

# Free lunch or vital support? Export promotion in The Netherlands

Export  
promotion

213

Marcel van den Berg  
*Statistics Netherlands, Heerlen, The Netherlands*

Received 23 September 2020  
Revised 25 October 2021  
Accepted 20 November 2021

## Abstract

**Purpose** – The purpose of this paper is to add to the debate concerning the merits of export promotion efforts by governments by investigating the effect of export promotion program (EPP) participation on the export performance of Dutch small and medium-sized enterprises (SMEs).

**Design/methodology/approach** – The authors confront participation data of an EPP targeting SMEs with rich firm-level data and use propensity score matching techniques combined with regression analysis.

**Findings** – The authors show that exports generated by participants do generally rise in the years after program entry, however, export growth does not outpace that of comparable, but unsupported firms. Nonetheless, there is some evidence suggesting that export shares in sales rise faster among program entrants, particularly in the first and second years after participation. Furthermore, the authors present evidence suggesting that the probability of becoming a permanent exporter is higher for participants relative to beginning exporters that did not receive support from the program.

**Originality/value** – The analysis contributes to the still relatively small literature dealing with the impact of government export promotion instruments on export performance using firm-level micro-data. The subject of analysis are Dutch small businesses. SMEs, particularly operating in advanced economies, are a group that is not frequently considered separately in this respect.

**Keywords** Exports, Export promotion, SMEs, Firm performance

**Paper type** Research paper

## 1. Introduction

The merits of export promotion efforts by governments have been fiercely debated over the years. Compelling empirical evidence for self-selection into exporting raises the question of which group of potential exporters a government should aim to support when developing

---

© Marcel van den Berg. Published in *Applied Economic Analysis*. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licenses/by/4.0/legalcode>

**JEL classification** – F14, F23, H42, O52

The content of this publication does not reflect the official opinion of Statistics Netherlands. Responsibility for the information and views expressed in the paper lies entirely with the author. This study is funded by the Ministry of Foreign Affairs of the Netherlands. I am grateful to Netherlands Enterprise Agency and in particular Hans Vlot for providing me with the data underlying the analysis. I thank Marjolijn Jaarsma and Mirjam Caminada for their support in my comprehension of the various data sets. I also thank Yusuf Emre Akgündüz, Peter van Bergeijk, Oscar Lemmers, Charles van Marrewijk and participants at the RWTH Aachen University Research Seminar in Economics and the 2016 International Conference on Export Promotion in Zwolle, the Netherlands, for valuable feedback and comments. Any remaining errors are my own.



export promotion programs (EPPs). Provided that firms self-select into exporting, governments should ideally focus on supporting the group of non-exporters that already possesses the preferable set of characteristics attributed to exporters, but would not engage in exporting without the support of an EPP. Risk aversion or perceived barriers to foreign market entry of individual entrepreneurs provide an explanation for the existence of firms that are ready for an export start in terms of self-selection, but stay focused on domestic markets. Entering an EPP could reduce the fixed costs of foreign market entry or reduce the perceived risk of internationalization by just enough to give a firm that last nudge into foreign markets. In that case, government support is justified. In all other cases, such programs would support firms that do not need assistance because they would otherwise have internationalized their activities without government support or firms participate that do not possess the preferable set of characteristics, which would imply that chances are substantial that they fail on international markets.

We analyze the Dutch EPP prepare2start (P2S), which aims to support small businesses in the early stages of their export endeavors. We contribute to the still relatively small literature dealing with the impact of governmental export promotion instruments on export performance using firm-level micro-data. In addition, we investigate an instrument that specifically targets small businesses, a group that is not frequently considered separately in this respect. Finally, an addition to the literature of this study is that it concerns export promotion in an advanced economy rather than developing countries.

We merge participation records from P2S with firm-level micro-data and investigate the effect of program participation on export performance. Using propensity score matching, we investigate whether the export performance of participants significantly differs from that of comparable firms that are at the same stages of export market entry only without support from an EPP. We find no convincing evidence that program participants are able to increase exports more rapidly than their counterparts that are at the same stage of export involvement, but that did not participate in the program. Exports generated by participants do generally rise in the years after program entry. Export growth, however, does not outpace that of comparable, but unsupported firms. There is some evidence suggesting that export shares in sales rise faster among program entrants, particularly in the first and second years after participation. Furthermore, we present evidence that suggests that the probability of becoming a permanent exporter is higher for participants relative to beginning exporters that did not receive support from the program.

We proceed as follows. Section 2 discusses the empirical literature on the relationship between export promotion and exports. Section 3 presents the data regarding participation records and the additional micro-data used. Section 4 introduces the EPP P2S. Section 5 discusses our empirical strategy followed by the empirical results in Section 6. Section 7 concludes.

## 2. Exporting and export promotion

We focus our discussion of the relevant literature on research at the micro-level using firm-level data to investigate firm heterogeneity and the impact of specific export promotion activities on the export involvement of individual firms.

Since the mid-1990s, a vast body of empirical literature has presented compelling evidence suggesting that exporting firms generally perform better on multiple dimensions and that firms seem to self-select into exporting rather than improve performance through learning-by-exporting. The literature shows that exporters are on average larger, more productive, more innovative, more capital-intensive, paying higher wages and have a higher probability of survival than firms focusing on domestic markets. This implies that firms most likely already possess these beneficial characteristics before they start exporting to be

able to overcome the fixed costs associated with entering foreign markets (Bernard *et al.*, 2012; Wagner, 2012) for recent surveys of the empirical literature).

