactions. Since the 1992 Single Market, most regulations, product standards, and tax treatment are harmonized or mutually recognized within the EU.[4]

Our baseline results suggest a 10 percentage point higher probability of extra-EU export market entry for firms benefiting from export promotion activities. The causal interpretation of this estimate relies on the assumption that selection into treatment is random once we condition on a sufficiently rich set of observables. We do find that the pre-treatment (employment) growth rate for supported firms is indistinguishable from the trend for control firms. The benchmark specification uses a probit model, simply including a set of controls in the estimating equation (Wooldridge 2010). But the estimates are robust when we use a linear probability models with fixed effects, double-robust propensity score weighting, or a Poisson model.

The high point estimates, approximately three times the unconditional probabil-

[3]As we do not observe support by market, firms will be considered as receiving support even if they approach FIT with the sole purpose of entering other EU markets. This will work against our finding a positive effect of the program.

[4]EU member states adopted the principle of mutual recognition of national rules. Any product legally manufactured and sold in one member state must be allowed in all others, which greatly facilitates international trade.

ity of export market entry, makes one worry about endogeneity. One solution is to focus on sub-samples of firms where self-selection is less likely to be a problem, a form of pre-matching. In a small country like Belgium, exporting quickly becomes imperative when firms reach a certain size. We expect all firms with 20 or more employees to be actively looking for export opportunities, whether they request support or not. On this sub-sample, we find an export entry probability that is only 4.3 percentage points higher for supported firms which is less than two thirds of the unconditional entry probability. Similarly, among firms already observed exporting intra-EU,[5] the point estimates are of a similar magnitude as the benchmark estimates, but relative to the unconditional export probability it represent a marginal effect that is only one third as high.

A second solution is to exploit variation in the type of services that supported firms receive. The agency classifies them in four categories. Firms can participate in an 'action' or receive a 'subsidy', both of which are more intensive uses than merely asking a 'question'.[6] We estimated the effect for firms benefiting from an action+question using as control group firms only receiving an answer to a question, the most limited form of support. Similarly, we compare subsidy+question to only question. These results indicate that subsidies are particularly effective, but there is no evidence that actions confer any more benefits than questions. Moreover, these effects survive a placebo test showing no effects when we replace the correct treatment indicator with a one period ahead lead of the treatment indicator.

Finally, we assess the balance of costs and benefits and the aggregate implications along a number of dimensions. For the subsidy part of the program, we calculate that each Euro in subsidies generates an average of EUR 35 of additional export revenue in the next two years. Point estimates using employment growth and the probability of firm survival as dependent variables tend to be positive, but only statistically significant if we combine both effects. There is no indication that the higher probability of export market entry merely pick up the conversion of indirect exporters into direct exporters. And, finally, there is some evidence of weak spillover effects to other firms in the same 4-digit sector. These last two findings should be interpreted with caution as unobservable demand shocks could also (partially)

[5]In full, firms exporting sufficient quantities intra-EU to clear the EUR 1 million reporting threshold.

[6]A fourth category, engaging in 'communication' with the agency, is lumped with questions.

explain the estimates we obtained there.

The remainder of the paper is organized as follows. Section 2 first reviews the justifications for export promotion, the existing evidence on the effectiveness of such programs, and the features of the program in Flanders. Section 3 describes the construction of the data set and Section 4 the empirical strategy. Results are presented in Section 5 and a cost-benefit analysis in Section 6. Section 7 concludes.

2 Export promotion

2.1 Theoretical justifications

In standard trade models with heterogeneous firms (Melitz and Redding 2014), firms self-select into exporting if their productivity is sufficiently high to cover the fixed or sunk cost that exporting entails. There are several reasons why a government interested in maximizing domestic welfare might want to subsidize export market entry directly or indirectly.

To the extent that the fixed costs represent investments in information acquisition, they have a public good aspect and it is better to incur them only once (Copeland 2008). Export promotion agencies often have an extensive network of foreign offices with officials informed about local market conditions and distribution channels. Especially in far-away markets it would be too expensive for all but the largest firms to bear those costs themselves. Such an information network is also valuable for existing exporters as it requires constant investments to maintain their foreign relationships (Eaton et al. 2014), especially during recessions when business partners might go bankrupt. Moreover, as demand falls during a recession and some credit constrained firms are forced to temporarily leave export markets, such market churn would involve repeatedly incurring the sunk costs of export market entry (Van Biesebroeck et al. 2016). Export sales even have a direct value as countercyclical policy through sales diversification (Hirsch and Lev 1971).

Dhingra and Morrow (2014) highlight that the amount of entry generated in a competitive market is only socially optimal in very special cases. In more general settings, benefits associating with increased entry provide additional reasons for export promotion. More entry can boost price competition and stronger selection on

productivity. This is particularly attractive in an international setting as it improves the comparative advantage of a country's exporters (Pflüger and Suedekum 2013). If foreign demand is uncertain and firms are risk averse, small non-exporters will underinvest in market exploration. Compared to the social optimum in Albornoz et al. (2012), there would be too little export market entry and exporters would expand too slowly into new export destinations. Swenson (2007) shows that the presence of exporters raises the likelihood that firms located nearby also start exporting. Learning about foreign demand is one possible channel for such a positive externality, again leading to suboptimal entry in a competitive market.

For Belgian firms, most of these benefits will be more pronounced for export sales outside the EU. The information network of the export promotion agency is more valuable in countries where regulations differ more and the cost of acquiring the information rises with geographic and cultural distance. Business cycles and consumer demand are less synchronized with countries outside the EU.

2.2 Evidence on effectiveness

Van Biesebroeck et al. (2016) provides an overview of what we know already about the effectiveness of export promotion. At the aggregate level, effects are ambiguous. International diplomacy, i.e. trade missions or diplomatic offices, might or might not work. Rose (2007) and Cassey (2014) find positive effects on national or U.S. states' bilateral exports, but comparable effects for Canadian trade missions in Head and Ries (2010) disappear once they control for country-pair fixed effects. Raising the budget of a country's export promotion agency, might or might not work. Lederman et al. (2010) find a positive effect on aggregate exports exploiting cross-country variation on a panel of 103 countries, while Bernard and Jensen (2004) find no link between the budgets of trade promotion offices of U.S. states and the likelihood that firms in a state enter the export market.

In contrast, studies that use exports of individual firms as dependent variable and a firm-level indicator for export promotion support as explanatory variable invariably find positive effects, see for example Volpe Martincus and Carballo (2008). Effects are especially strong for entry into new product or destination markets (Volpe Martincus and Carballo 2010a), for small firms (Volpe Martincus and Carballo 2010), and for differentiated products (Volpe Martincus and Carballo 2012).

Positive effects are also documented at the intensive margin, i.e. increased exports in markets already served, for exporters in developed countries, see Van Biesebroeck, Yu, and Chen (2015) for Canada and Mion and Muûls (2015) for the U.K. Supported exporters are also more likely to survive on export markets (Mion and Muûls 2015, Van Biesebroeck et al. 2016). Finally, Cadot et al. (2015) find that benefits from these programs decay rapidly after support ends, which is consistent with stronger effects for firms receiving multiple services (Van Biesebroeck et al. 2015) or firms participating in several programs simultaneously (Volpe Martincus and Carballo 2010b).

These studies use various ways of implementing the selection-on-observables assumption to deal with self-selection into export promotion support. Alternatively, Munch and Schaur (2015) observe whether the firm contacted the Danish Trade Council or whether the agency took the initiative, in which case there is no self-selection by construction. Endogenous treatment might still be a concern as the Trade Council could observe more information than the econometrician, but conditioning on observables should be be more powerful. They find that the program is equally effective (for small firms) irrespective of who initiated the support. The randomized control trial of Atkin et al. (2016) has even cleaner identification as treatment status is assigned randomly. The positive effects they find on subsequent quality and productivity performance cannot be the result of self-selection.

Other studies use information on firm-level support from government programs with different policy objectives, but which indirectly can help firms succeed on export markets, for example by lowering variable costs. Girma, Gong, Görg, and Yu (2009) and Girma, Görg, and Wagner (2009) evaluate whether production subsidies in China and Germany affect firms' export status. In both cases they find significant effects at the intensive margin, firms export more, but it does not seem to compel non-exporters to enter the export market. Görg, Henry, and Strobl (2008) find similar effects for a subsidy program in Ireland intended to help firms invest in technology, training or physical capital.

