



**Smoothing out the bumpy road
to export success:
Evaluating export promotion activities
in Belgium**

By

Annette D. Schminke
University of Leuven

Johannes Van Biesebroeck
University of Leuven and CEPR

Paper prepared for the workshop :
“Aid for Trade: What Have we Learnt? Which way Ahead?”
6 December 2012, International Conference Centre, Geneva

This version : August 2012

Smoothing out the bumpy road to export success: Evaluating export promotion activities in Belgium *

Annette D. Schminke[†] Johannes Van Biesebroeck[‡]

August 2012

Preliminary and Incomplete. • Comments/corrections welcome.

Abstract

Exporting seems essential for many firms in small open economies. Three Belgian export promotion agencies assist firms in starting and enhancing their export activities. Two of these agencies provided us with detailed information on participation in different types of promotion. We evaluate whether the export promotion activities are successful in improving export performance. Our unique data set was constructed using four different databases and covers the period between 2005 and 2010. Using a difference-in-differences estimator, we find that support lagged by one year, disregarding the type, has a stronger impact on total export value than on all other performance measures. Though in magnitude smaller, export promotion also shows a positive impact on various measures of the extensive margin of trade.

Keywords: International trade, Export promotion, firm-level analysis

JEL Codes: F13, F14, O24

*An ERC grant of the E.U. and Program Financing by the University of Leuven are gratefully acknowledged. We would like to thank Flanders Investment and Trade and Brussels Invest & Export, as well as the National Bank of Belgium for collaboration and provision of data.

[†]University of Leuven, annette.schminke@kuleuven.be

[‡]University of Leuven and CEPR, jo.vanbiesebroeck@kuleuven.be

1 Introduction

For specialized firms in a small open economy exporting is essential to reach a wider range of consumers. We have secured the collaboration of *Brussels Invest & Export* and *Flanders Investment and Trade*, two out of the three regional export promotion agencies in Belgium. They have provided us with firm-level information on the date, type, and extent of interactions with each of their clients, potential exporters located mainly in Flanders and Brussels. In this study, we evaluate whether their export promotion activities are successful in boosting the number of export destinations and increase total export volume over the period 2005-2010. We closely analyze performance indicators linked to exports destined for markets outside the European Union (EU) because barriers are higher than for exporting within the EU's single market.

Governments both in industrialized and developing countries perceive exporting as a means of securing and creating jobs and acquiring or increasing welfare. Export promotion agencies act as a mediator between the government and the individual firms by receiving funding by public sources and spending this money on targeted export promotion of firms. Though export promotion is seen as an adequate way to foster exports, export promotion funded by governments is subject of continuous critique by economists who believe in free markets, in which only the most efficient firms persist. One of the most striking works defending this view is Bhagwati (1988). In the eyes of the advocates of the free market, export promotion allows inefficient firms to enter the global markets and thereby distort competition. The counterargument made by those in favor of government support is usually that markets are not as perfect and transparent as economic theory assumes, i.e. information is usually not costless and instantaneously available to everybody. Export promotion agencies can help companies to overcome such distortions and reduce transaction cost.

Belgium consists of the regions Brussels-Capital, Flanders and Wallonia. In addition to the federal government whose main responsibilities are justice, defense and public finance, three region-specific parliaments govern inter alia economy and foreign trade. As a consequence, each region has its own export promotion agency, always closely bound to and financed by the according regional government. These export promotion agencies are Brus-

sels Invest & Export for the Brussels-Capital region, Flanders Investment and Trade (F.I.T.), and l'Agence wallonne à l'exportation et aux Investissements étrangers (AWEX) for Flanders and Wallonia, respectively. For this research project, we secured the collaboration of Brussels Invest & Export and F.I.T. Both F.I.T. and Brussels Invest & Export combine the tasks of export promotion of domestic firms and attracting Foreign Direct Investment (FDI) from foreign firms. Their mandate is executed by a large number of specialists located in a handful of offices in Belgium and around 90 offices abroad. By offering complementary types of export promotion services, they all aim to strengthen the international entrepreneurship of small and medium-sized firms. Both agencies have their main offices in Brussels and their network of foreign offices shows a tight coverage of Europe and spans over markets in North and South America, and strategic positions in the Near East and East Asia.

The literature on export promotion spans from publicly funded export guarantees to bundles of export promotion services targeted at individual firms. Studies that use firm-level data can be found for countries in both South and North America, several countries in Europe, Japan, South Korea, and China (inter alia Volpe Martincus and Carballo, 2008; Volpe Martincus and Carballo, 2010c; Bernard and Jensen, 2004; Van Biesebroeck et al., 2010; Görg et al., 2008; Hayakawa et al., 2011).

There are also a few studies that use data similar to ours, i.e. combining firm level export data and export promotion data that distinguishes different types of promotion. Among these, Álvarez and Crespi (2000) distinguish promotion between “exporter committees”, “presence in international fairs”, and “utilization of a business information system” in the case of Chile and the national export agency PROCHILE. They find that export promotion does not have an impact on the number of products a firms exports but does have an effect on the addition of new export destinations and the increase of export volume. They find exporter committees to be the most effective type of promotion. Volpe Martincus and Carballo (2010b) combine data of Columbian exports with information from the national export promotion agency PROEXPORT over the period 2003-2006. They group support types into the categories “participation in international trade missions and fairs”, “counseling”, and “support in setting up an agenda of commercial meetings”. They find

evidence for the benefits of complementing different types of export promotion compared to requesting only one of the services with respect to growth of the number of export destinations and total exports.