Roberts and Tybout (1997) suggest export promotion policies aimed at the extensive margin might be more effective in expanding exports than policies aimed at the intensive margin. In a broader perspective, Moons (2012) corroborates this notion through a review of the empirical literature concerning Latin America and the organization for economic co-operation and development. Alvarez and Crespi (2000) and Alvarez (2004) show that Chilean EPPs initially have a positive impact on the number of foreign markets that are being served, however, participating in such programs is not shown to unambiguously increase the probability of becoming a permanent exporter. In a series of empirical papers, Volpe Martincus and Carballo (2008, 2010a, 2010b, 2010c) and Volpe Martincus *et al.* (2012) consider various dimensions of export performance in multiple Latin-American countries, presenting evidence suggesting that EPPs mainly promote exports along the extensive margin, both in terms of the number of products exported and the number of destination countries and particularly for exports of heterogeneous goods and for smaller firms. The latter finding confirms the hypothesis that smaller firms generally perceive barriers to exporting more strongly than do larger firms, a finding corroborated by Comi and Resmini (2020) using data on EPPs in the Italian region of Lombardy. In addition, their analysis also confirms that EPPs are most effective along the extensive margin. Munch and Schaur (2018) show that Danish firms benefit from EPP participation in terms of foreign market entry across the full firm size distribution, however, in terms of export values medium sized firms benefit the most. Brooks and Van Biesebroeck (2017) focus particularly on the extensive margin and show that Flemish firms are able to enter foreign markets outside the EU for the first time through EPP entry. Van Biesebroeck *et al.* (2016) focus on the 2008–2009 crisis and present evidence suggesting that EPPs enabled Belgian and Peruvian firms to remain active on foreign markets and export more relative to unsupported firms. Finally, and in contrast with most empirical evidence, van Biesebroeck *et al.* (2015) find that Canadian EPPs mainly impact along the intensive margin rather than along the extensive margin.

In general, the existing body of evidence can be summarized by the notion that export promotion efforts seem to be most effective when they are aimed at smaller firms, exporting heterogeneous goods and increasing exports along the extensive margins.

### 3. Data

#### 3.1 *Export promotion program*

We take a closer look at the characteristics of exporters participating in EPPs compared to non-traders and unsupported exporters by analyzing participants in an EPP called P2S. This program is developed by the Dutch Government and executed by the Dutch export promotion agency; The Netherlands Enterprise Agency. The program was first established in 1999 and terminated in 2012.

The data cover the years 2000 to 2010, which is almost the full length of existence of the program. The participation records contain a variety of characteristics of the supported project such as the destination of the export project in terms of country and industry and information about the subsidization of specific activities from the internationalization plan. Over the course of 11 years, a total of 5,787 P2S-applications by 4,929 unique firms have been accepted and executed. Repeated participation is, thus, allowed (even within the same year), but the majority of the firms, 86%, participate only once.

The number of program entries that we can include in the analysis is, however, smaller. This has four reasons. First, firm-level data from Statistics Netherlands is not available for the years 2000 and 2001. Second, the program is open to firms from any sector, including service sectors, but the trade data only concern goods trade. Therefore, we confine the analysis to manufacturing

and wholesale and retail trading sectors. Third, program participation is registered on a different registration number than the registry system used by Statistics Netherlands for tracking individual firms. Merging participation records to the micro-data panel of Statistics Netherlands is a cumbersome procedure resulting in multiple participation records of different firms merging to one unique firm in the Statistics Netherlands records or vice versa. To be absolutely certain that the unit of measurement for our analysis comprises of exactly the same economic activity in both the participation records and the micro-data, we only allow the merge for unique firms from the participation records that could be tied uniquely to a single firm in the micro-data from Statistics Netherlands. Fourth, and finally, program participation is not limited to exporting endeavors; also importing and engaging in foreign direct investment projects are eligible for support by P2S. However, we focus our analysis on the impact of participation on exporting [1]. The merging procedure ultimately results in a total of 1,053 projects by 905 unique firms being successfully matched to our micro-data set.

### *3.2 Additional micro-data*

For the empirical analysis we merge data from three main data sources at Statistics Netherlands: (i) The General Business Register (GBR) (ii) The Baseline database and (iii) The International Trade in Goods Statistic into a panel data set covering the years 2002 to 2010.

The data from the three different sources are merged using a unique identification number which is assigned by Statistics Netherlands to each individual firm in the GBR.

The GBR is, in principle, exhaustive in the sense that it contains information about every firm in The Netherlands, including a set of basic firm characteristics such as the number of employees in fulltime equivalents and the sector in which the firm operates according to the internationally standardized international standard industrial classification (ISIC) Rev. 3.1 sector classification. We take from separate but related database information indicating whether the ultimate controlling owner of the Dutch firm is located abroad.

The Baseline database contains a wealth of financial information collected from both corporate tax declarations and income tax declarations of entrepreneurs. The Baseline database contains information about profits, gross output, value added and the value of capital, labor and intermediate inputs, where the data regarding input used and output produced are deflated using separate sector level price indices for gross output, value added, labor, capital and intermediate inputs. We use the data from tax declarations to estimate total factor productivity (TFP) by using the procedure proposed by [Levinsohn and Petrin \(2003\)](#).

Trade data are taken from the International Trade database and include information on all imports and exports of goods by Dutch firms. Extra-EU trade is recorded by the Customs Authority and intra-EU imports and exports are recorded by the Dutch Tax Authority. The trade data available at the firm level cover more than 80% of annual aggregate trade in terms of value in The Netherlands [2].

The merging procedure results in an unbalanced panel data set containing a total of 1,848,789 observations of 511,044 firms spanning a period of nine years (2002–2010) [3]. Because of their fundamentally different nature, we separate the data into two main sectors, manufacturing and wholesale and retail trading sectors [4].