2.3 Organization in Belgium

Export promotion in Belgium is organized in three regional, government-funded agencies. We use information from the Flemish agency, *Flanders Investment &*

Trade (FIT). It serves firms located in Flanders or Brussels which together account for approximately 80% of Belgian goods trade. As described in the data section, we are able to identify, and exclude from the sample, firms receiving support from *Brussels Invest & Export*, the agency only serving firms from the Brussels-Capital region.[7] If some firms in our sample received support from the Walloon agency through a subsidiary located in Wallonia, it will mitigate the effects we estimate.

FIT has its headquarters in Brussels, regional offices in the five provincial capitals and field offices in approximately 90 locations abroad. Its total budget in 2009 was EUR 56.3 million. Most of it, 86 percent, came directly from the Flemish government, with fee income from services covering around EUR 3 million. Its largest expense is maintaining the network of offices, including the corresponding personnel costs, in Belgium and abroad. Approximately one quarter of its budget is spent on subsidies for firms which are directly linked to a business trip, participation in a fair, or foreign market prospection. The average subsidy is approximately EUR 12,000 per request and large firms are excluded from all but one subsidy category (setting up an export prospecting office abroad).

FIT provided detailed information on the nature and intensity of interactions with each of its clients, potential exporters located in Flanders or Brussels. This includes information on four different promotion instruments: question, action, subsidy, and communication. The category 'question' comprises requests for information that involve some research by FIT employees (located domestically or abroad). 'Action' includes events that FIT organizes to help firms access markets abroad, such as support to participate in a trade fair abroad, organize prospection tours, or giving a seminar in Brussels. 'Subsidy' includes financial incentives given to individual companies which are targeted mostly to small and medium-sized firms (SMEs). 'Communication' is the leftover category, which is chosen in the system when the other three categories do not fit. For each of the four promotion instruments we observe the frequency of usage by each firm between 2002 and 2012, but not which export destination the firm was targeting. In the analysis we will exploit that firms participating in an action or receiving a subsidy use FIT services more intensively.

Belgian SMEs benefit from a number of related policies that support their inter-

[7]We obtained comparable support information from the Brussels agency, but did not use it in the analysis as the sample period is shorter and *BIE* focuses primarily on trade in services for which we lack detailed information.

nationalization efforts. Long-run effects on trade are more likely when export promotion strategies are complemented with innovation support (Altomonte et al. 2013). The Flemish government agency *Agentschap Innoveren & Ondernemen* supports growth, entrepreneurship, and innovation of SMEs with information and subsidies (for an assessment see Decramer and Vanormelingen, 2016). At the national level, the Belgian government operates the *Delcredere* agency, which guarantees export credit and provides default insurance (for an assessment see Abraham and Dewit, 2000). At the EU level, the Horizon 2020 initiative provides funds for research and industrial innovation and the COSME program promotes entrepreneurship and improves the business environment for SMEs by providing access to finance and funding the knowledge provider *Enterprise Europe Network*.

3 Data

As our empirical strategy has been shaped by the available information, we first describe our data set. It covers the period from 2006 to 2010 and was constructed by merging information from three databases. It is based on the balance sheet information of all Belgian firms, irrespective of firm size,[8] which is supplemented with indicators of export promotion support from FIT and with export status into various regions abroad from the official Belgian trade-transactions records, both at the firm-year level. Given that all three data sources use the same official ID to identify firms, merging the different pieces of information was seamless. We briefly describe each data set and the variables we extract from them.

All non-financial firms in Belgium have to file annual accounts with the Central Balance Sheet Office of the National Bank of Belgium (NBB).[9] We observe a measure of firm size in terms of full time equivalent employees, total wage bill, tangible assets (estates, buildings, machinery, and fleet), a proxy for labor productivity,[10] founding

[8]Only a few types of firms are exempt from this reporting requirement. They have ownership forms that are rather uncommon for firms with production activities, such as partnerships or firms with unlimited liability. In a few instances submitted accounts did not pass a quality standards and firms are excluded from the official database.

[9]Smaller firms file a simplified balance without profit and loss statement, but there will be a firm record even for them.

[10]For small firms, which do not report sales, the measure uses a proxy for value added constructed based on the observable information (employment, industry, etc.).

year, and line of business according to the NACE revision 2 industry code. We only work with this limited set of control variables as small firms report very little information and we especially want to avoid dropping them. We focus on firms most likely to export goods, in particular firms in NACE sections C (manufacturing) and G (wholesale and retail trade). We exclude non-profit organizations, firms with fewer than one employee, and use unconsolidated accounts to avoid double counting.

Merchandise trade information for each firm—broken down by year, destination, and product—is also available at the NBB. We use information on exports to countries within and outside the EU between 2003 and 2010. Importantly, both types of trade flows are subject to different reporting thresholds. Intra-EU exports are collected through the Intrastat inquiry. From 2006 onwards, they only show up in the database if exports of a firm to all EU member states combined total at least EUR 1 million for the year. If this threshold is met, all trade flows are reported at the product-destination level. Information on extra-EU exports is collected by Belgian customs. There is a reporting threshold for individual transactions which has been constant at either a value of EUR 1,000 or a weight of 1,000 kg.

Information from 2003 to 2005 is used to ascertain that firms did not yet export before the start of the sample period. From 2006 onwards, we construct for each firm a set of export status indicators for different regions, classifying export destinations into several groups which are detailed in Table A.1 in the Appendix. These export status dummies are used as dependent variables. The analysis focuses entirely on the extra-EU export status, in which case only firms with no prior exports outside of the EU are included in the sample. We sometimes split this sample into firms with no export experience anywhere and firms that have exported within the EU.

From the export promotion agency FIT, we received the full list of clients for the period 2000-2010 and information on the intensity of assistance provided to each. Information up to 2005 is again used to detect firms already receiving support prior to 2006 which are dropped from the sample. Many client firms engage repeatedly with FIT and we observe both the frequency and the type of assistance they receive, classified in four different categories: action, question, communication and subsidy. The export promotion data was collapsed to the firm-year level and merged with the other two databases.

We obtained similar information on export promotion assistance from *Brussels*

Invest & Export, but the length of that sample was too short to incorporate those firms in the analysis. Some firms located in Flanders benefit from support by the Brussels agency, and vice versa, as some firms have branches in both regions. We cross-checked both databases and excluded Flemish firms that ever received assistance from *Brussels Invest & Export*. We left unsupported Brussels firms in the sample as they would have been eligible for FIT support.[11]

The first two columns of Table 1 show descriptive statistics for the estimating sample covering the 2006-2010 period which is obtained by merging the three databases. All observations are for firms with no export experience or FIT support up to 2005. Approximately 2.2% of firm-year observations are supported by FIT. These firms tend to be much larger, employing on average 56 versus 14 employees, and pay higher wages. Differences in terms of capital per worker and firm age are much smaller. The next two columns show comparable statistics on the (sub-)sample that only contains firm-year observations of firms that still have no export experience anywhere at the sample year t. It drops firm-year observations in all years after they have entered any export market. This eliminates one third of the original sample and almost three quarters of all firm-year observations for FIT clients. The lower firm size and average wage in columns (3) and (4) is consistent with (repeated) exporters being larger and paying higher wages, as documented in the literature. This is true both for supported and unsupported firms.

[Table 1 approximately here]

Table 2 shows the intensity of use of different types of export promotion services for all FIT clients in the estimation sample. Among all firms with no export experience outside of the EU, only 708 unique firms (1,025 firm-year observations) received export promotion support.[12] It highlights that many firms using FIT services are continuous exporters or repeat users, which we both exclude from the analysis. On average, even the maintained clients worked with FIT more than five times per year and many firms even a lot more intensively. Communication is the most popular

[11] We excluded all firms located in Wallonia, the third region of Belgium, as we do not have access to information on export promotion by *AWEX*, the Walloon agency.

[12] The sample in Table 2 excludes all firm-year observations with any extra-EU export experience and it is used in most regressions. Some of these observations are still included in Table 1, but only used when estimating effects on intra-EU export market entry, as reported in Table A.3.

support type and most firms used services in more than one category. The types of services used by firms with no export experience anywhere is broadly similar.

[Table 2 approximately here]

4 Empirical strategy

Our objective is to evaluate the impact of export promotion activities, the treatment variable, on the likelihood that a supported firm enters the export market, a dummy dependent variable. Throughout, we focus attention on extra-EU exporting and look for an effect of support with a one year lag as effects are likely to show up with some delay. We also expect an immediate effect to be more susceptible to reverse causality. As a robustness check we also report results for support in the last two years.