For Belgium, there exist some studies on export promotion but none of them compares different bundles of promotion types. Abraham and Dewit (2000) analyze official export insurance against commercial and political risk of default: they find that export promotion does not inevitably cause trade distortions. Moreover, insurance premium subsidies are not beneficial for most export destinations. Cuyvers and Dumont (2008) obtained information of all three regional export promotion agencies. They limit their study to participation in trade fairs and compare this to export opportunities using a decision support model. Their findings suggest that export opportunities of the Belgium-Luxembourg Economic Union only correlate weakly with the export promotion activities of the regional export promotion agencies.

Using the difference-in-differences estimation technique, we obtain estimates for the treatment effects of export promotion. We focus on the following research questions: Which of the different services offered by export promotion agencies show significant effects on a firm's export performance? Do small and medium-sized enterprises benefit more from export promotion than large firms? For our estimations, we use a unique data set that covers the period between 2005 and 2010 and contains detailed export data, annual accounts items such as age of the firm, number of employees and capital stock, and data on the types and frequency of export promotion activities.

We contribute to the existing literature on export promotion via export promotion agencies in two ways: Firstly, we complement the analysis for Belgium with more detailed firm-level data on export promotion which allows to analyze different bundles of promotion types. Furthermore, to our knowledge it is the first paper that shows how different bundles of export promotion services influence the export trajectory in a highly industrialized country.

Our results show that when no special treatment type is specified, firms benefit mainly in the first year after promotion, some only after two years. When the treatment is a combination of participation in activities and direct communication with the agency, the effect becomes evident only after two

periods.

The remainder of the paper is organized as follows. In the next section we describe the empirical methodology underlying our analysis. The third section describes the dataset. Empirical results are displayed in Section 4, and Section 5 contains the conclusion.

2 Empirical Methodology

Our objective is to evaluate the impact of distinct bundles of export promotion on a firm's export performance. Participating in export promotion is optional for each firm, and compared to the overall population of Belgian firms, only a small fraction requests services offered by the export promotion agencies. Firms participate in different intensities and can start requesting services, or, in technical terms, "treatment", at any point in time. Below, we describe the estimation technique we use in the regressions.

The program evaluation literature provides techniques suited for the analysis of non-experimental data. In this literature, pioneered by Rubin (1974) and recently reviewed by Imbens and Wooldridge (2009), and Blundell and Costa Dias (2009), participation in a program, be it a medical trial or a job market program, is indicated by a binary treatment variable, which we denote by D_i . This indicator equals unity, if unit i receives the treatment, and zero, if it does not. Whether a company seeks assistance by an export promotion agency is only determined by the company itself, not by randomized or quasi-randomized processes. This non-randomness of treatment assignment may result in biased estimators due to self-selection and constitutes the important difference to randomized controlled trials and experimental data, for which we have to account when estimating average treatment effects. If we cannot be sure that firms choosing to ask export promotion agencies for assistance are fundamentally equal in their overall performance to firms that do not seek assistance, a simple comparison between assisted and non-assisted firms may lead to biased results with respect to the impact of the treatment on performance. The optimal setting to estimate the effect of export promotion would include comparing the same firm in assisted and not-assisted status. However,

each firm is observed only in one status: either it receives help from an agency, or it does not. It is therefore impossible to extract an assisted firm’s export performance in case of non-assistance or vice versa, a non-assisted firm’s export performance in case of promotion.

We use difference-in-differences methods for measuring the impact of support granted to firms by export promotion agencies. Firms may take the decision to apply for assistance by export-promotion agencies either at no point in time, at one point in time or at several points in time. We mainly distinguish between “treated” and “not-treated” and use a dummy as indicator for repeated participation within a year.

Because of the non-experimental nature of the data, we will focus on estimating the effect of the program on those who actually participated, i.e. the average treatment effect on the treated (ATT). In general terms, this measure captures the average effect of the treatment only for those units that received the treatment, compared to the counterfactual case, if the unit had not received the treatment. We will study the effects on total export value and additional measures of the intensive and extensive margins of trade. We closely analyze performance on performance indicators linked to exports to outside the European Union (EU) because barriers are higher than for exporting within the EU’s single market. These outcome variables are henceforth denoted by Y . If unit i receives the treatment, the potential outcome is denoted by Y_{i1} (Y_{i0} is then the counterfactual outcome of the same unit i), $i = 1, \dots, N$. While triple (Y_0, Y_1, D) indicates a random vector from the underlying population of interest, triple (Y_{i0}, Y_{i1}, D_i) represents a random draw from the population. For simplicity, we drop the firm identifier i in the following illustration.

Given these definitions, the conditional expectation of the firm’s outcome is given by $E(Y|X, D)$, and the average treatment effect on the treated can be written as

$$\gamma \equiv E(Y_1 - Y_0|X, D = 1).$$

The treatment effect γ captures the average rate of change in the performance indicator between the observed outcome of a treated firm and the one it would have hypothetically yielded without assistance of the export promotion agency. We include different covariates in order to mimic random treatment assign-

ment. We thus allow for self-selection into treatment based on unobservables, but only if the unobservables are not correlated with performance differences after conditioning on the covariates. We further reduce bias due to unobserved confounders by exploiting the panel structure of our data. We can decompose the standard error term μ_{it} into otherwise omitted fixed firm-, year-, and firm-year effects, illustrated in the following specification:

$$Y_{it} = X_{it}\theta + \gamma D_{i(t-1)} + \lambda_i + \rho_t + \varepsilon_{it},$$

where λ_i marks the firm-specific fixed effect, ρ_t captures a year, common macroeconomic effect, and ε_{it} is the temporary firm-specific effect. The ATT is given by γ . The treatment indicator D enters the regression in a one year lag because we believe that the effect of export promotion does not show in the same period.

We estimate this equation on the whole sample and different sub-samples: distinguishing with respect to size (measured in the number of full-time equivalent employees) and region (all Belgium, Flanders, and Brussels).