## **4. The export promotion program**

### *4.1 Prepare2start participation*

P2S is an EPP specifically targeting small businesses with limited export experience. The support provided to beginning exporters consists of two elements, namely, guidance in

the development of an international business plan and limited financial support for the execution of specific elements of that plan. The monetary subsidy amounts to 50% of the costs of the subsidizable activities with a maximum of €11,500 per project. The participating firm needs to put in a considerable effort as well, as it is required to develop an international business plan during program participation and it bears the other 50% of the costs of executing subsidizable activities from the plan plus any additional non-subsidizable expenses. The main participation criteria of this program are relatively non-discriminatory; the applicant cannot employ more than 100 employees and the export share in sales cannot exceed 25% unless total turnover does not exceed €100,000 [5]. The annual budget of the program varied over the years, up to around €11m annually (in nominal terms) in recent years. The main aim of the program is to support small businesses in the internationalization of their activities. Even though the specifics have varied over the years, the general framework of the program has been fairly unchanged. After an introduction period, the annual budget was generally fully depleted following a “first-come-first-serve” regime [6]. Firms are allowed to revisit the program with a different export program, for example, when they want to enter an additional export market. Over the years about 25% of the firms participate in the program more than once (Table 1).

#### 4.2 Prepare2start-participants

About one-third of the participants did not export at all in the year before participation (Table 2). In addition, export shares in sales are generally modest among those firms that do already export. The incidence of exporting and the accompanying export shares of P2S-participants increase steadily over the years surrounding program participation. The fraction of firms that exports increase from 66% in the year before program participation to 76% in the year after. Analogously,

# P2S-projects per firm	Firms		Projects	
	#	(%)	#	(%)
1	676	74.7	676	56.6
2	180	19.9	360	30.2
3	39	4.3	117	9.8
4	9	1.0	36	3.0
5	1	0.1	5	0.4
Total	905	100.0	1,194	100.0

**Table 1.**  
P2S-Projects per firm  
(2000–2010)

Characteristic	Program participation			Self-reported In program application
	Year before	Year of	Year after	
<i>Number of firms</i>				
% non-exporting participants	33.9	28.9	24.5	32.7
% exporting participants	66.1	71.1	75.5	67.3
Total no. of firms	555	804	642	768
<i>Export share in sales</i>				
Mean	6.5	9.2	10.7	7.1
Median	1.8	3.1	4.3	2.3
<i>Firm size (FTE)</i>				
Mean	11.3	10.9	11.7	
Median	5.0	4.0	5.0	

**Table 2.**  
Firm characteristics  
of first-time program  
participants  
(2002–2010)

the mean export share increases from 6.5% to 10.7% over the same period. However, that also implies that 25% of the program participants still has been unable to successfully enter export markets one year after program participation. In addition, the distribution of export shares in sales is rather skewed, considering the fact that the median export share before program participation is a mere 1.8% and increases to a still modest 4.3% in the year after.

Firms participating in the program P2S are generally small considering the mean employment of about 11 fulltime equivalent (FTE) and a median of just 4 FTE. In line with what is considered a stylized fact in the empirical literature, exporting firms that participate in the EPP show to be considerably larger than non-exporters. Wholesale trading is by far the most prominent provider of program participants with a participation share of almost half, followed by retail trade with a share of 9%. Germany is by far the most important destination country for firms participating in P2S with 38% of the export projects aiming at entering the German market. This is followed by the UK (12%), Belgium (10%) and France (8%). The focus of beginning exporters is clearly on nearby countries with Western Europe accounting for 85% of all export projects. The destination distribution for first-time participants and repeaters reveals an interesting pattern; repeating participants seem to focus their export plans on markets further away within Western Europe. The combined participation share of Belgium, UK and Germany among first-time participants is 64% and for repeaters 47%.

About one-fourth of the program participants ultimately receive the maximum financial support of €11,500 for the execution of certain elements of the internationalization plan. There is little difference between first-time participants and repeaters, suggesting that repeating participants do not use their program experience to work the system and maximize support. The mean amount of financial support received by program participants amounts to about €7,500 or 65% of the maximum with the median at about €7,900.

## 5. Empirical strategy

### *5.1 Identifying the treatment and control group*

To gain an understanding of the development of the export performance of P2S-participants relative to non-participating exporters we start by identifying a subset of firms from both groups that we consistently observe over the years surrounding program participation. The focus of the analysis in this section will be on firms that we observe for (at least) five consecutive years, with the window of analysis starting two years before program entry up to at least two years after program participation [7]. We only consider first-time participants in the analysis, thereby excluding entrants that already participated in the program before the observed period of five consecutive years under investigation.

In our analysis, we will distinguish between firms that participate once in P2S, without repeated participation with consecutive export projects in the period of impact measurement following program participation and repeating firms. We do this to separate the impact from single program participation from possible non-linearities in the impact on the export performance of accumulated participation. In addition, a firm is of course only allowed to revisit the program if the first participation did not push it beyond the limited export involvement requirement, which could put a downward bias on the results once including repeaters. Table 3 illustrates that the number of available program entries decreases rather quickly with an increase of the period of analysis. Considering a window of analysis of five consecutive years we have a total of 150 program-entries available, which decreases gradually to a mere 23 entries when considering a window of eight years (five years after program participation). If we also allow for repeated participation in the impact measurement period the numbers of observations increase to 184 resp. 34. The number of non-participating firms serving as the pool from which the control group will be constructed



is sufficiently large; the five-year balanced panel consists of 238,000 non-exporters and 54,000 exporting firms.

Table 4 presents a few key parameters of interest for both P2S-participants and non-participating firms. We see the persistence of exporting growing considerably among participants, from 71% exporting already two years prior to participation to 88% two years after for the five-year balanced panel. Simultaneously, non-participants modestly increased their presence on foreign markets, with the persistence of exporting growing from 17% to 20% over the same period of time. Table 4 also presents the corresponding values for the past year of the six- and seven-year balanced panel. The persistence of exporting is considerably higher among both participants and non-participants, which is mainly because of the mean firm size being higher for both subsets as the bottom part of Table 4 illustrates. This is tied to the underlying number of observations decreasing rapidly with an increasing panel length as Table 3 shows, and the probability of a firm surviving in a balanced panel of increasing length is higher for larger firms.