Firms are only included in the sample if they had no export experience and were not yet FIT clients at the start of the sample period. Firms are removed from the sample after they enter the export market, as no new information will be revealed afterwards. They are also removed two years after they first become a FIT client, as the link between export market entry and the export promotion support becomes more tenuous as time passes.

The propensity of export market entry by new FIT clients is compared to the propensity for the overall firm population. Even though all Flemish firms are eligible, only a small fraction takes advantage of these services. The main empirical challenge comes from firms self-selecting into export promotion. It seems unlikely that the probability of entering the export market in the absence of support by FIT would be the same for control firms and for firms actually seeking out support. If the latter were already more likely to start exporting, the treatment effect estimate would be biased upward.

We follow a common identification strategy from the program evaluation literature by conditioning on a set of observables and invoking a conditional independence assumption (Imbens and Wooldridge 2009). In particular, we assume that the expected probability a firm enters the export market in the absence of treatment would have been the same for firms that were actually supported and for unsupported firms, once we condition on a set of observable, firm-specific and potentially

time-varying characteristics. In the potential outcome notation, we assume that $E[y^0|X, d = 1] = E[y^0|X, d = 0]$.[13] Combined with the law of iterated expectations, $E[\cdot] = E_X\{E[\cdot|X]\}$, this is all we need to estimate the average treatment effect on treated firms (ATT), defined as $E[y^1 - y^0|d = 1]$.

In practice, there are different ways to condition on the observables. In the baseline results, we simply include the firm characteristics in the regression (Wooldridge 2010). As we are dealing with a limited dependent variable, the probability that firm i exports to region r at time t is estimated using a probit model:

$$P(y_{rit} = 1|\mathbf{X}_{it}, d_{it}) \quad = \quad \Phi\left(X_{it}^{'}\beta + \delta d_{it}\right). \tag{1}$$

Φ represents the standard normal cumulative distribution function, X denote the vector of covariates we condition on, and d_{it} is a binary variable indicating whether firm i received export promotion in the previous or current year or not. δ is the coefficient of interest. We estimate this model for export entry in the different regions r, listed in Table A.1.

As robustness check, we also estimated a linear probability model that allows for sector-year fixed effects or weights based on the estimated propensity score of treatment.[14] Such weighting scheme has a double-robust property, i.e. it leads to consistent estimates if either the selection equation or the performance variable is correctly specified (Cadot et al. 2015; Van Biesebroeck et al. 2015). Researchers often include firm-fixed effects (Van Biesebroeck et al. 2016) or use a matching difference-in-differences estimator (Volpe Martincus and Carballo 2008) when evaluating the effect on continuous measures of export performance, but this is not helpful in the current setting. Export market entry is a once in a lifetime event for most firms and we cannot hold the impact of an unobservable factor constant.

Given the differences between supported and control firms, one might worry that the selection-on-observables assumption—which is fundamentally untestable—is not

[13] In this notation, $E[y]$ is the probability of export market entry, d is an observed treatment indicator, X is a vector of control variables, and the superscripts 0 and 1 indicate the potential outcomes under either treatment regime for a given firm. Naturally, if $d = 1$ we do not observe y^0 and we need to estimate this counterfactual object from a group of firms with $d = 0$.

[14] Treated firms receive a weight of one, whereas firms in the control group receive a weight that is increasing in their probability of treatment: $w_i = \frac{\hat{p}}{1-\hat{p}}$ with $\hat{p}$ the propensity score obtained from the same probit regression used in the balancing test.

satisfied. We pursue two strategies to make treatment and control groups more similar and the assumption more likely to hold.

First, we exploit that firms benefit from different types of promotion activities which are likely to have differential effects. Among the four possible services, 'question' or 'communication' are minimal forms of support. They do not require a large investment or time commitment by the agency or the firm and we expect the average effect on the probability of export market entry to be limited. Firms receiving only this form of support can be used as control firms for firms receiving more intense support in a regression that only includes supported firms. The treatment indicator then becomes a dummy variable for firms receiving a 'subsidy' in addition to a 'question or communication', while the indicator is zero for firms only receiving the latter. We run similar regressions for firms participating in an 'action' or both a 'subsidy and action'.

Second, we focus on a sub-sample where treated and control firms are more similar. In particular, we allow the effect of export promotion to differ by firm size using three size categories: 1-5 employees, 5-20 employees, or 20+ employees.[15] The small size of the Belgian market makes exporting a necessary strategy for all firms of a certain size, while it is more of a discrete choice for small firms. We expect all firms with 20 or more employees to be looking actively for export opportunities, and self-selection into export promotion less likely to identifying a unique group of ambitious firms on this sub-sample.

A similar analysis includes only firms with positive exports within the EU single market in the regression. Again, treatment and control firms will be much more similar in this sub-sample as all firms already sell outside the narrow Belgian market and have attained a minimal size. It does shift the nature of the investigation to whether export promotion is helpful in penetrating more distant markets. We argue, however, that exporting within the EU is fundamentally different and more similar to within-country sales for a large country. Since the 1992 Single Market program, most regulations, product standards, and tax treatment have been harmonized within the EU. Extra-EU export market entry does seem to be the more interesting and more internationally comparable export dimension for Belgian firms.

[15]Employment is measured in full-time equivalent workers as a continuous variable. The actual size categories are 1-5 employees, 5.01-20, and 20.01+.

5 Results

We first present benchmark estimates for the effect of export promotion on the likelihood a firm enters the export market. In separate sub-sections we then show effects exploiting the type of support service provided, the robustness to alternative estimators, and the heterogeneity of effects.

Benchmark estimates

To condition on differences between treated and control firms, we use the same set of controls throughout: quadratic functions of age and employment, capital and wage per worker, labor productivity, and a manufacturing dummy.[16] We first verify whether supported firms show a similar pre-treatment growth trajectory, by matching each with a control firm using nearest neighbor matching based on the propensity score. Figure 1 shows the evolution of average employment for both groups of firms in logs in panel (a) and in levels in panel (b). In the year of treatment both groups show the same average employment, as expected because this variable is included in the estimation of the propensity score. Prior to this time, the trajectories are highly similar for both groups. Both supported and control firms tend to be younger and smaller than the average firm and still show a positive average growth rate.

[Figure 1 approximately here]

The first set of estimates, reported in Table 3, measure the effect of export promotion support on the probability of export market entry in different regions outside of the EU. To facilitate interpretation, we report the marginal effects for the probit estimates of equation (1), evaluated at the mean. Each coefficient in Table 3 is estimated using a separate regression. The results in column (1) are based on slightly varying samples that include all firms with no previously export experience to the region considered. In the next two columns, we split these samples in two separate groups. Results in column (2) are for firms with no export experience anywhere and this sample is the same in all rows. Results in column (3) are for firms with

[16] Ideally, we would also like to control for sales growth prior to export promotion, but this information is not reported by smaller firms, which we especially want to keep in the sample.

positive observed intra-EU exports, but not to the extra-EU region considered in the respective row.

[Table 3 approximately here]

The estimate of 0.103 in the first row and column of Table 3 implies that FIT support raises the likelihood of export market entry to any of the countries outside of the EU by 10.3 percentage points. It is significantly different from zero using robust standard errors and the magnitude should be compared to an unconditional entry probability of 3.4 percent (reported in square brackets). Effects are estimated lower if we measure them separately on the groups of OECD and non-OECD countries, at respectively 6.4 and 7.4 percentage points, but they are not statistically different from each other. The commensurate decline in the unconditional entry probability, implies that export promotion provides a comparable boost to the probability of export market entry in relative terms. For even smaller sub-sets of countries, respectively the two closest OECD members Switzerland and Norway and the eight G20 countries not in the OECD, effects are estimated even lower, but remain a similar multiple of approximately three times the unconditional entry probability.

These estimates are remarkably high and are also estimated remarkably precisely. The constancy of the effects in relative terms when we focus on entry in smaller sub-regions, while many supported firms will not have focused on entry in those markets, suggests that effects would be even larger if we had some way of measuring the target destination(s) of the promotion activities. An alternative explanation is that the absorptive capacity of the firm plays a role. FIT support is estimated to be equally effective to help a firm enter close by and more developed OECD countries as more distant and poorer markets. It might be the case that firms only request support when they have the necessary capabilities to tackle those more challenging destinations.