3 Data

Our unique data set was constructed using four different databases from three sources and covers the period between 2005 and 2010. Firstly, we obtained two databases from the export promotion agencies Flanders Investment and Trade and Brussels Invest & Export. Secondly, we use balance sheet data provided by the National Bank of Belgium (NBB). Finally, we use detailed export information provided by the NBB. The foreign trade data contains both Extra-EU and Intra-EU exports. Figure 1 illustrates how the data is being merged: first the F.I.T. and Brussels Invest & Export data is merged to the balance sheet data, and then this combined data is merged to the external trade data. The overlap between the databases is not complete because firstly, some firms included in the export promotion agencies' data do not file annual accounts (e.g. firms with unlimited liability) and secondly, not all firms filing annual accounts export. Furthermore, some observations from the foreign trade data cannot be merged to the balance sheet data, because the accounts the firms filed might not have fulfilled the quality standards of the central

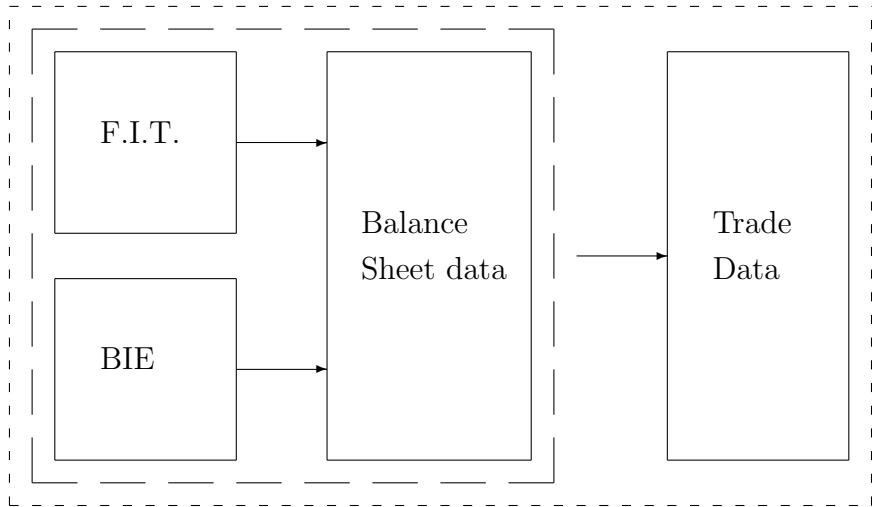


Figure 1: Matching scheme of databases

balance sheet office. In the following, we will briefly describe each dataset and the measures we extract from them.

Firstly, we will present the balance sheet data. Almost all firms in Belgium have to file annual accounts with the Central Balance Sheet Office of the National Bank of Belgium. The database comprises an increasing number of active non-financial firms, ranging from around 96,105 in 2005 to 128,685 active firms with 1 or more full-time equivalent employees in 2010. We obtain measures of a firm’s size in terms of employees, total wage bill, tangible assets (estates, buildings, machinery, fleet), founding year, and line of business. The latter is given by the NACE revision 2 industry code. Large firms are obliged to report more items in their accounts than small firms, so that information on turnover, value added/sales, R&D expenditure and intermediate consumption is only available for those firms whose workforce exceeds 100 persons or if it has crossed two, or more out of the following three thresholds: 1) average annual workforce of 50, 2) turnover of EUR 7,300,000 or 3) balance sheet total of EUR 3,650,000. We exclude non-profit organizations, and firms that operate in NACE-BEL sections T and U.¹ However, in the final dataset there are more firms in 2006 than in 2010. This reversion happened when the data was cleaned

¹Section T: activities of households as employers; undifferentiated goods- and services-producing activities of households for own use; Section U: activities of extraterritorial organizations and bodies.

Table 1: Average values of covariates

Year	Employees	Wage / worker	Capital / worker	Age	N
2006	1.15	10.36	10.35	16.82	108,213
2007	1.15	10.39	10.37	17.02	112,986
2008	1.17	10.43	10.38	17.29	114,691
2009	1.16	10.47	10.37	17.54	117,289
2010	1.27	10.45	10.33	18.39	93,363

Source: Our own calculations on data from Brussels Invest & Export, F.I.T., and NBB export data.

Values in logs.

and observations with missing covariates were removed from the database. In Table 1 some descriptive statistics are shown. Most values remain relatively constant. There are two exceptions: between 2009 and 2010 a lot of small and rather young firms seem to have left the sample which might be due to the economical crisis following the financial crisis.

Foreign trade data on the firm-level is also provided by the NBB. The export data contains both extra-EU as well as intra-EU exports of goods. The internal and external figures are collected in different ways: while intra-EU exports are collected through the Intrastat inquiry, extra-EU trade flows are captured by the Belgian customs. Different value or weight thresholds determine whether a firm's exports will appear in the data or not. In 2006, the threshold of intra-EU exports was raised from EUR 250,000 to EUR 1,000,000 per year and firm. Extra-EU exports are already reported when a single transaction either exceeds a value of EUR 1,000 or weighs more than 1,000 kg. For each individual firm, the dataset states annual export value and weight (or unit) of the exported goods for each product-destination combination. From the destination information, we create regional dummies to infer that firms managed to break into emerging markets such as Brazil, Russia, India, or China (BRIC countries) in a given year after having exported successfully to European neighboring countries in previous years. From the same source, we also create performance indicators of the extensive margin of trade: the number of extra-EU destinations and the total number of export destination.

From the export value information, we create the total export value per firm

and year. We also create a variable capturing the extra-EU exports of a firm, so that we can differentiate the impact of trade promotion on the intensive margin with two different performance measures. In Tables 8-Table 11 in the appendix we show averages of performance indicators, distinguished both by size and region. As is to be expected, larger firms show higher values of volume indicators, both in general and for the specific extra-EU indicators. In Table 10 it is also revealed that firms that are active participants in export promotion yield higher revenues for new destinations in extra-EU countries and add more extra-EU destinations to their portfolio than non-assisted firms in the same size category.

