Export Boosting Policies and Firm Performance

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Literature Review

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Export Boosting Policies and Firm Performance: Review of Empirical Evidence Around the World

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Abstract: How effective are government policy attempts to boost firm exports in the short-run? We answer this question by conducting a review of 33 studies from 26 countries around the world, and provide nine findings. Export boosting policies are defined as a group of public policies that aim to increase firm exports in the short-run. These include policies such as export promotion, export-oriented public grants, public export guarantee schemes and subsidised export loans. Our review provides insights into policy effectiveness with respect to extensive and intensive export margins, as well as firms' production function inputs and its outputs. The heterogeneity of effects across firm characteristics is emphasised, and the discussion is enriched with new evidence of spillover effects from export boosting policies. Finally, we summarise *back-of-the-envelope* calculations of the cost-benefit analysis and provide recommendations for future research.

Keywords: export promotion policies, guarantees, grants, loans, impact evaluation, review

JEL Classification: F13, F14, L15, L25, 010, 024

1 Introduction

For a country to converge to the technological frontier, it makes a choice between technological catch-up and frontier innovation policy (Aghion et al. 2021). However,

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both technological catching-up and innovation-based economies seek to increase their gross domestic product by boosting exports of high-value added innovative or imitative products. For a long time, it was unclear whether exports through *learning-by-exporting* lead to increased firm performance. Many scholars have found positive associations between exports and a premium in firm performance, being more productive, larger, and paying higher wages[1] but it is Atkin et al. (2017) who show experimental evidence in favour of *learning-by-exporting* where exporting improves technical efficiency. This is an important finding because *learning-by-exporting* implies not only a fluctuation along the production possibility frontier curve, but an outer change. An outer change in the production possibility frontier implies economic growth, and therefore makes export boosting[2] a tempting objective for policymakers (Cruz et al. 2018; Wagner 2007), particularly for small open economies where it is critical that a large number of firms find a path to the export market (Baldauf et al. 2000; Broocks and Van Biesebroeck 2017; Coad and Vezzani 2019). Our goal is to systematically review robust counterfactual evaluations of public policies aiming to directly boost firm exports in the short-run.

1.1 Export Promotion Agencies

Given the interest in boosting exports, the number of national export promotion agencies (EPAs) and their export promotion programmes (EPPs) has grown significantly over the past 20 years (Cruz et al. 2018; Lederman et al. 2010; Olarreaga et al. 2020). In the 1990s, approximately 65% of existing EPAs in developing countries were created with the goal of supporting the transition from a heavy reliance on imports to exports (Cruz et al. 2018). Regardless of whether they are in developing or developed countries, many EPAs are public entities that receive a substantial amount of funding from the government, i.e. taxpayers (Van Biesebroeck et al. 2015), although there are already private firms providing similar replacement services (Cruz et al. 2018). It appears that public funding is necessary for existing EPAs and EPPs to function, so it comes as no surprise that some researchers have criticised the efficiency of agencies in developing countries (e.g. Lederman et al. 2010). The efficiency of public money spent on EPPs may be a particular concern when public budgets are tight and policymakers want to prioritise the most efficient interventions.

1 For example: Wagner (2007), Costa et al. (2017), Debellis et al. (2021).

2 With the emergence of international trade laws, regional regulations, and multilateral trade agreements, most governments have shifted from traditional macroeconomic policy interventions to other forms of export assistance (Aalto and Gustafsson 2020), therefore, the policy focus has shifted to the micro-level. In particular, the focus of trade policy has moved towards trade facilitation and export promotion (Cadot et al. 2015).

EPAs assist firms overcome circumstantial difficulties and become successful exporters (Munch and Schaur 2018). If there are private providers of export promotion services and public entities support exporters, the question is why governments intervene in the market with EPAs and what market failure they are trying to address. The main economic rationales for government support are to promote information spillovers and to address trade barriers such as information asymmetries (Aalto and Gustafsson 2020; Copeland 2008). Information asymmetries between the potential exporter and foreign customers and companies, as well as the lack of trust between actors in international business, can be eliminated if the potential exporter incurs the sunk costs of obtaining the needed information. Otherwise, a lack of information can lead to underinvestment, so EPAs aim to share risk with potential exporters and reduce information asymmetry. In terms of information sharing, successful exporting of products can lead to information sharing with other exporting and non-exporting firms about demand conditions for different types of products in a foreign market. Copeland (2008) concludes that information spillovers form the theoretical backbone of government export promotion, but empirical evidence of spillover effects requires further research. Cadot et al. (2013) provide examples of positive spillover effects from exporters to neighbouring firms producing similar products. However, if there are no information spillover effects, Copeland (2008) questions the need for an export promotion scheme.

EPPs can be directed at various promotional activities, such as building a country image through promotion and advocacy or various bundles of support services (Lederman et al. 2010: 257). Export support services may include training, technical regulations, quality standards, capacity building, logistics, customs packaging, pricing, as well as marketing services such as advertising, trade fairs, exhibitions, missions, and follow-up services offered by representatives abroad (Lederman et al. 2010; Munch and Schaur 2018; Volpe Martincus and Carballo 2010a). The range of support services is broad and includes partner search and matchmaking (meetings, recruitment, contact databases, and other forms of market entry assistance) (Munch and Schaur 2018) as well as market research and publications (datasets and information, surveys, publications) (Lederman et al. 2010). In addition, services may include the analysis of political and economic conditions, international law, and business plans (Munch and Schaur 2018; Volpe Martincus and Carballo 2010a).