In the second column of Table 3 we use a more restrictive sample and exclude all firms with any prior export experience anywhere. It reduces the sample by more than one quarter in some cases and leads to uniformly lower point estimates, but only in the two sub-regions of non-OECD countries are the estimates in column (1) and (2) significantly different. The higher estimates in column (3), for firms with confirmed intra-EU export experience, is the direct counterpart to this. Firms with

some export experience seem to be more responsive. Note that strictly speaking only the estimates in column (2) focus on a pure firm extensive margin of export market entry as only those firms are not yet exporting elsewhere.[17]

A final pattern to note is that the relative increase in the export market entry probability is several times smaller for the estimates in column (3) compared to column (1). While the marginal effect of support is slightly larger for this group of, on average, larger firms with proven success trading intra-EU, the unconditional entry probability shows an even larger increase. We expect supported and control firms to be much more similar on this sample of pre-selected firms. Self-selection into export promotion is less likely to be an important factor as almost 10% of these firms enter the extra-EU export market anyway the next year, irrespective of support status. Particularly for destinations outside of the OECD, the marginal effects are now estimated smaller than the unconditional probability, but remain unambiguously larger than zero. We estimate that the average control firm has a 7.7% probability of entering a non-OECD export market, while this is 15.3% for supported firms.

For the above results to estimate the average treatment effect, the control variables need to have common support for both types of firms. Otherwise it would be impossible to replace the conditional (on X) expectation of the export probability of treated firms with that of untreated firms and the expectation $E_X\{E[y^0|d=1,X\}$ would not be defined. We check the common support assumption using a balancing test. Results in Table A.2 in the Appendix show that in our two main samples the p-value of the test statistic is above 5% in all but a few cases. For no characteristic is the average p-value remotely close to the 5% significance level, the lowest average across all variables and samples being 34%.

In Table A.3 in the Appendix, we report the estimated increase in the probability of export market entry within the EU, first in general and then for several subregions. As such entry is only recorded when firms reach the EUR 1 million reporting threshold (for total intra-EU trade), these estimates measure a combined response at the intensive and extensive margins. For firms with no recorded export experience

[17]Even some of these firms will be exporting already, but remain below the EUR 1 million reporting threshold for intra-EU trade. Prior to 2006, the first year of the sample, the reporting threshold was only EUR 250,000 and we use information on the pre-sample period to also identify these intra-EU exporters.

anywhere, we estimate a marginal effect of 0.9 percentage point, which is three times as high as the unconditional probability of becoming a new intra-EU exporter.[18] The effects are estimated positively and significantly different from zero for each of three sub-regions that are increasingly distant from Belgium. The relative boost to the entry probability is weakest in the four neighboring countries that account for almost half of all Belgian exports. This is intuitive as FIT is likely to provide the least value added to help penetrate these nearby markets.

Two sets of results in Table A.3 are informative for the earlier baseline estimates. First, estimates in column (3) condition on prior exporting to neighboring countries, but not to other EU member states. Exports for these firms already exceed the reporting threshold and the point estimates now measure only an effect of export promotion on the market extensive margin. They are an order of magnitude larger than the results for non-exporters in column (2), but not as large as the effects at the firm extensive margin we estimated based on extra-EU trade. Second, applying the EUR 1 million reporting threshold also on firms' extra-EU trade lowers the point estimates we obtained earlier, as shown in the last line. Their magnitude is now comparable to those reported for intra-EU export market entry.[19]

Differentiating by type of support service

We definitely expect supported and control firms to be systematically different in the full sample. Conditioning on a set of observables will make both types of firms more comparable, but the selection-on-observables assumption might still not be satisfied. To make supported and control firms even more comparable, the next set of results only includes FIT clients in the regressions. Control firms are now FIT clients that received the weakest form of support, i.e. only got an answer to a 'question' (or 'communication', the residual type of support which we classified into the same category). Treated firms received more extensive forms of support,

[18]Note that the relative size of the point estimate on the export promotion dummy, relative to the unconditional probability of export market entry probability, is of a similar magnitude intra-EU and extra-EU. The program does not seem to differ widely in terms of effectiveness within or outside the EU.

[19]Strictly enforcing the reporting threshold on intra-EU trade also lowers those point estimates on intra-EU market entry somewhat, for example from 0.017 to 0.012 in the first line and column of Table A.3, making the estimates even more similar.

i.e. they also benefited from an 'action' or a 'subsidy' or both.

In Table 4, we first look at the increase in extra-EU export probability for firms participating in a FIT action. The first line shows regression results where treated firms benefit from an action and question and nothing else. For the results in the second line, treated firms benefitted at a minimum from an action and possibly, but not necessarily, also a subsidy and/or question. All six point estimates are positive, but none is statistically significant. To some extent, this is likely due to the vastly smaller sample sizes. The estimate of 0.042 in column (1) is based on the largest sample, with 750 observations in total, and has a t-statistic of 1.6, making it almost statistically significant. It is nevertheless also apparent that all point estimates are notably smaller than the 10 percentage point effect reported in Table 3, even though the unconditional entry probabilities are much larger. There is no strong evidence that actions lead to better results than questions.

[Table 4 approximately here]

The effects are a lot more supportive of a positive effect for firms that received a subsidy. The agency itself ranks the importance of its different activities in the following order: action, question, subsidy, and then communication (other). The estimates, however, show a strongly positive and statistically significant effect for firms benefiting from a subsidy and question compared to firms only benefiting from a question. Among firms with no previous export experience, the probability of export market entry is 12.0% for control firms, but 7.7 percentage points higher, or 19.7%, for treated firms.[20]

When we focus on firms receiving at least a subsidy and possibly additional services, results in the fourth line of Table 4, the estimated effects are lower, but still significant in two of the three cases. This pattern is repeated for the fifth set of results for firms benefitting from both an action and subsidy and the last set of results for firms benefitting from an action or a subsidy. Providing a direct subsidy to potential exporters seems to be remarkably effective, even though it is a relatively cheap policy. Note that these subsidies are quite limited, averaging approximately

[20]The probability of treatment is much higher on this select sample, compared to the full samples used in Table 3, e.g. it is 28.5% in the case discussed. As a result, the probability of export market entry for control firms (12.0%) is much lower than the unconditional probability (15.5%).

EUR 12,000 per request. Usually they are a contribution to the cost of a business trip to attend a fair, meet potential distributors, or do market prospecting.

Robustness checks

Another way to verify the robustness of the estimated effects is to implement the conditioning on observables in different ways. The benchmark results employed a simple probit regression that included the relevant control variables. The results in Table 5 show that the findings are robust to using alternative estimation methods and using different timing assumptions on the treatment variable. In the first row we repeat the relevant estimates from Tables 3 and 4 to facilitate comparison.

[Table 5 approximately here]

Including sector-year fixed effects in a linear probability model leads to higher point estimates which now directly measure the marginal effects. This is especially the case in the sub-sample that focuses on firms receiving subsidies. Additionally adding firm-fixed effects in the regression more than triples the point estimate for actions, but it remains insignificant. The other two effects are estimated somewhat smaller and only the effect on the full sample remains significant. As discussed earlier, possible self-selection on a time-varying unobservable makes the firm-fixed effects suspect in our setting. The estimates using the double-robust weighting scheme produces results similar to the baseline estimates, but an even larger effect for subsidies. Finally, we also report results for a Poisson model that directly estimates the impact of export promotion on the incidence rate. The estimates of 4.06, 1.19 and 1.63 imply a probability of exporting that is, respectively, 306%, 19%, and 63% higher for supported firms than for the control group. These are comparable to the implied increases in relative export probability obtained in the benchmark regressions.

The next set of results indicate that effects tend to be larger if we switch the treatment indicator to one if the firm was supported either one or two years ago. The increase is by far the largest in the case of actions and the effect even becomes statistically significant. This is intuitive as visiting a trade fair abroad or participating in a series of seminars organized by FIT is more likely to have a delayed effect than receiving answers to questions, for example.