Products are coded according to the 8-digit Combined Nomenclature (CN8). We use concordance tables to keep the product codes constant over time. Doing this allows us to differentiate whether an increase in the number of exported products is due to a real increase or merely due to splitting a product category into one or more subcategories. We use the number of products a firm exports in a given year as an additional performance measure of the extensive margin. The external trade database differentiates between distinct natures of international goods exchange. We only consider trade transactions in which a monetary compensation is made in exchange for the good.

From our partners in the export promotion agencies, we received data on the number and intensity of assistance of their clients. From both agencies, we received a database including information on the year a given firm was included into the database. This information is important to carefully extract the impact of trade promotion on export performance. From F.I.T., we also obtained information on the exact dates a firm participated in an activity for the period 2003-2010. Most firms engaged repeatedly in different communication types. The upper panel of Table 2 displays the demands for communication types for which F.I.T. provided the data, i.e. “action”, “question”, “communication” and “subsidy”. Again, we can merge this dataset via firm and year identifiers to the accounting data. Compared to the population of firms, only a small fraction of them receives assistance by F.I.T.. Around 3,500 to 4,000 firms can be matched to accounting data each year when no restrictions regarding firm size are made. These firms are not only in the database, but participated also at least in 1 activity during the given year. Some firms from the F.I.T.

Table 2: Demands of promotion services

	Active firm in F.I.T. database					
	2007 (n=3818)			2010(n=4720)		
	Mean	Min	Max	Mean	Min	Max
Action	0.92	0	31	1.15	0	37
Communication	3.65	0	95	2.25	0	76
Subsidy	0.74	0	16	0.81	0	18
Question	0.67	0	15	0.52	0	16
Any	5.99	1	125	4.74	1	80
	Active firm in BIE database					
	2007 (n=535)			2010(n=861)		
	Mean	Min	Max	Mean	Min	Max
Activity	0.60	0	4	0.58	0	8
Subsidy	0.91	0	11	0.80	0	10
Attaché meeting	-	-	-	0.58	0	37
Any	1.56	1	18	2.01	1	37

data cannot be merged to the balance sheet data, probably due to the fact that small firms with unlimited liability do not file accounts. When imposing only a weak employment constraint of 1 or more full-time or full-time equivalent employees per year and firm, the number of firms already drops by approximately 700 per year.

For Brussels Invest & Export, we have a similar database, the communication types being “attaché meeting”, “activity” and “financial file”. The lower panel of Table 2 reveals that firms ask promotion from Brussels Invest & Export less frequent than from F.I.T., the figure of average participation in any type of promotion for F.I.T. being nearly four times as high as for Brussels Invest & Export. For the activities, we know how many people participated but not the exact date. We can therefore not infer whether 5 different people went to the same event or whether two went to one event on the BRIC countries and three others to a trade fair in Germany. The data includes the years from 2007-2010.

Assistance by one of the export promotion agencies is not mutually exclusive: there are firms that are assisted by both of them. Also, Flemish firms

can ask Brussels Invest & Export for assistance, and vice versa firms located in Brussels may receive assistance from Flanders Investment and Trade. In our dataset, we excluded firms that received promotion from both agencies to extract the "pure effect" of receiving promotion from one export promotion agency.

For both databases, we collapse the information to the firm-year level, so that we have the total number of communication types each firm accesses each given year. The firm-year observations are then merged to the balance sheet data and the trade data.

4 Empirical Results

In this section we first motivate the choice of our treatment specifications and performance indicators and then present our results for two different specifications and two different lagged periods of treatment.

The definition of treatment is not as straightforward as it may appear on first impression, so we use five different treatment specifications in the econometric analysis. We suggest that on the one hand the "action" reported by F.I.T. and "activity" reported by Brussels Invest & Export and on the other hand the subsidy indicator reported by both are more or less comparable across the agencies. The benchmark definition of the treatment is simply a binary indicating whether a company requested a service from one of the export promotion agencies, not differentiating between whether they had a question, met a commercial attaché, engaged into an activity or asked for a subsidy. This is of course basic, given that there are also differences in the reporting of the services between the two agencies whose data we are investigating. May a contact between a Flemish firm and F.I.T. have been recorded as "question" or "contact" in their database, the same interaction would not appear in our data if it had been a firm from Brussels contacting Brussels Invest & Export.

Therefore, we disentangled the treatment indicator from the very general definition to the distinct types both agencies offer and some bundles thereof. Both export promotion agencies report "activity" as a support type. We create the specification "Activity + Communication", where the "Communica-

tion” part includes “Question” and “Communication” from F.I.T. and “Attaché meeting” for Brussels Invest & Export.² We therefore use this as our alternative treatment. Different specifications of export promotion do not only display solely the distinct types but also different intensities of effort. While, according to the managers of F.I.T., subsidies only require a rather low level of commitment, the preparation for meetings and the meeting itself are more time-consuming and require a more intense level of information exchange.