Balanced panel Period, prepare2start in t	5 yrs t - 2, t + 2	6 yrs t - 2, t + 3	7 yrs t - 2, t + 4	8 yrs t - 2, t + 5
excl. repeaters, non-exporting in t	22	13	6	2
excl. repeaters, exporting in t	128	67	46	21
Total	150	80	52	23
incl. repeaters, non-exporting in t	26	16	8	3
incl. repeaters, exporting in t	158	97	68	31
Total	184	113	76	34

**Table 3.**  
Prepare2start-  
participation and  
export status  
(balanced panel,  
2002–2010)

**Notes:** *Excl. repeaters* indicates that firms with repeated program participation before the end of the cohort under investigation are excluded from the statistics. The subset denoted *incl. repeaters* includes this group of repeating participants

Balanced panel Year, prepare2start in t	t - 2	t - 1	t	5 yrs t + 1	t + 2	6 yrs t + 3	7 yrs t + 4
<i>% of firms exporting</i>							
Participants (incl. repeaters)	71.2	73.9	85.9	85.3	88.0	92.9	93.4
Non-participants (<= 100 FTE)	17.0	17.3	18.6	18.8	20.1	31.8	33.2
<i>Export share in sales</i>							
Participants (incl. repeaters)	Mean	7.6	7.2	9.5	12.0	12.4	12.3
	Median	2.7	2.7	4.9	6.1	5.9	7.9
Non-participants (<= 100 FTE)	Mean	3.0	3.0	3.1	3.2	3.3	5.2
	Median	0.0	0.0	0.0	0.0	0.0	0.0
<i>Total factor productivity</i>							
Participants (incl. repeaters)	17,329	18,599	18,909	18,624	19,688	20,563	19,181
Non-participants (<= 100 FTE)	11,456	12,154	12,399	12,194	12,295	16,414	16,101
<i>Firm size (FTE)</i>							
Participants (incl. repeaters)	12.2	12.5	13.7	14.1	14.4	18.3	16.9
Non-participants (<= 100 FTE)	6.3	6.3	6.3	6.3	6.2	9.7	9.6

**Table 4.**  
Prepare2start-  
participation and  
firm characteristics  
(balanced panel,  
2002–2010)

The second part of [Table 4](#) shows that the export share of program participants also increases gradually over time, while that of non-participants remains largely constant at around 3%. For program entrants, the export share in sales increases from 8% to over 12% in five years time. However, as we have seen in [Section 4.2](#) as well, the distribution is rather skewed. Simultaneously, firm-level productivity measured as TFP is also higher among program participants. Finally, the bottom part provides a (partial) explanation for higher persistence of exporting and higher TFP-levels among program participants compared to non-entrants; the average entrant is roughly twice as large as the average non-entrant.

### *5.2 Propensity score matching*

The sheer observation that export shares and export persistence are higher and seem to grow faster among program participants relative to non-entrants is not sufficient to conclude that the EPP is successful in supporting beginning exporters in their endeavors on foreign markets, simply because it could be the case that firms entering the program self-select into participation because they are more motivated to succeed on foreign markets or are already better informed or prepared for an export start. In addition, the subset of non-participants is likely to be more diverse, containing, for example, a considerable number of small firms which are not contemplating export activities in any way. However, it is impossible to check whether program entrants would have realized the same results on foreign markets if they entered export markets without the support of the export promotion agency, as this scenario is simply unobserved.

A common way to deal with this endogeneity issue is to use propensity score matching ([Greenaway and Kneller, 2007](#)). The objective of this procedure is to construct the non-observed counterfactual by matching each treated firm to a firm from the control group based on the similarity of firm characteristics before the treatment. In this particular application, the treatment is P2S-participation of the firm. The control group consists of firms that we observe consistently over exactly the same period of time as the treated unit for which it serves as the counterfactual and that never participated in the EPP altogether up to the end of the period under investigation. The aim is to analyze whether these matched pairs of firms show diverging performance growth paths in the years after program entry. We use propensity score matching to investigate the impact of program participation on export performance. We take a closer look at two dimensions of export performance: the export value and the export share in sales. Firms participating in the program in year  $t$  are matched to a peer from the control group based on the similarity of a set of firm characteristics at  $t - 1$ . These characteristics are used in a pooled probit model to estimate the probability of program participation at time  $t$ , the so-called propensity score.

### *5.3 Treatment effect I and II: export value and export share*

Firms from the subset of P2S-entrants are then matched to a peer from the non-participating control group by minimizing the difference in individual propensity scores; this procedure is referred to as nearest neighbor propensity score matching. We force matching to be allowed only within the same sector and year. In addition, it is desirable to match program entrants to peers who are roughly at the same stage in the internationalization process, as the outcome variables of key interest are the export value and export share in sales after program entry. We operationalize this by dividing the distribution of export values of participants at  $t - 1$  into brackets of €50,000 and force the matching of entrants to peers only to be allowed within these brackets when considering the export value as our performance variable of interest. Following the same analogy, we only allow the matching of



program participants to non-participating peers within export share brackets of 2.5% when the export share in sales is our outcome variable under investigation [8].

The export performance dimension under investigation, on which the program participant is, thus, matched to a peer within narrowly defined brackets, is left out of the probit model in which the probability of program participation is estimated. The model is specified as follows for the analysis of the *export value* as the outcome variable of interest:

$$\begin{aligned} Pr(P2S_{it} = 1) = & \alpha + \beta_1 exporter_{it-1} + \beta_2 importer_{it-1} + \beta_3 twowaytrader_{it-1} \\ & + \beta_4 foreigncontrolled_{it-1} + \beta_5 firmsize_{it-1} + \beta_6 \ln(TFP_{it-1}) \\ & + \beta_7 + TFPgrowth_{it-1,t-2} + \beta_8 exportshare_{it-1} + \beta_9 exportgrowth_{it-1,t-2} \\ & + \beta_{10} year_t + \beta_{11} sector_{it-1} + e_{it} \end{aligned} \quad (1)$$

The analysis of the treatment effect expressed in terms of the *export share in sales* follows the same analogy. The propensity score of program participation is, thus, estimated from the trade status of the firm, both in terms of importing and exporting, whether the firm is foreign controlled, firm size in terms of employment, the level and growth rate of TFP, the export growth rate and a full set of year and sector dummy variables. In addition, when the treatment effect is expressed in terms of export values, we include the export share as an explanatory variable in the probit model and vice versa. All explanatory variables are lagged one year, except for time-invariant variables and productivity growth and export growth, which are defined as the percentage change of productivity resp. export value between  $t - 2$  and  $t - 1$  [9].