Finally, we conduct a type of placebo test by estimating whether a one year lead of the treatment indicator, rather than a lag, has an effect on export market entry. This explanatory variable now turns to one the year before a firm receives support. For the two regressions on the sub-sample of treated firms, both effects are estimated close to zero and are entirely insignificant. Firms participating in an action or receiving a subsidy only the following year, are not more likely to start exporting right now than firms that will only have a question answered (the following year). However, the point estimate on the full sample in column (1) while smaller than the baseline effect remains positive and even statistically significant. This is in spite of these firms not having received any support yet. It suggests that at least part of the original effect is due to self-selection of firms. They are actively trying to enter the export market when they approach FIT and even the year before they receive support some of them are already more likely to succeed than the average firm.[21]

Heterogeneous effects

Results in Table 6 illustrate a few dimensions along which export promotion effects might be heterogenous. In turn, we interact the treatment indicator with dummies for firm size, for a firm's position in the wage distribution, or in the distribution of the capital-labor ratio. The size dummies are defined in absolute terms, while the wage and capital-intensity indicators classify firms in the bottom, middle, or top tercile of its own industry.

[Table 6 approximately here]

Some of the earlier literature, e.g. Volpe Martincus and Carballo (2010), found the effect of export promotion on the volume of exports to be monotonically decreasing with firm size. This pattern carries over to the likelihood of export market entry. The effect on firms with fewer than five employees is estimated more than three times as large as the effect on firms with more than twenty employees. This differential marginal effect is even more striking given the inverse ranking in the unconditional entry probability. For the smallest firms, the marginal effect is almost six times as

[21] Note that the unconditional probability is somewhat larger on this reduced sample making the decline in the relative effect somewhat larger than the decline in the reported marginal effect.

large as the baseline probability. For the largest firms, the boost is less than two thirds of the baseline probability. Effects for middle-sized firms with five to twenty employees are intermediate.

It is possible that export support services are much more effective for small firms that have a more difficult time collecting the necessary information on foreign markets and regulations on their own. However, it is also likely that small firms that approach FIT to attempt entering the extra-EU export market are uniquely well placed compared to other small firms. Self-selection of firms with better than average export prospects seems especially likely on this sub-sample. In contrast, large firms are generally more likely to export. Even control firms that did not receive support are likely to pursue export opportunities on their own. The fact that even for larger firms the effects remain positive and statistically significant makes it more plausible that self-selection is not the entire explanation for the estimated export promotion effects. Moreover, the point estimate for the largest firms becomes insignificant when we apply the earlier placebo test and use a leading indicator of future export market support.

The systematic pattern in the effects by firm size contrast with less pronounced differences by wage levels or capital intensity. There is no obvious reason to expect a differential importance of self-selection across these groups and different effects would now solely be due to differential effectiveness. Firms in the lower tercile of the wage distribution show a stronger marginal effect of export promotion support, even though the baseline probability is lower.[22] While the difference is not huge, cost-competitiveness seems to play a role in foreign market entry. A firm's relative capital-intensity, on the other hand, shows no relationship with the effectiveness of export promotion.

6 Discussion of aggregate effects

The earlier results established that export support makes it more likely that new firms enter the export market. We now assess the cost-benefit balance and aggregate implications along a number of dimensions.

[22]The marginal effects on the 2nd and 3rd decile are not statistically different and in absolute magnitude they represent similar multiples of the respective baseline entry probabilities.

To provide a rough idea of the overall magnitude of the program's effect, we perform a back-of-the-envelope calculation focusing on direct subsidies, the most effective component of the export promotion program. In 2009 the value of approved subsidies amounted to EUR 13.5 million. EUR 4.7 million of this went directly to individual firms, with the rest going to larger projects that involved many enterprises, generally existing exporters (FIT 2009). Even most of the individual subsidies go to firms which are repeat users of FIT services, which are more numerous, but excluded from our analysis. Assuming that subsidies are split between new and existing clients in proportion to the number of firms in both groups, the effects we estimated are driven by an annual subsidy outlay of EUR 1.49 million.

On average, over the five years of our sample period, new extra-EU exporters in Flanders generated export sales of EUR 807 million in their entry year, but only a small proportion of these firms received FIT support. Even for FIT clients, we only attribute a fraction of the new exports to the program, based on the estimated increase in export probability relative to the baseline probability (taken from the benchmark results in Table 3). Combining these two ratios, we estimate that EUR 28.6 million of new exports are a direct consequence of FIT support. Pro-rated by the fraction of clients receiving subsidies, at least EUR 12 million of this can be attributed to the subsidy part of the program. This only counts exports in the entry year itself. By the second year on the export market, total extra-EU export sales for this same group of firms grows on average to EUR 40.8 million, but it starts declining afterwards.[23]

In sum, EUR 1.49 million in annual subsidies can be linked to EUR 12 million of new export sales in the first year new exporters start selling abroad and EUR 40.8 million the next year. On a per-firm basis, it amounts to an average subsidy of EUR 12,300 leading to exports of EUR 438,000 in the first two years, a multiple of 35.

Export market entry might have positive long-term effects, but it would be even more important if supported firms would raise production and employment. In

[23]To put these aggregates in perspective, the starting point of EUR 807 million represent approximately 1% of total extra-EU exports for Belgium and slightly more than 0.25% of worldwide exports. A similar calculation based on the intensive margin increase in exports for FIT clients that received subsidies, a group excluded from the current calculations, generated an estimated average annual increase in exports of EUR 80.4 million, counting both intra and extra-EU exports in this case.

Table 7 we report similarly estimated treatment effects using as dependent variables several measures of employment growth or survival indicators. We normalized the control variables to have mean zero in the sample, such that the constant in the regression indicates the average change across all firms.

None of the three variables measuring the change in employment—in absolute terms, in log changes, or in percentage changes—show a significant effect for supported firms that started exporting. Supported firms overall show positive employment growth for all three measures, but self-selection into export support is a plausible explanation. FIT clients that actually entered the export market do not show stronger employment growth than FIT clients failing to do so. The point estimates in columns (2) and (3) for relative changes in employment are quite large, at 5.1% and 4.1%, but estimated much less precisely than the effect for all supported firms. The sample of supported new exporters might simply be too small (around 300 firms per year) and the sample period considered too short (only 1 year after export market entry) to pick up an effect.

Point estimates in columns (4) and (5) for the likelihood that firms survive one or two years beyond the year we measured their export market entry are both positive, but again not statistically significant. The standard errors for the small group of supported firms that start exporting is again more than twice as large as for supported firms generally. Only the last column shows a significant effect. Employment growth in this case is measured as in the literature on labor market churn as $(L_{t+1} - L_{t-1})/\overline{L}$ with $\overline{L} = (L_{t+1} + L_{t-1})/2$ and using a 0 value for L_{t+1} for firms that exit. As a result, this ratio captures both the possible effect on employment growth and the survival probability. Only when both effects are combined, representing exit by a growth rate of -2, do we find a significant positive effect for supported firms entering the export market.

Bernard et al. (2012) have highlighted the existence of carry-along traders that export goods they did not produce themselves. Some recorded export market entry might thus not represent new exports, but merely pick up the conversion of indirect exporters into direct exporters. To evaluate whether such substitution is common, we use product-level trade statistics and regress the volume of exports for existing exporters on the volume of exports by firms that newly entered the export market. We run this regression using the narrow 8-digit (HS)-country-year observations as unit of analysis and include country-year and product-year fixed effects to control

for changes in overall trend growth rates.

Results in Table A.4 in the Appendix suggest that exports of existing exporters increase when new exporters enter their product-country market. Rather than substituting some of their export volume, we find that they increase together. Effects are similar in magnitude, and still positive, if we distinguish between entry of supported or unsupported firms. They are much lower when we control for the lagged value of exports which suggests that unobserved, but serially correlated demand shocks are (partially) responsible for the positive effects. If we estimate the regression by adding a 1 to export flows before taking logarithms, such that zero trade flows do not drop out, and we omit country-product pairs that never see a new exporter over the sample period, we obtain the lowest point estimates. In this case they are very close to zero and entirely insignificant for both the export volumes of supported and unsupported new exporters.

The last results, reported in Table A.5 in the Appendix, provide some evidence of weak spillover effects within 4-digit (NACE) industries. We added in equation (1) two additional variables: the logarithm of the number of other supported firms in the firm's industry (plus 1), and the logarithm of the number of other supported firms that started exporting (plus 1). The results indicate that this last variable raises the probability of export market entry for all firms in the industry by a small amount. The results for any type of support in column (1) imply an increase in the marginal probability of export market entry of 0.6 percentage points if another supported firm in the industry entered the export market. This is almost 20 times smaller than the direct effect, but of course it applies to all other firms in the (narrowly defined) industry. This increase in entry probability will be higher if there are more supported export market entrants. While we found direct effects to be much stronger for subsidies than for actions, the spillover effects are of a similar magnitude for both types of support, which is not implausible.