The main aim of export promotion agencies might not be the general aim of the exporting firm. While the firm that asks the export promotion agency for support usually seeks to break into new markets, its overall goal will still be to maximize profits. The export promotion agency is mainly interested to give good advice to the requesting firm and will try to help the individual firm in breaking into new markets and open the opportunity to a larger demand. Many firms seek to export into the emerging markets - Brazil, Russia, India, and China (BRIC) which were still growing as most of the economies were struck by the financial crisis. Here we could see whether firms assisted by an export promotion agency could agitate faster and compensate lower exports to industrialized countries by increasing exports to emerging economies. Also, firms seek to export to Extra-European destinations in general for which they will need to acquire more (costly) information than for export activity inside the European Union with its single market. According to the rules of the common market set up by the European Commission, “any product legally manufactured and sold in one member state must be allowed to be placed on the market in all others” (European Union 2012). Therefore enterprises do not need to worry about standardizations within the European Union when adding foreign destinations inside the EU to their portfolio. Within the EU, they have to merely worry about marketing and demand. Thus firms may benefit relatively more when aiming to break into new markets outside of the EU. We therefore chose to include a number of performance indicators targeted at capturing effects of extra-EU export measures, i.e. “number of extra-EU export destinations”, “average export value per new extra-EU destination”, and “total export value to new extra-EU destinations” to compare to the general perfor-

²We obtained treatment effects for other specifications as well. Results for estimations using “Activity” and “Subsidy” separately and treatment “Activity + Subsidy” are available from the authors on request.

Table 3: Results for treatment “Any”, by region

ALL	(1)	(2)	(3)
Total Exports	0.189***	0.176***	0.220***
Number of destination countries	0.035***	0.033***	0.042***
Number of ex-EU destination countries	0.034***	0.032***	0.041***
Total exports to new destinations	0.110***	0.088***	0.097***
Total exports to new ex-EU destination	0.083***	0.070***	0.098***
Number of products	0.038***	0.036***	0.046***
Flanders			
Total Exports	0.221***	0.207***	0.281***
Number of destination countries	0.038***	0.036***	0.046***
Number of ex-EU destination countries	0.033***	0.032***	0.039***
Total exports to new destination	0.140***	0.114***	0.133***
Total exports to new ex-EU destination	0.092***	0.075**	0.097*
Number of products	0.035***	0.032***	0.036***
Brussels			
Total Exports	-0.092	-0.119	-0.474
Number of destination countries	-0.001	-0.004	-0.075*
Number of ex-EU destination countries	0.011	0.009	-0.065
Total exports to new destination	-0.079	-0.062	0.088
Total exports to new ex-EU destination	0.068	0.139	0.324
Number of products	0.000	-0.003	-0.054

Source: Our own calculations on data from Brussels Invest & Export, F.I.T., and NBB export data.

Performance indicators in logs.

* 10% Significance level, ** 5% significance level, *** 1% significance level.

Standard errors can be obtained from the authors on request.

mance indicators “total exports”, “number of export destinations” “number of products”, “average export value per new destination”, and “total export value of new destinations”.

Table 3 displays the results for three different model specifications, using the treatment “Any” and considering the treatment with a one-year lag, i.e. we suggest that the effect of export promotion shows only after one year needed for adjustment. The second column shows the results for OLS regression with firm and year fixed effects. The third column contains results for the fixed effects model including the following covariates: work force, capital per worker, wage per worker, and firm age (all in logs), and sector-year dummies. In the regressions for the fourth columns, a measure indicating whether a firm requested promotion services more than five times in the lagged year is added. Robust standard errors are clustered at the firm level to allow for errors to be

serially correlated within the panel (Kézdi 2004; Stock and Watson 2006).

We used three different samples in the analysis: all, Flanders, and Brussels. The first includes all Belgian firms. The second one includes only firms from Flanders, and the third only firms from the Brussels-capital region. Selection is based on the nuts region reported in the Crossroads database. We chose to conduct the analysis by region because on the one hand, the data we received from the two export promotion agencies spans over different time horizons. On the other hand, we have to exclude firms from Wallonia because for those firms we cannot be sure whether they received export promotion by AWEX and would therefore bias our results. The regressions for the Brussels region comprises only the years 2007 to 2010 which is rather short. We excluded firms that received export promotion in years prior to the sample period to make sure that the effects we find are not lagged effects from previous treatment.

For the whole sample and the Flanders subsample, all estimates are positive and significant. For the Brussels region however, estimates are insignificant with only one exception. It is interesting to see that the magnitude of the treatment estimator increases for all performance indicators when comparing the first model specification with the third model specification. Because the last specification contains most information and does not appear to take too much variation out of the sample, we implemented this specification in the following regressions, which are now grouped by firm size. Though export promotion agencies often aim to support small and medium-sized enterprises, it is possible that large firms benefit relatively more from the services, as shown by Van Biesebroeck, Yu, and Chen (2011).³ Please note that the last column from Table 3 is the second column in Table 4.

When accounting for firm size, it becomes obvious the large firms do not profit from export promotion. According to the results grouped by region and size displayed in Table 4, export promotion has the most striking impact on small firms, which account for about 13% of all firms in the overall sample.

³The European Commission adopted the “Small Business Act for Europe” in June 2008, which explicitly aims to privilege small and medium-sized firms in the European Union. Because the Belgian export promotion agencies are directly linked to regional ministries, the offer of export promotion services will be tailored to these kind of firms.(Commission of the European Communities 2008)

Table 4: Results for treatment “Any”, by size and region

1-year lag	All	Large ^a	SME ^b	S ^c
All				
Total Exports	0.220***	0.191	0.130*	0.260***
Number of destination countries	0.042***	-0.033	0.033***	0.042***
Number of ex-EU destination countries	0.041***	-0.063*	0.041***	0.050***
Total exports to new destination	0.097***	-0.004	0.071*	0.099*
Total exports to new ex-EU destination	0.098***	-0.061	0.095**	0.122**
Number of products	0.046***	0.024	0.026*	0.034*
Flanders				
Total Exports	0.281***	-0.052	0.162	0.373***
Number of destination countries	0.046***	-0.068	0.028*	0.047**
Number of ex-EU destination countries	0.039***	-0.119**	0.030**	0.051***
Total exports to new destination	0.133***	-0.099	0.074	0.135
Total exports to new ex-EU destination	0.097*	-0.125	0.039	0.118
Number of products	0.036***	-0.067	0.001	0.019
Brussels				
Total Exports	-0.474	1.930	-1.166	-1.484*
Number of destination countries	-0.075*	0.432*	-0.113	-0.114
Number of ex-EU destination countries	-0.065*	0.556*	-0.115	-0.097
Total exports to new destination	0.088	-0.111	0.246	0.008
Total exports to new ex-EU destination	0.324	1.511	0.319	0.166
Number of products	-0.05	0.42	-0.12	-0.17

Source: Our own calculations on data from Brussels Invest & Export, F.I.T., and NBB export data.