Propensity score matching is done using a caliper of 1/4 of the standard deviation of the estimated propensity score, as is common in the literature. As we use a caliper, combined with the fact that we only allow matches within narrowly defined year-sector-export value bracket combinations, we decide not to additionally impose the common support condition on the matching procedure. The only additional condition that needs to be satisfied is that both treated and matched untreated firms continuously stay in business during the period under investigation. In the final step, the export performance of the matched pairs of program entrants and unsupported beginning exporters is compared. To evaluate the average treatment effect on the treated (ATT) we construct bias-corrected 95% confidence intervals by bootstrapping the ATT with 1,000 replications.

#### 5.4 Treatment effect III: becoming a permanent exporter

The third performance dimension of exporting that we investigate is the probability of becoming a permanent exporter. A permanent exporter is defined as a firm that exports (export value larger than zero) in the year of program participation (denoted  $t$ ) and the two years following program entry  $t + 1$  and  $t + 2$ . To gain an understanding of the impact of P2S-participation on the probability of becoming a permanent exporter, we run a simple probit-model in which the dummy variable indicating whether a firm is a permanent exporter is regressed on a dummy variable indicating whether the firm participated in the program in year  $t$  and an additional set of control variables describing firm characteristics. The probit-model we estimate is, thus, defined as follows:

$$\begin{aligned} Pr(permanentexporter_{it,t+1,t+2} = 1) = & \alpha + \beta_1 prepare2start + \beta_2 firmsize_{it} \\ & + \beta_3 \ln(TFP_{it}) + \beta_4 TFPgrowth_{it,t-1} + \beta_5 exportgrowth_{it,t-1} \\ & + \beta_6 foreigncontrolled_{it} + \beta_7 importer_{it} + \beta_8 year_t + \beta_9 sector_{it} + e_{it} \end{aligned} \quad (2)$$

The probability of becoming a permanent exporter is, thus, estimated from a program participation dummy variable, firm size in terms of employment in FTE, the level and growth rate of TFP, the export growth rate, whether the firm is foreign controlled, the import status of the firm and a full set of year and sector dummy variables. All explanatory variables are set in year  $t$ , except for time-invariant variables and productivity growth and export growth, which are defined as the percentage change of productivity resp. export value between  $t - 1$  and  $t$ . To get an indication of the robustness of our findings we run this model separately on the four subsets of paired treated and control groups constructed by the propensity score matching procedure discussed above.

### 6. Empirical findings

In this section, we present the results of our empirical analysis. We start with a graphical depiction of the development of cumulative export values of the treatment and the control group before we turn to our econometric results. Figures 1 and 2 depict the cumulative export values of P2S-participants and matched non-entrants over the observed period of five years surrounding program participation of the treated firm. We distinguish between the case where we do not allow for repeated program entries before the end of the period of analysis at  $t + 2$  (Figure 1) and the case where repeated participation is allowed (Figure 2). The fact that matching is forced within export value brackets is reflected by the cumulative export values of treated and control groups being largely equal at  $t - 1$ .

Figures 1 and 2 show that the cumulative export value for the treatment and control group are apart no more than 8% in the year of program participation. In the year after program entry, the generated export value is higher for both treated groups; the group excluding repeated entrants realizes a 19% higher export value than the control group and the treatment group including repeated entrants 6%. At  $t + 2$ , the export value growth of single participants vanishes, although the total export value is still 10% higher than that of the control group. Exports generated by the treatment group including repeated participants continue to grow at a constant growth rate. However, export growth among the control

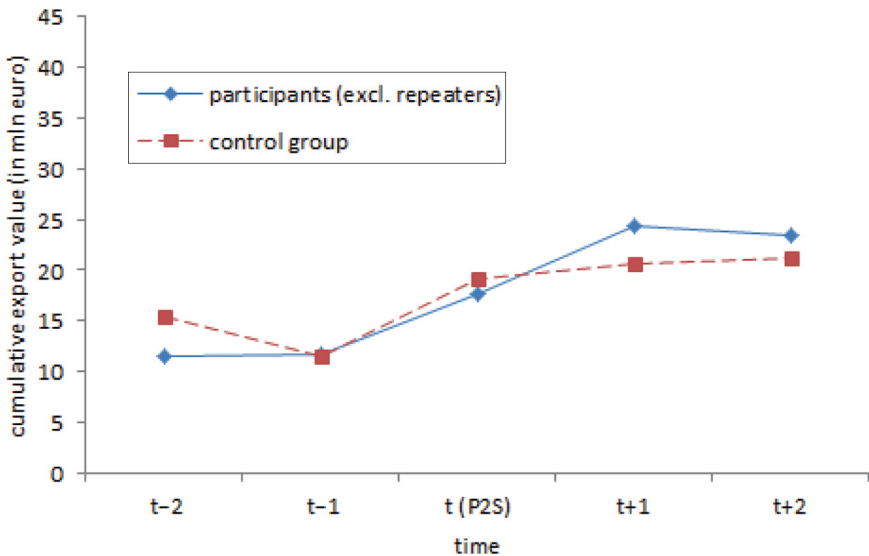
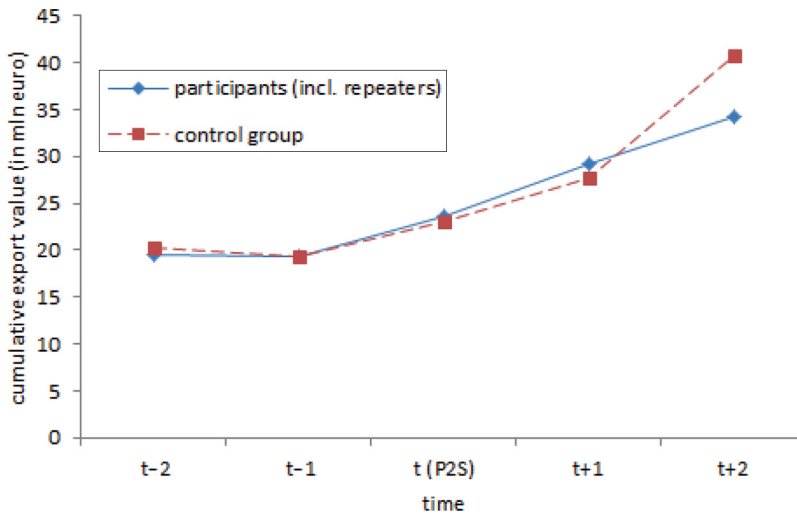