These last two findings should be interpreted with caution as unobservable demand shocks might bias the estimates upward. Therefore we only reported those results in the Appendix. At a minimum they suggest that substitution from existing exports should not be a big concern and that the presence of spillover effects might make the export promotion program even more valuable than implied by the direct effects.

7 Conclusion

The prior literature provided evidence for two benefits of export promotion programs: (1) they help existing exporters raise their export volumes, mostly by penetrating new markets, and (2) they help existing exporters survive on the export market, in particular when an export destination suffers a recession or financial crisis. We now added a third benefit to this list: (3) they are able to help non-exporters enter the export market for the first time.

This third effect has received little attention in the literature, primarily because of data constraints. The Belgian data is uniquely suited for this task as all three administrative data sources we combined use the same firm identifier. It allowed us to comprehensively link the universe of Belgian firms to a complete record of their export activities as well as information on firm-level export promotion support. In particular, we observe and can link all firms regardless of size and export status which is important as the firms most likely to enjoy an effect at the extensive margin tend to be small.

Due to the high reporting threshold for intra-EU trade, we focus only on export market entry outside the EU. This dimension of Flemish firms' export decisions is likely to be more comparable to exporting in other countries (outside the EU) than transactions within the EU single market which almost resemble national sales. A disadvantage is that some firms might already have acquired limited, but relevant experience selling within the EU, unobservable to us.

On our sample of mostly small firms, self-selection of potential export market entrants into export promotion support is likely to be an even more severe problem than in a sample of existing exporters. We tackle it in a variety of ways. We condition on a set of observable characteristics and invoke the usual selection-on-observables assumption. We show the results are robust to using various econometric estimators that implement the conditioning on observables in different ways. We still find positive and significant effects on sub-samples where supported and control firms are more comparable and self-selection is less likely to be systematic, i.e. for larger firms and for firms with observed prior intra-EU export experience. We show that firms receiving more extensive forms of support, especially firms receiving a subsidy, are more likely to start exporting than firms receiving more limited, but

still positive support.

We report consistently positive effects of the Flemish export promotion program in terms of guiding firms onto the export market. We even find weakly positive effects on employment growth if we incorporate the effect on firm survival. Effects are particularly strong for the direct subsidies that potential exporters can apply for. That part of the program shows the largest effects in absolute value, especially in combination with actions, and appears to be very cost effective.

Appendix: Supporting Tables

Table A.1 lists the country composition of the different regions used in the analysis. Worldwide exports are divided into two mutually exclusive regions: EU27 and extra-EU. Export flows to either region are collected with different inclusion thresholds. The EU27 region is further sub-divided into three mutually exclusive regions. The extra-EU region is sub-divided in OECD and non-OECD countries (for which we do not provide an exhaustive list, but it contains all countries not classified in any of the above groups).

[Table A.1 approximately here]

The following procedure, introduced by Becker and Ichino (2002), is the most popular test for the balancing property, i.e. whether treatment and control groups are comparable. First, the sample is split into equally spaced blocks based on the estimated propensity scores. The procedure keeps partitioning the entire interval more finely until in each block the average propensity score for treated and control units are not statistically different. Second, a test ascertains whether for any variable the mean for treated and control observations is not significantly different in any of the blocks. If this balancing property fails, the specification has to be adjusted.

In Table A.1 we show the p-values for the mean difference tests on the three most important subsamples for the extensive margin analysis. We show both the average p-values as well as the number of times a test yields a p-value below the 5% significance level. In the top panel we show the average over all the blocks with similar propensity scores by characteristic; in the bottom panel we show the average over all characteristics by block in the propensity score distribution.

[Table A.2 approximately here]

Table A.3 contains estimates of the impact of export promotion support on intra-EU export market entry for different sub-regions. These results are discussed in Section 5. In contrast with the extra-EU effects, they are a combination of firm-level responses at the extensive and intensive margin, because the intra-EU reporting threshold for exports is much higher (EUR 250,000 until 2005 and EUR 1 million from 2006 onwards) than extra-EU (EUR 1,000).

[Table A.3 approximately here]

Estimates reported in Table A.4 and Table A.5 are discussed in Section 6. The first results investigate whether export market entry by new exporters have a negative effect on the export volumes of existing exporters. This would be the case if the latter firms used to 'carry-along' some of the foreign sales of the former firms which were indirect exporters before. The second result investigate spillover effects by including measures of the intensity of support and export market entry by supported firms by firms in the same industry in the regression.

[Table A.4 approximately here]

[Table A.5 approximately here]

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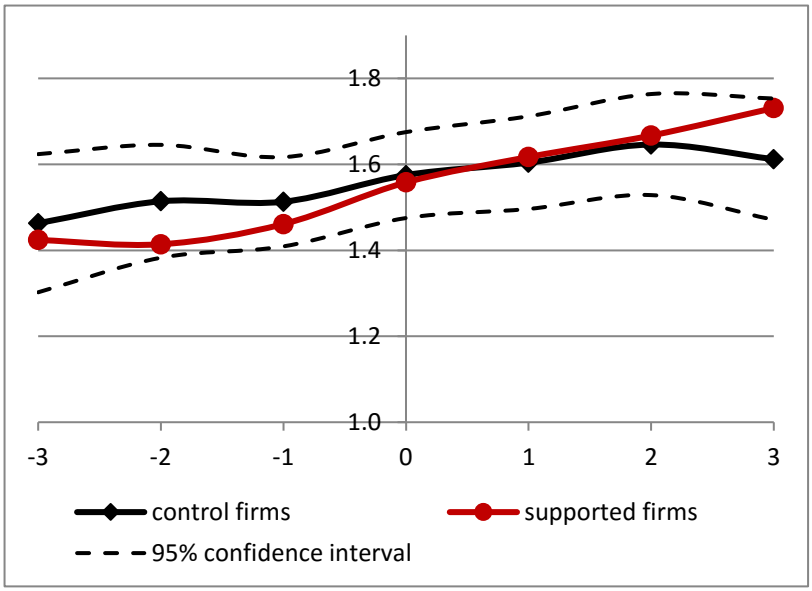
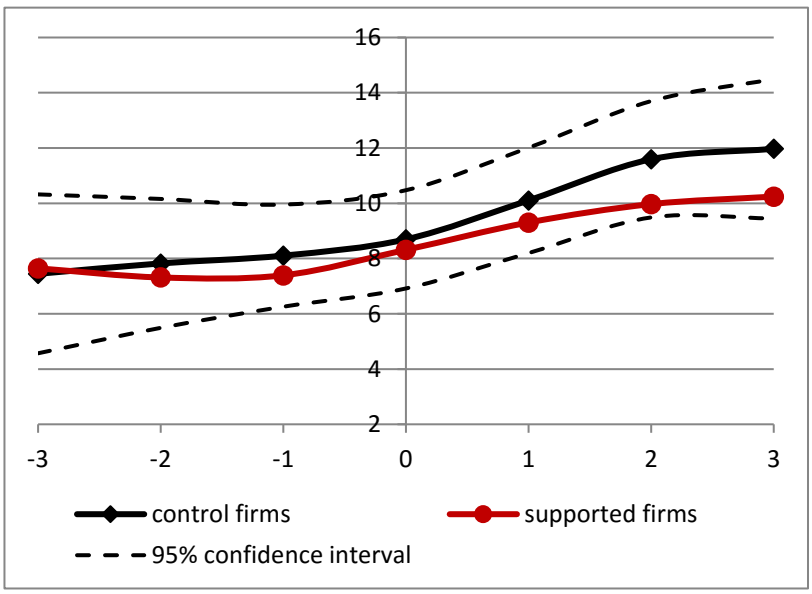
Figure 1: Evolution of employment for supported and control firms

(a) Log of employment



(b) Level of employment



Note: Control firms are the nearest-neighbors of treated firms (which received export promotion support) based on the propensity score estimated with the same explanatory variables used in all specifications. The X-axis refers to the support year or the match year in the case of control firms.