Performance indicators in logs.

* 10% Significance level, ** 5% significance level, *** 1% significance level.

Standard errors can be obtained from the authors on request.

Notes: ^a Large, ≥ 250 employees; ^b Small and medium-sized, $50 \leq \text{employees} < 250$;

^c small, $10 \leq \text{employees} < 50$

While the estimate for all Belgium and all firms suggests that the rate of growth for total exports is around 25% ($(e^{0.220} - 1) * 100$), the estimate for small firms is even bigger in magnitude and suggests a growth of nearly 30%. Small and medium-sized enterprises seem to benefit relatively less from export promotion when looking at total exports. Compared to Volpe Martincus and Carballo (2008), the impact of export promotion on total exports is larger, whereas the impact on the number of export destinations and number of products is smaller. This result also holds if we use the specification where no indicator of repeated participation is included.

When firms from Wallonia and Brussels are excluded from the sample, nearly all estimators for the sample including all firm sizes increase, most significantly the estimators using total exports as performance measure. Interestingly, when taking the subsample only considering firms in the Brussels capital region, hardly any estimator remains significant.

From these findings we can infer that export promotion is beneficial especially for small firms in Flanders with respect to total exports and the number of export destinations. However, these findings cannot show a significant effect of higher exports to newly added destinations and the number of products for small firms. The last finding does not abridge the results because the main aim of the export promotion agency is to help firms breaking into new markets, exporting more products in general is only a secondary aim.

When changing the treatment specification to “Action + Communication”, we see that small firms do not seem to benefit at all from this bundle of services. While total exports, the number of destinations both in general and outside the EU seem to benefit when looking at all firms, this effect vanishes for the small firms. Large firms both in all Belgium and Flanders experience a rate of growth of extra-EU destination countries of 6% and 13%, respectively. Comparing the results from Table 5 to the results displayed in Table 7, we see that small firms might simply take longer in applying what they learned from the export promotion agency. When taking the two-year lag of the treatment indicator, treatment becomes significant for nearly all model specifications for the whole sample and Flanders. The treatment effects for number of destination countries and number of extra-EU destination countries even slightly increase compared to the benchmark values in Table 4, from 4.8% to 5.2% and from 5.2% to 5.7%,

Table 5: Results for treatment “Action + Communication”, by size and region

1-year lag	All	Large ^a	SME ^b	S ^c
All				
Total Exports	0.102*	0.093	-0.029	-0.133
Number of destination countries	0.031***	0.040	0.015	-0.002
Number of ex-EU destination countries	0.031***	0.061**	0.021*	0.020
Total exports to new destination	0.056*	-0.001	0.042	0.044
Total exports to new ex-EU destination	0.034	0.000	0.051	0.065
Number of products	0.025**	0.044	0.010	-0.017
Flanders				
Total Exports	0.151*	0.468*	-0.033	-0.118
Number of destination countries	0.034***	0.060	0.009	-0.012
Number of ex-EU destination countries	0.026**	0.125***	0.010	0.015
Total exports to new destination	0.045	0.112	0.004	0.029
Total exports to new ex-EU destination	0.013	0.180	0.032	0.079
Number of products	0.020	0.045	-0.008	-0.033
Brussels				
Total Exports	-0.407	-0.039	0.284	0.331
Number of destination countries	-0.007	0.150	0.030	0.011
Number of ex-EU destination countries	-0.066	0.103	-0.109	-0.301
Total exports to new destination	0.104	-0.266	-0.633***	-0.771***
Total exports to new ex-EU destination	-0.116	-0.143	-0.660	0.000
Number of products	-0.01	0.345**	0.121	0.265

Source: Our own calculations on data from Brussels Invest & Export, F.I.T., and NBB export data.

Performance indicators in logs.

* 10% Significance level, ** 5% significance level, *** 1% significance level.

Standard errors can be obtained from the authors on request.

Notes: ^a Large, ≥ 250 employees; ^b Small and medium-sized, $50 \leq \text{employees} < 250$;

^c small, $10 \leq \text{employees} < 50$

Table 6: Results for treatment “Any”, by size and region

2-year lag	All	Large ^a	SME ^b	S ^c
All				
Total Exports	0.124**	0.053	0.081	0.113
Number of destination countries	0.035***	-0.009	0.030***	0.031**
Number of ex-EU destination countries	0.036***	0.005	0.040***	0.032**
Total exports to new destination	0.053*	-0.170	0.052	0.056
Total exports to new ex-EU destination	0.061*	-0.164	0.044	0.030
Number of products	0.044	-0.006	0.041***	0.031*
Flanders				
Total Exports	0.109	-0.213	0.103	0.153
Number of destination countries	0.031**	-0.046	0.023	0.024
Number of ex-EU destination countries	0.027**	-0.053	0.027*	0.022
Total exports to new destination	0.047	-0.265	0.054	0.146**
Total exports to new ex-EU destination	0.020	-0.227	-0.014	0.024
Number of products	0.034**	-0.049	0.030	0.027
Brussels				
Total Exports	-0.524	-0.489	-0.942	-1.169
Number of destination countries	-0.045	0.011	-0.069	-0.124
Number of ex-EU destination countries	-0.058	-0.127	-0.098	-0.134
Total exports to new destination	-0.133	0.771	0.658	-0.083
Total exports to new ex-EU destination	-0.048	1.144**	1.043	0.42
Number of products	-0.077	0.09	-0.097	-0.18

Source: Our own calculations on data from Brussels Invest & Export, F.I.T., and NBB export data.