Figure 1. Cumulative export value of prepare2start-participants (P2S-entry in year  $t$ , excl. repeaters,  $n = 87$ ) and matched control group ( $n = 87$ )



**Figure 2.** Cumulative export value of participants (P2S-entry in year  $t$ , incl. repeaters,  $n = 111$ ) and matched control group ( $n = 111$ )

group spikes, rendering the total export value generated by the treatment group 16% smaller than the exports of the control group.

The picture emerging from Figures 1 and 2 refutes the premise that entering the EPP P2S renders participating firms to materialize higher export value growth than their non-participating counterparts, although firms overall seem to be able to increase exports in the years after program participation. However, the figures do suggest that repeated participation in the program has a beneficial effect on export value growth relative to single time program entry, particularly in the second year after program entry.

### 6.1 Treatment effect I: higher export value

Looking at the ATT regarding export values, that is, the difference between the average export value generated by P2S-participants in the year of entry and the two years following program participation the picture emerging from Figures 1 and 2 is confirmed. The mean program participant materializes exports of €200,000 to €300,000 in the years after program entry, although we should add that a small number of participants is not able to successfully enter export markets altogether and remains serving solely domestic markets. We do not find any evidence for P2S participants generating higher export values than their non-participating counterfactuals (Table 5). The treatment effect is generally small and not consistently positively signed. Every estimated ATT lies well within the bootstrapped bias-corrected 95% confidence interval. Note that the relatively large and negative treatment effect of the treatment group including repeaters two years after program entry is not caused by a collapsing export performance of program entrants, but due to rapid export growth among control group members (Figure 2).

### 6.2 Treatment effect II: higher export share

The picture looks somewhat different when considering the results of the propensity score matching procedure with the export share in sales as the outcome variable of interest (Table 6). Participating firms return higher export shares in sales than their non-participating counterparts and continuously increase the share of exports in sales over the

Statistic	No. of matched treated	Mean of matched treated (€)	Mean of matched controls (€)	ATT (€)	Bias-corrected 95% C.I. (€)	
<i>excl. repeated participation</i>						
Export value in t	87	203,199	220,215	-17,016	-233,951	77,640
Export value in t + 1	87	280,178	236,264	43,914	-140,328	268,939
Export value in t + 2	87	268,889	243,980	24,909	-369,373	176,353
<i>incl. repeated participation</i>						
Export value in t	111	212,495	207,139	5,357	-65,827	49,135
Export value in t + 1	111	263,177	249,029	14,148	-99,523	95,126
Export value in t + 2	111	308,155	366,757	-58,602	-733,817	119,615

**Notes:** Nearest neighbor propensity score matching was done using Stata 12 and the psmatch2 package developed by [Leuven and Sianesi \(2003\)](#). Matching is done using a caliper of 1/4 of the standard deviation of the estimated propensity scores and by allowing matches only within narrowly defined year-sector-export value bracket combinations. Export values are expressed in constant euro's and are deflated using sector level price indices for gross output. The balancing property condition, requiring absence of statistically significant differences between mean values of the matching characteristics of the treatment and the control group is fully satisfied in all instances. The bias-corrected confidence intervals are constructed by bootstrapping the ATT with 1,000 replications. \* $p < 0.05$

**Table 5.**  
Effect of program participation on export value

Statistic	No. of matched treated	Mean of matched treated (%)	Mean of matched controls (%)	ATT (%)	Bias-corrected 95% C.I.	
<i>excl. repeated participation</i>						
Export share in t	92	9.3	7.5	1.8	-0.5	5.1
Export share in t + 1	92	10.9	9.0	1.9	-2.4	5.3
Export share in t + 2	92	11.2	8.3	2.9	-0.7	6.2
<i>incl. repeated participation</i>						
Export share in t	121	9.1	7.8	1.3	-1.3	4.2
Export share in t + 1	121	11.5	7.5	4.0*	1.9	7.9
Export share in t + 2	121	11.5	7.6	3.9*	1.1	7.0

**Table 6.**  
Effect of program participation on export share

**Note:** See table note of [Table 5](#)

course of three years following program participation. The mean share of exports in sales is about 9% in the year of program participation and increases to about 11% two years later. The average treatment effect is consistently positive, varying between 1.3% and 4% and is consistently higher for the treatment group including repeated entrants. However, only for the treatment group including repeated participants do we find a significantly positive effect of program participation on export shares in the two years following program participation. In these two years, the mean program participant shows a 4% point higher share of exports in sales than its non-participating counterpart.

### 6.3 Treatment effect III: becoming a permanent exporter

The final performance dimension of exporting that we investigate is the probability of becoming a permanent exporter.

[Table 7](#) shows that there is evidence suggesting that P2S participation positively affects the probability of becoming a permanent exporter for the treatment groups including

repeaters. The estimated coefficients for the participation dummy variable are consistently positive, although those concerning treatment groups including repeaters are significant at the 10% significance level only. This does not necessarily imply that there is a causal relationship between repeated program participation and export performance. It could be (partially) explained by the mere fact that the number of observations available for analysis is considerably larger when including repeating participants. In addition, the control variables included in the probit-model are generally intuitively straightforwardly signed.