Table 1: Average sample statistics for supported versus unsupported firms

	Firm-year observations with no export experience & no FIT support at the start of the sample period		Firm-year observations with no export experience anywhere & no FIT support at time *t*	
	non-clients	FIT clients	non-clients	FIT clients
	(1)	(2)	(3)	(4)
Number of observations	127,331	2,803	84,875	763
Employees (FTE)	13.6	56.2	6.3	11.0
Wage/worker	38,573	44,671	35,185	39,597
Capital/worker	80,155	78,331	82,459	103,307
Labor productivity (proxy)	79,509	87,615	72,417	71,154
Age	20.0	20.9	18.2	15.3

Note: Sample period covers 2006-2010. Observations for FIT clients are only included up to two years after first treatment. Wage per worker and capital per worker in EUR.

Table 2: Intensity of use of export promotion services

	Average use of each service by FIT clients (firm-year observations)					
	Firms with no prior extra-EU export experience (n=1,025)			Firms with no prior export experience anywhere (n=763)		
	Mean	Min	Max	Mean	Min	Max
Action	0.71	0	20	0.70	0	20
Subsidy	0.72	0	8	0.81	0	8
Communication	3.01	0	75	2.99	0	49
Question	0.69	0	16	0.67	0	8

Note: Sample period covers 2006-2010 and use of FIT services is one year lagged. Observations for FIT clients are only included up to two years after first treatment. The different activities are described in Section 2.

Table 3: Effect of export promotion on the probability of export market entry outside the EU

Sample:	No exports to this region		No exports anywhere		Exports intra-EU, not to this region	
Dependent variable:	(1)		(2)		(3)	
Extra-EU	0.103***	[0.034]	0.096***	[0.029]	0.127***	[0.088]
	(0.010)	93,752	(0.012)	85,632	(0.026)	8,104
- OECD	0.064***	[0.019]	0.058***	[0.011]	0.068***	[0.052]
	(0.007)	109,471	(0.008)	85,632	(0.015)	13,251
- non-OECD	0.074***	[0.028]	0.055***	[0.019]	0.076***	[0.077]
	(0.008)	101,175	(0.009)	85,632	(0.017)	11,029
- Switzerland & Norway	0.035***	[0.013]	0.033***	[0.006]	0.034***	[0.041]
	(0.005)	117,000	(0.006)	85,632	(0.010)	16,639
- non-OECD G20	0.035***	[0.012]	0.025***	[0.004]	0.032***	[0.041]
	(0.004)	118,814	(0.005)	85,632	(0.009)	17,718

Note: Each row-column intersection reports the estimated treatment effect from a separate regression. Reported statistics are the marginal effects evaluated at the sample mean, robust standard errors (in round parentheses), the unconditional probability of exporting [in square parentheses], and the number of observations in each regression. ***, **, * indicate significance at the level of 1%, 5%, and 10 %, respectively.

Table 4: Effect of specific forms of export promotion on the export propensity outside the EU

	Dependent variable is Extra-EU export dummy					
Sample:	No extra-EU exports		No exports anywhere		Exports intra-EU, no extra-EU exports	
Type of support:	(1)		(2)		(3)	
Action + Question	0.027	[0.141]	0.021	[0.130]	0.045	[0.168]
	(0.039)	469	(0.042)	332	(0.080)	137
Action (+ others)	0.042	[0.157]	0.027	[0.139]	0.083	[0.208]
	(0.027)	750	(0.029)	548	(0.059)	202
Subsidy + Question	0.094**	[0.167]	0.077**	[0.155]	0.160*	[0.202]
	(0.041)	490	(0.039)	361	(0.096)	129
Subsidy (+ others)	0.046*	[0.165]	0.032	[0.149]	0.113*	[0.218]
	(0.026)	814	(0.028)	626	(0.065)	188
Action + Subsidy + Question	0.084*	[0.155]	0.049	[0.140]	0.384**	[0.202]
	(0.047)	458	(0.046)	344	(0.155)	114
Action or Subsidy (+others)	0.040*	[0.166]	0.027	[0.151]	0.083*	[0.207]
	(0.024)	978	(0.026)	727	(0.050)	251

Note: Each row-column intersection reports the estimated treatment effect from a separate regression where firms with various types of support or combinations of support are always compared to FIT clients that received only the weakest form of support (Question or Communication). Reported statistics are the marginal effects evaluated at the sample mean, robust standard errors (in round parentheses), the unconditional probability of exporting [in square parentheses], and the number of observations. ***, **, * indicate significance at the level of 1%, 5%, and 10 %, respectively.

Table 5: Robustness checks on the effect of export promotion using different estimation methods

	Dependent variable is Extra-EU export dummy Sample only contains firms with no export experience anywhere		
Treatment:	Any support	Action & Question	Subsidy & Question
Control:	No support	only Question	only Question
Estimation method:	(1)	(2)	(3)
Probit	0.096***	0.021	0.077**
(as in Tables 3 or 4)	(0.012)	(0.042)	(0.039)
Linear probability model with	0.109***	0.025	0.111**
sector-year FE	(0.013)	(0.052)	(0.053)
Linear probability model with	0.062***	0.079	0.056
sector-year & firm FE	(0.017)	(0.191)	(0.115)
Double robust estimator	0.089***	0.027	0.134**
(weighted least squares)	(0.011)	(0.054)	(0.057)
Poisson model	4.059***	1.194	1.632*
	(0.374)	(0.372)	(0.366)
Export probability	[0.029]	[0.130]	[0.155]
Observations	85,632	332	361
Export entry 1 or 2 years later	0.153***	0.103**	0.074*
(Probit)	(0.012)	(0.048)	(0.043)
Export probability	[0.050]	[0.221]	[0.220]
Observations	86,729	457	486
Treatment only next year	0.069***	-0.009	-0.028
(Probit)	(0.013)	(0.052)	(0.045)
Export probability	[0.032]	[0.177]	[0.179]
Observations	63,323	282	312

Note: Each row-column intersection reports the estimated treatment effect from a separate regression. Reported statistics are the marginal effects evaluated at the sample mean for the probit model, the point estimates for the regression models and the incidence ratios for the Poisson models, with robust standard errors (in round parentheses). The unconditional probability of exporting [in square parentheses] and the number of observations is the same for all regressions reported in the same column and shown at the bottom. ***, **, * indicate significance at the level of 1%, 5%, and 10 %, respectively. For the Poisson model significance is tested relative to 1 (values above 1 indicate a positive effect), for the other models significance is tested relative to 0.

Table 6: Heterogeneous effect of export promotion on the export propensity

	Dependent variable is Extra-EU export dummy Sample only contains firms with no export experience anywhere (n=85,632)					
	By firm size		By position in sectoral wage distribution		By capital-labor ratio	
	(1)		(2)		(3)	
Average effect	0.096***	[0.029]	same as in (1)		same as in (1)	
	(0.012)	85,632				
Effect by size category or tercile:						
- 1-5 workers / 1st tercile	0.137***	[0.023]	0.123***	[0.022]	0.088***	[0.031]
	(0.018)	58,126	(0.023)	31,890	(0.020)	25,559
- 5-20 workers / 2nd tercile	0.058***	[0.036]	0.078***	[0.030]	0.107***	[0.030]
	(0.016)	22,494	(0.018)	31,682	(0.020)	26,692
- 20+ workers / 3rd tercile	0.043**	[0.068]	0.093***	[0.038]	0.094***	[0.026]
	(0.022)	5,012	(0.019)	22,060	(0.019)	30,381

Note: Each column reports the estimated treatment effect from a separate regression that estimates separate treatment effects for three groups of firms. Reported statistics are the marginal effects evaluated at the mean for the group and robust standard errors (in round parentheses). Each regression uses the same number of observations: N = 85,632. The unconditional probability of exporting [in square parentheses] and the number of observations are reported separately for each of the three groups. In columns (2) and (3) the groups differ in size as the terciles are defined before dropping firms based on prior export experience. ***, **, * indicate significance at the level of 1%, 5%, and 10 %, respectively.