Performance indicators in logs.

* 10% Significance level, ** 5% significance level, *** 1% significance level.

Standard errors can be obtained from the authors on request.

Notes: ^a Large, ≥ 250 employees; ^b Small and medium-sized, $50 \leq \text{employees} < 250$;

^c small, $10 \leq \text{employees} < 50$

respectively.

Although we found that treatment effects become more significant when comparing one-year and two-year lags for treatment “Action + Communication”, we can see in Table 6 that this is not the case if we analyze treatment “Any”. In the group of small and medium-sized firms, some firms only benefited after 2 years after the treatment but the magnitude of the treatment indicator is exactly the same as when using the one year lag of promotion.

In this section, we compared treatment effects for two different treatment specifications and two different lags of the treatment. We found that when no special treatment type is specified, firms benefit mainly in the first year

Table 7: Results for treatment “Action + Communication”, by size and region

2-year lag	All	Large ^a	SME ^b	S ^c
All				
Total Exports	0.091	-0.100	0.145**	0.173*
Number of destination countries	0.030***	-0.008	0.031***	0.031**
Number of ex-EU destination countries	0.032***	-0.018	0.037***	0.040***
Total exports to new destination	0.056*	-0.037	0.060*	0.073
Total exports to new ex-EU destination	0.051	-0.032	0.046	0.072
Number of products	0.036***	-0.013	0.044***	0.040**
Flanders				
Total Exports	0.230**	-0.058	0.215*	0.293*
Number of destination countries	0.051***	-0.016	0.043**	0.051**
Number of ex-EU destination countries	0.051***	-0.075	0.057***	0.055**
Total exports to new destination	0.119**	0.208**	0.092	0.155
Total exports to new ex-EU destination	0.101	0.108	0.064	0.098
Number of products	0.055***	-0.027	0.057**	0.060**
Brussels				
Total Exports	-0.461	-1.911	0.566	0.891
Number of destination countries	-0.063	0.010	-0.008	-0.109
Number of ex-EU destination countries	-0.067	-0.065	0.047	-0.071
Total exports to new added destination	-0.261	-0.482	0.013	-0.068
Total exports to new ex-EU destination	-0.125	0.362	0.314	0.104
Number of products	0.048	-0.061	0.172**	0.206

Source: Our own calculations on data from Brussels Invest & Export, F.I.T., and NBB export data.

Performance indicators in logs.

* 10% Significance level, ** 5% significance level, *** 1% significance level.

Standard errors can be obtained from the authors on request.

Notes: ^a Large, ≥ 250 employees; ^b Small and medium-sized, $50 \leq$ employees < 250 ;

^c small, $10 \leq$ employees < 50

after promotion, some only after two years. When the treatment is “Action + Communication”, the effect only kicks in after two periods. For the Brussels-Capital region, we found the impact of trade promotion to be very insignificant. There are several possibilities for this finding: First, it may be due to the short period over which we observe export promotion in Brussels which includes the recession following the financial crisis that started in 2007. Second, compared to F.I.T., a larger share of the clients of Brussels Invest & Export operates in the services sector. If these enterprises receive export promotion but do not export goods, the empirical effect in our analysis will be mitigated because we only consider trade in goods.

5 Conclusions

We investigated the effect of export promotion on the export trajectory of Belgian firms. Disposing of a unique Belgian dataset including both non-exporters and exporters, we applied the difference-in-differences estimation technique using two distinct treatment specifications and two different lags of treatment. We find that when firms receive export promotion disregarding the type of service, firms benefit mainly in the first year after promotion, some only after two years. When the treatment is “Action + Communication”, the effect only kicks in after two periods. This suggests also that although the effect of any promotion is evident after one year, the benefits vanish for most firms after two years and long-lasting effects on total exports or the number of export destinations is instant. Firms therefore do not learn from export promotion in general, but only for the problem of entering the targeted new market in the following period.

References

- Abraham, F. and G. Dewit (2000). Export promotion via official export insurance. *Open Economies Review* 11(1), 5–26.
- Álvarez, R. and G. A. Crespi (2000). Exporter performance and promotion instruments: Chilean empirical evidence. *Estudios de Economía* 27(2),

225–241.

- Bernard, A. B. and J. B. Jensen (2004). Why some firms export. *The Review of Economics and Statistics* 86(2), 561–569.
- Bhagwati, J. (1988). *Protectionism*. Cambridge: MIT Press.
- Blundell, R. and M. Costa Dias (2009). Alternative approaches to evaluation in empirical microeconomics. *Journal of Human Resources* 44(3).
- Commission of the European Communities (2008). “think small first”, a “small business act” for europe. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0394:FIN:EN:PDF>.
- Cuyvers, L. and M. Dumont (2008). Export opportunities and export promotion activities in Belgium: Is there any connection? *Review of Business and Economics*.
- European Union (2012). 6. the single market. http://europa.eu/abc/12lessons/lesson_6/index_en.htm.
- Görg, H., M. Henry, and E. Strobl (2008). Grant support and exporting activity. *The Review of Economics and Statistics* 90(1), 168–174.
- Hayakawa, K., H.-H. Lee, and D. Park (2011). Do export promotion agencies increase exports? Technical report.
- Imbens, G. and J. Wooldridge (2009). Recent developments in the econometrics of program evaluation. *Journal of Economic Literature* 47(1), 5–86.
- Kézdi, G. (2005). Robust standard error estimation in fixed-effects panel models. *EconWPA Econometrics*, No. 0508018.
- Rubin, D. (1974). Estimating causal effects of treatments in randomized and nonrandomized studies. *Journal of educational Psychology* 66(5), 688.
- Stock, J. H. and M. W. Watson. Heteroskedasticity-robust standard errors for fixed effects panel data regression. *Econometrica* 76(1).
- Van Biesebroeck, J., E. Yu, and S. Chen (2011). The impact of trade promotion services on Canadian exporter performance. *CEPR Discussion Paper*, No. 8597.
- Volpe Martincus, C. and J. Carballo (2008). Is export promotion effective in developing countries? Firm-level evidence on the intensive and the

extensive margins of exports. *Journal of International Economics* 76(1), 89–106.