The picture emerging from the empirical analysis in this section, thus, does not provide convincing evidence that entering the EPP P2S enables participating firms to perform better on export markets than their non-participating counterparts. Although program participants do show to increase their level of involvement in export markets in the years following program entry, both in terms of export value and export share in sales, propensity score matching does not convincingly show that this increase in export involvement is higher than that of beginning exporters that do not participate in the program. However, we do find some empirical evidence suggesting that program entrants are able to increase their export share in sales faster than non-participants in the years after program participation and that program participation has a positive effect on the probability of becoming a permanent exporter. These results seem to be notably tied to repeated program participation.

## 7. Conclusion and discussion

Empirical research addressing the effectiveness of export promotion by means of firm-level data mainly concerns Latin American countries thus far; firm-level research of export promotion in advanced countries has been rather limited. This paper aims to add to this literature by investigating the effectiveness of export promotion in The Netherlands, a small, open and advanced economy. The aim of the EPP P2S is to support small businesses in the internationalization of their activities, a group that is not frequently considered separately in this field.

Combining participation records from the Dutch EPP P2S with firm-level micro-data, we investigate whether program entrants convert to a different export performance path than firms that are in the early stages of export market entry as well, but proceed without the support of such an EPP. Using propensity score matching, we investigate whether the

Variable	Observation selection from PSM-procedure			
	Export value excl. rep. part.	Export value incl. rep. part.	Export share excl. rep. part.	Export share incl. rep. part.
Prepare2start	0.366 (1.05)	0.661* (2.27)	0.334 (1.03)	0.566 <sup>†</sup> (1.85)
<i>Control variables</i>				
Export growth ( $t - 1, t$ )	0.751* (2.53)	0.584* (2.32)	0.067 (0.28)	1.110** (3.16)
Firm size (FTE, log)	0.497* (2.18)	0.410* (2.27)	0.910*** (4.29)	0.535* (2.40)
TFP (log)	0.638 <sup>†</sup> (1.85)	-0.061 (-0.22)	0.721* (2.01)	0.828** (2.79)
TFP growth ( $t - 1, t$ )	0.217 (0.44)	-0.382 (-1.05)	-0.041 (-0.09)	-1.170* (-2.33)
Foreign controlled	-1.657* (-2.34)	0.510 (0.52)	-1.619** (-2.70)	1.543 <sup>†</sup> (2.12)
Importer	1.494*** (3.46)	1.842*** (4.52)	1.502** (2.67)	3.015*** (5.22)
<i>No. of observations</i>	111	142	128	172

**Notes:** All regressions include a full set of year and sector dummy variables.  $z$  statistics in parentheses. <sup>†</sup> $p < 0.1$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table 7.**  
Effect of program participation on probability of becoming a permanent exporter (pooled probit-model)

export performance of participants significantly differs from that of comparable firms that are at the same stages of export market entry only without support from an EPP. We consider three dimensions of export performance; the export value and export share in sales generated by the beginning exporter and the probability of becoming a permanent exporter.

We find no convincing evidence that program participants are able to increase exports more rapidly than their counterparts that are at the same stage of export involvement, but that did not participate in the program. Exports generated by participants do generally rise in the years after program entry. Export growth, however, does not outpace that of comparable, but unsupported firms. There is some evidence suggesting that export shares in sales rise faster among program entrants, particularly in the first and second years after participation. Furthermore, we present evidence that suggests that the probability of becoming a permanent exporter is higher for participants relative to beginning exporters that did not receive support from the program.

The fact that the empirical evidence suggests that the beneficial impact of program participation seems to be mainly tied to repeated program participation does not necessarily imply that there is a causal relationship between repeated program participation and export performance. It could be (partially) explained by the mere fact that the number of observations available for analysis is considerably larger when including repeating participants. An additional explanation could be that firms repeatedly participating in the program are more determined to succeed on export markets and fully explore the possibilities that foreign markets provide.

The welfare implications of our findings are difficult to assess, as we do not know to what extent participants would not have entered foreign markets without EPP-support. However, the fact that program participants do not appear to differ notably from their matched peers in terms of firm characteristics and export performance could imply that the additivity of the program is lower than the program evaluation surveys indicate. This would reduce the benefits, and thus, the net welfare gain from the program. However, if part of the participating firms would not have entered export markets altogether without EPP-support, then program participation enabled them to match the export performance of unsupported beginning exporters, implying a net welfare gain. The question remains, however, to what extent that is the case.

Concerning the policy implications of this study, we argue that a crucial step in an evaluation of the merits of any program is the assessment of the degree of additivity: to what extent would participants not have entered foreign markets without EPP-support? However, such an assessment mechanism is difficult to incorporate in the design of an EPP. Nonetheless, without at least an indication of the degree of additivity of program participation to the individual participant, it is difficult to fully evaluate the merits of the EPP. In this respect, alternative program set-ups characterized by smaller financial support relative to the investment required from the participating firm would be interesting to explore. This may provide an indication of the degree of additivity of program participation to the prospective participant, as at least some firms that would also have entered export markets without EPP-support will decide not to enter the program because the financial support is perceived to be too little relative to the required investment from the participant. [De Nooij \*et al.\* \(2010\)](#) show in their social cost-benefit analysis that these alternatives would most likely yield higher welfare gains than the current set-up of the program. In this light, a more integrated EPP-evaluation approach would be interesting to explore, combining



insights from micro-data research with macro-level social cost-benefit analysis and optimizing the design of EPPs accordingly.

A very interesting avenue for further research would be to try to identify ways to objectively assess the degree of additivity of an export promotion instrument in an attempt to answer the question to what extent the exports generated by beneficiaries crucially hinge upon program participation. Research techniques such as propensity score matching enable us to investigate to what extent program beneficiaries outperform their unsupported counterparts, but they do not provide an answer to the question to what extent the exports generated by beneficiaries would not have been realized altogether without program support. This is, however, an important question to answer to gain a full understanding of the effectiveness of export promotion efforts.