Table 7: Effects of export promotion on employment growth and firm survival

	Sample only contains firms with no export experience anywhere					
Dependent variable:	Employment change			Survival probability		Combined
	$L_{t+1} - L_{t-1}$	$\log \frac{L_{t+1}}{L_{t-1}}$	$\frac{L_{t+1} - L_{t-1}}{\bar{L}}$	to year *t+1*	to year *t+2*	$\frac{L_{t+1} - L_{t-1}}{\bar{L}}$
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.395***	0.039***	0.037***	[0.776]	[0.555]	-0.388***
	(0.025)	(0.002)	(0.001)			(0.003)
Supported firm	0.563*	0.060***	0.050***	0.000	0.043***	0.125***
	(0.261)	(0.019)	(0.016)	(0.014)	(0.017)	(0.033)
Supported firm that started to export	-0.472	0.051	0.041	0.050	0.027	0.373***
	(0.671)	(0.048)	(0.040)	(0.032)	(0.042)	(0.081)
Observations	71,560	71,560	71,560	93,752	93,752	93,315

Note: Each column reports the estimates from a separate regression. The dependent variable in the different columns is: (1) the absolute change in the level of employment between the year following and preceding possible export market entry, (2) the log-change in employment, (3) the percentage change in employment relative to the average level in the two years, (4) a survival dummy for the year following possible export market entry, (5) a survival dummy two years following possible export market entry, (6) the percentage employment change, but replacing L_{t+1} by 0 (instead of missing) if the firm has exited. The explanatory variables are indicator variables for treated firms and for treated firms that actually started exporting in year *t* . In columns (4) and (5) we reported marginal effects and the probability of survival [in square parenthesis]. Robust standard errors are shown (in round parentheses) . ***, **, * indicate significance at the level of 1%, 5%, and 10 %, respectively.

Table A.1: Definition of the different regions

Country group	Export share	Definition	List of countries
EU27	72.0%		
- Neighbors (4)	48.6%	sharing a land border	France, Germany, Luxembourg, Netherlands
- Easy periphery (10)	22.1%	EU15 without neighbors (all joined before 1996)	Austria, Denmark, Finland, Greece, Ireland, Italy, Portugal, Spain, Sweden, United Kingdom
- Hard periphery (12)	1.3%	EU27 without EU15 (joined in 2004 or 2007)	Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia
Extra-EU	28.0%		
- Extra-EU OECD (13)	12.2%	Developed countries outside the EU	Australia, Canada, Chile, Iceland, Israel, Japan, South Korea, Mexico, New Zealand, Norway, Switzerland, Turkey, United States
- Extra-EU non-OECD	15.8%	Countries not in the EU, nor in the OECD	Main destinations (in order): India, China, Russia, Brazil, Hong Kong, UAE, South Africa, Saudi Arabia, Nigeria, Egypt, Singapore, Algeria, Thailand, Morocco,…

Note: The breakdown is exhaustive and sub-groups within or outside the EU27 are mutually exlusive. For the non-OECD group, we list all 15 countries with an export share above 0.2%. Export shares are for Belgium in 2010 (the Flemish region accounted for 85% of Belgian exports).

Table A.2: Balancing test p-values

		Firms that have never before exported anywhere		Firms that have never before exported to destinations outside the EU	
		mean p-value	# p-values < 5%	mean p-value	# p-values < 5%
X_1	Employment	0.45	0	0.34	0
X_2	Employment sq	0.54	0	0.35	0
X_3	Age	0.34	1	0.36	2
X_4	Age sq	0.36	3	0.40	2
X_5	Capital/Worker	0.44	0	0.44	0
X_6	Wage/Worker	0.43	0	0.34	0
X_7	Labor productivity	0.48	0	0.38	0
X_8	Manufacturer	0.57	0	0.63	0

Propensity score block	# obs.	Fraction treated	mean p-value	# p-values < 5%	# obs.	Fraction treated	mean p-value	# p-values < 5%
1	43,382	0.42%	0.38	1	35,559	0.46%	0.20	2
2	9,309	0.52%	0.30	0	19,821	0.70%	0.39	0
3	6,957	0.98%	0.81	0	12,274	0.98%	0.34	0
4	8,897	0.94%	0.68	0	12,952	1.44%	0.42	1
5	13,288	1.70%	0.19	1	6,232	2.31%	0.58	0
6	2,487	2.90%	0.33	0	6,063	3.51%	0.57	0
7	724	5.25%	0.52	0	757	6.47%	0.53	0
8	541	6.47%	0.60	0	90	10.00%	0.30	1
9	44	22.73%	0.23	2	4	50.00%	0.30	0
10	3	66.67%						
overall	85,632	0.91%	0.45	4	93,752	1.11%	0.41	4

Note: Block 10 only contains 3 observations and no mean-difference test is possible.

Table A.3: Effect of export promotion on the probability of export market entry within the EU

Sample:	No exports to this region		No exports anywhere		Exp. to neighbors, not to this region		Exports extra-EU, not to this region	
Dependent variable:	(1)		(2)		(3)		(4)	
EU27	0.017***	[0.006]	0.009***	[0.003]	N/A		0.026***	[0.017]
	(0.003)	104,366	(0.003)	85,632			(0.008)	18,718
- Neighbouring countries	0.015***	[0.005]	0.006***	[0.003]	N/A		0.027***	[0.015]
	(0.003)	108,500	(0.002)	85,632			(0.007)	21,574
- Other EU15 countries	0.015***	[0.005]	0.008***	[0.001]	0.054**	[0.040]	0.023***	[0.013]
	(0.003)	114,177	(0.003)	85,632	(0.022)	6,171	(0.006)	23,774
- New member states	0.016***	[0.006]	0.004**	[0.001]	0.051***	[0.039]	0.024***	[0.017]
	(0.003)	116,389	(0.002)	85,632	(0.012)	11,617	(0.006)	25,112
Extra-EU exports using the EU threshold	0.007***	[0.003]	0.004***	[0.001]	N/A		N/A	
	(0.002)	90,927	(0.002)	85,638				

Note: Each row-column intersection reports the estimated treatment effect from a separate regression. Reported statistics are the marginal effects evaluated at the sample mean, robust standard errors (in round parentheses), the unconditional probability of exporting [in square parentheses], and the number of observations in each regression. Note that strictly applying the intra-EU threshold on the regressions in column (1) also lowers that point-estimate from 0.018 to 0.012. ***, **, * indicate significance at the level of 1%, 5%, and 10 %, respectively.

Table A.4: Evolution of export volumes for existing exporters when new exporters enter a product-destination market

	dependent variable is log(exports of existing exporters)				
	(1)	(2)	(3)	(4)	(5)
log(exports of new exporters)	0.144***				
	(0.005)				
log(exports of new, unsupported exporters)		0.131***	0.041***	0.046***	0.0003
		(0.005)	(0.004)	(0.001)	(0.001)
log(exports of new, supported exporters)		0.093***	0.030***	0.031***	-0.004
		(0.007)	(0.006)	(0.005)	(0.005)
log(lagged value of all exports)			0.656***	0.601***	0.042***
			(0.005)	(0.001)	(0.003)
Country-year fixed effects	Yes	Yes	Yes	Yes	Yes
Product-year fixed effects	Yes	Yes	Yes	Yes	Yes
Country-product fixed effects					Yes
Observations	38,837	38,837	29,719	614,888	132,335

Note: Regressions over the 2005-2011 period with observations defined at the country destination - 8-digit product - year level. In columns (1)-(3), only observations with positive new export volumes are included. In columns (4)-(5), a value of 1 is added to all export volumes before taking logs, which replaces missing values with zeros. In column (5), country-product observations with no new exporter entry in any year do not contribute at all to the identification and they are dropped. ***, **, * indicate significance at the level of 1%, 5%, and 10 %, respectively.

Table A.5: Spillover effects of export promotion

	Dependent variable is Extra-EU export dummy					
	Sample only contains firms with no export experience anywhere					
	Any support		Action		Subsidy	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
Own support	0.080***	0.080***	0.095***	0.095***	0.106***	0.105***
	(0.010)	(0.010)	(0.019)	(0.019)	(0.017)	(0.017)
log(No. of other supported firms in industry + 1)		-0.002		0.000		0.001
		(0.002)		(0.002)		(0.001)
log(No. of other supported firms that start exporting + 1)	0.007***	0.009***	0.005***	0.005***	0.007***	0.006***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)
Observations	85,632	85,632	85,123	85,123	85,201	85,201

Note: The dependent variable is the change in the level of employment in (a) columns and the log-change in employment between the year following and preceding treatment. Each column reports the estimated treatment effect from a separate regression. Reported statistics are the marginal effects evaluated at the sample mean and robust standard errors (in round parentheses) for the three variables of interest (estimates on the control variables are not reported). The number of observations in each regression is indicated at the bottom. ***, **, * indicate significance at the level of 1%, 5%, and 10 %, respectively.

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