Volpe Martincus, C. and J. Carballo (2010a). Beyond the average effects: The distributional impacts of export promotion programs in developing countries. *Journal of Development Economics* 92(2), 201–214.

Volpe Martincus, C. and J. Carballo (2010b). Entering new country and product markets: does export promotion help? *Review of World Economics (Weltwirtschaftliches Archiv)* 146(3), 437–467.

Appendix

Table 8: Yearly averages of performance indicators by size group

	Av. total exports	Av. number of export destinations	Av. number of exported products	Number of exporters
All firms				
2006	12.07	1.63	1.77	13,010
2007	11.95	1.63	1.79	13,177
2008	11.83	1.64	1.83	13,695
2009	11.84	1.67	1.86	13,345
2010	12.19	1.75	1.95	11,234
Large firms ^a				
2006	15.90	2.75	3.05	494
2007	15.72	2.74	3.08	536
2008	15.61	2.77	3.16	549
2009	15.55	2.79	3.19	530
2010	15.51	2.75	3.19	529
Medium firms ^b				
2006	14.66	2.35	2.49	1,709
2007	14.55	2.35	2.51	1,752
2008	14.38	2.35	2.54	1,870
2009	14.25	2.35	2.57	1,870
2010	14.34	2.37	2.60	1,798
Small firms ^c				
2006	12.43	1.70	1.86	4,595
2007	12.35	1.71	1.89	4,571
2008	12.22	1.71	1.91	4,820
2009	12.23	1.74	1.95	4,684
2010	12.48	1.78	2.00	4,084

Source: Our own calculations on data from NBB export data.

Performance indicators in logs.

Notes: ^a ≥ 250 employees; ^b $50 \leq$ employees < 250 ;^c $10 \leq$ employees < 50

Table 9: Yearly averages of performance indicators by region

	Av. total exports	Av. number of export destinations	Av. number of exported products	Number of exporters
All firms				
2006	12.07	1.63	1.77	13,010
2007	11.95	1.63	1.79	13,177
2008	11.83	1.64	1.83	13,695
2009	11.84	1.67	1.86	13,345
2010	12.19	1.75	1.95	11,234
Flanders				
2006	12.22	1.67	1.79	8,557
2007	12.14	1.68	1.81	8,632
2008	12.06	1.70	1.86	8,964
2009	12.05	1.72	1.89	8,779
2010	12.32	1.79	1.96	7,628
Brussels Capital region				
2006	11.49	1.50	1.79	1,682
2007	11.07	1.47	1.78	1,735
2008	10.76	1.46	1.77	1,846
2009	10.80	1.48	1.80	1,781
2010	11.36	1.57	1.93	1,340

Source: Our own calculations on data from NBB export data.
Performance indicators in logs.

Table 10: Yearly averages of extra-EU performance indicators by size

	Av. number of ex-EU destinations	Av. number of ex-EU destinations if fit or bie	Average of total exports to newly added ex-EU destinations	Average of total exports to newly added ex-EU destinations if fit or bie
All firms				
2006	1.12	1.74	10.69	12.35
2007	1.15	1.78	10.49	12.29
2008	1.17	1.80	10.33	12.17
2009	1.17	1.77	10.30	12.06
2010	1.23	1.81	10.62	12.13
Large firms ^a				
2006	2.20	2.84	13.79	15.46
2007	2.20	2.83	13.61	15.21
2008	2.25	2.88	13.46	15.11
2009	2.26	2.90	13.45	15.13
2010	2.26	2.90	13.45	15.17
Medium firms ^b				
2006	1.57	2.10	12.45	13.43
2007	1.56	2.13	12.24	13.62
2008	1.62	2.18	12.09	13.41
2009	1.64	2.20	11.97	13.55
2010	1.65	2.19	12.10	13.41
Small firms ^c				
2006	1.06	1.64	10.71	12.10
2007	1.10	1.72	10.53	12.14
2008	1.10	1.66	10.36	11.84
2009	1.10	1.66	10.32	11.81
2010	1.16	1.71	10.58	11.94

Source: Our own calculations on data from Brussels Invest & Export, F.I.T., and NBB export data.

Performance indicators in logs.

Notes: ^a ≥ 250 employees; ^b $50 \leq$ employees < 250 ; ^c $10 \leq$ employees < 50

Table 11: Yearly averages of extra-EU performance indicators by region

	Av. number of ex-EU export destinations	Av. of total exports to newly added destinations	Av. of total exports to newly added ex-EU destinations
All firms			
2006	1.12	12.07	10.69
2007	1.15	11.95	10.49
2008	1.17	11.83	10.33
2009	1.17	11.84	10.30
2010	1.23	12.19	10.62
Flanders			
2006	1.13	12.22	10.79
2007	1.16	12.14	10.61
2008	1.18	12.06	10.49
2009	1.18	12.05	10.44
2010	1.24	12.32	10.69
Brussels Capital region			
2006	1.14	11.49	10.35
2007	1.16	11.07	10.00
2008	1.16	10.76	9.69
2009	1.18	10.79	9.66
2010	1.24	11.36	10.14

Source: Our own calculations on data from NBB export data.
Performance indicators in logs.