### Notes

1. The impact of this last elimination step is negligible; 0.7% of the number of available observations after merging concerned support of other projects than exporting.
2. The trade data are recorded on value added tax-numbers. Connection to the firm identification key used by Statistics Netherlands leads to a merging loss of about 20% of annual trade values.
3. This is after eliminating two sectors with eight observations or less, micro-sized firms (less than one fulltime equivalent) and implausible observations with zero or negative output or exports exceeding gross output.
4. Manufacturing sectors correspond in the analysis to ISIC Rev. 3.1 sections A through I, excluding G. Wholesale and retail traders correspond to ISIC Rev. 3.1 section G.
5. There are no requirements regarding the age of the firm.
6. Because of the first-come-first-serve regime the empirical results are not expected to depend on the budget being fully depleted, as there is no procedure in place selecting the most promising export projects.
7. Including a period of two years leading up to program participation is necessary to match program participants with non-participating exporters on similarity of growth rates for several performance dimensions.
8. In both cases a separate bracket is constructed for non-exporting firms with an export value and export share in sales of zero.
9. The top and bottom 1% of the observations along the TFP and export growth distributions are excluded from the analysis in addition to the top and bottom 5% along the TFP growth distribution. This is done to eliminate implausible observations due to measurement error, which we are unable to further investigate due to confidentiality considerations.

### References

- Alvarez, R. (2004), "Sources of export success in small-and medium-sized enterprises: the impact of public programs", *International Business Review*, Vol. 13 No. 3, pp. 383-400.
- Alvarez, R. and Crespi, G. (2000), "Exporter performance and promotion instruments: Chilean empirical evidence", *Estudios de Economía*, Vol. 27 No. 2, pp. 225-241.
- Bernard, A.B., Jensen, J.B., Redding, S.J. and Schott, P.K. (2012), "The empirics of firm heterogeneity and international trade", *Annual Review of Economics*, Vol. 4 No. 1, pp. 283-313.
- Broocks, A. and Van Biesebroeck, J. (2017), "The impact of export promotion on export market entry", *Journal of International Economics*, Vol. 107, pp. 19-33.

- Comi, S. and Resmini, L. (2020), "Are export promotion programs effective in promoting the internalization of smes?", *Economia Politica*, Vol. 37 No. 2, pp. 547-581.
- De Nooij, M., van den Berg, M., Garretsen, H. and de Groot, H. (2010), "Mkba van handelsbeleid: Een illustratie aan de hand van het programma starters op buitenlandse markten", *TPEdigitaal*, Vol. 4 No. 1, pp. 108-125.
- Greenaway, D. and Kneller, R. (2007), "Industry differences in the effect of export market entry: learning by exporting?", *Review of World Economics*, Vol. 143 No. 3, pp. 416-432.
- Leuven, E. and Sianesi, B. (2003), "Psmatch2: Stata module to perform full mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing", Statistical Software Components, Boston College Department of Economics.
- Levinsohn, J. and Petrin, A. (2003), "Estimating production functions using inputs to control for unobservables", *Review of Economic Studies*, Vol. 70 No. 2, pp. 317-341.
- Moons, S. (2012), "What are the effects of economic diplomacy on the margins of trade?", *International Journal of Diplomacy and Economy*, Vol. 1 No. 2, pp. 147-162.
- Munch, J. and Schaur, G. (2018), "The effect of export promotion on firm-level performance", *American Economic Journal: Economic Policy*, Vol. 10 No. 1, pp. 357-387.
- Roberts, M. and Tybout, J. (1997), "The decision to export in colombia: an empirical model of entry with sunk costs", *The American Economic Review*, Vol. 87 No. 4, pp. 545-564.
- Van Biesebroeck, J., Konings, J. and Volpe Martincus, C. (2016), "Did export promotion help firms weather the crisis?", *Economic Policy*, Vol. 31 No. 88, pp. 653-702.
- Van Biesebroeck, J., Yu, E. and Chen, S. (2015), "The impact of trade promotion services on canadian exporter performance", *Canadian Journal of Economics/Revue Canadienne D'économique*, Vol. 48 No. 4, pp. 1481-1512.
- Volpe Martincus, C. and Carballo, J. (2008), "Is export promotion effective in developing countries? Firm-level evidence on the intensive and the extensive margins of exports", *Journal of International Economics*, Vol. 76 No. 1, pp. 89-106.
- Volpe Martincus, C. and Carballo, J. (2010a), "Beyond the average effects: the distributional impacts of export promotion programs in developing countries", *Journal of Development Economics*, Vol. 92 No. 2, pp. 201-214.
- Volpe Martincus, C. and Carballo, J. (2010b), "Entering new country and product markets: does export promotion help?", *Review of World Economics*, Vol. 146 No. 3, pp. 1-31.
- Volpe Martincus, C. and Carballo, J. (2010c), "Export promotion: Bundled services work better", *The World Economy*, Vol. 33 No. 12, pp. 1718-1756.
- Volpe Martincus, C., Carballo, J. and Garcia, P. (2012), "Public programmes to promote firms' exports in developing countries: are there heterogeneous effects by size categories?", *Applied Economics*, Vol. 44 No. 4, pp. 471-491.
- Wagner, J. (2012), "International trade and firm performance: a survey of empirical studies since", *Review of World Economics*, Vol. 148 No. 2, pp. 235-267.

### Corresponding author

Marcel van den Berg can be contacted at: [m.r.vandenberg@cbs.nl](mailto:m.r.vandenberg@cbs.nl)

---

For instructions on how to order reprints of this article, please visit our website:

[www.emeraldgrouppublishing.com/licensing/reprints.htm](http://www.emeraldgrouppublishing.com/licensing/reprints.htm)

Or contact us for further details: [permissions@emeraldinsight.com](mailto:permissions@emeraldinsight.com)