Several studies evaluate the effects of EPAs and direct subsidies on exporters. Bernard and Jensen (2004) use a panel of U.S. manufacturing firms to examine the factors that increase the probability of entry into exporting. Their study found volatile entry and exit rates of manufacturing firms into the export market, with past exporters having a higher probability of re-entering exporting, while current exporters have a higher probability of remaining exporters in subsequent years.

Since entry costs are substantial and the spillover effects of other firms' export activity are negligible, Bernard and Jensen (2004) conclude that export promotion costs do not have a significant effect on firm-level export prospects. At the aggregate level, Rose (2007) used bilateral gravity model of trade to answer whether presence of the foreign missions is associated with country-level export growth. He finds that each additional consulate is associated with an increase in exports by six to ten percent. Finally, using survey data from 103 developing and developed countries, Lederman et al. (2010) find a statistically significant effect of EPAs and their strategies on country-level exports.

1.2 Export Boosting Policies

While EPP are the most commonly used policy, they are not the only policy to directly boost exports. Some authors (e.g. Broocks and Van Biesebroeck 2017) include financial subsidies under the umbrella of EPPs, but there are also other policies such as subsidised export loans (i.e. export discount credit programmes) and public export credit guarantees. For example, Defever et al. (2020a) provide evidence for subsidised export loans, Agarwal et al. (2018) for public export credit guarantees, while Defever and Riaño (2017) using a two-country model of trade with heterogeneous firms, provide a quantitative assessment of the effect that subsidies with an export share requirement have on exports and conclude that this type of subsidy increases exports more than an equivalent unconditional subsidy accessible to each exporter. All of these policies aim to boost exports and should therefore be reviewed together. Therefore, together with EPPs we defined these policies as export boosting policies (EBP):

> *Export boosting policies are defined as a group of public policies that aim to increase firm exports in the short-run. These include export-oriented capacity building, attending trade fairs, exhibitions, missions, partner search matchmaking, pricing, advertising, analysis of the context abroad (i.e. export promotion policy), export credit guarantees, subsidized export loans, or export-oriented public grants.*

EBP could be particularly effective for the smaller firms (Atkin et al. 2017; Broocks and Van Biesebroeck 2017; Munch and Schaur 2018), primarily because they face higher information asymmetry. Credit export guarantees may be particularly relevant for guaranteeing larger shipments of smaller firms, while public grants and subsidized export loans could be particularly relevant for smaller firms with greater capital constraints (see McKenzie 2017; Srhoj et al. 2021).

1.3 The Position of Export Boosting Policies in a Wider Set of Public Policies

EBPs potentially contribute to firm exports, however EBPs are not the only public policies that contribute to exports. To understand this point, two dimensions are useful for placing EBPs within a broader set of public policies: the time horizon and the policy objective. Many public policies may have the indirect objective of increasing exports in the medium or long term[3] (see also Coad et al. 2022; Bloom et al. 2019), however, EBPs are short-term in nature, have the immediate goal of increasing exports of target firms in the short-run, and typically include the words "exports" or "foreign market" in their title and description. International trade theories (e.g. those of Vernon and Posner) emphasise the importance of "research and development" (R&D) processes for innovation and thus for firm exports. Altomonte et al. (2013) suggested that EBPs should be considered "*under the same umbrella*" as innovation policies, yet they are usually analysed separately.

In particular, for small open economies, R&D grants and tax incentives can be considered EBPs, but they do fall outside our definition.[4] To explain why, we provide Figure 1, which depicts the flowchart of the R&D process in two stages and a

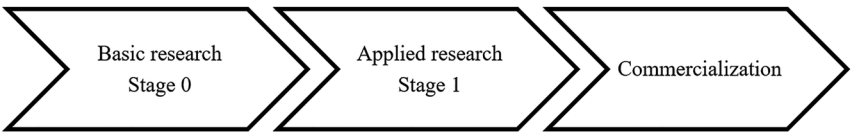

Figure 1: Flowchart of the R&D process. Source: Aghion et al. (2021: 207).

3 For example, in their reviews, Bloom et al. (2019) and Coad et al. (2022), suggest ways to increase innovation and indirectly exports in medium to long run by reforming intellectual property law, designing tax incentives for patents (i.e. patent box), improving education system, increasing the number of individuals trained in science, technology, engineering, and mathematics, increasing skilled immigration, improving labour market regulation, firm competition and trade openness, R&D policy, national mission-oriented R&D projects, public procurement policy (e.g. building a bridge or railroad), or reforming bankruptcy laws to speed up resource allocation to a higher value use (i.e. Srhoj et al. 2022). These are all worthy ways which can indirectly increase firm productivity and innovativeness and therefore contribute to boosting exports in a medium to long term.

4 Although R&D grants fall outside our definition, we agree with Altomonte et al. (2013) – across the full policy cycle, EBPs could be "under the same umbrella" as innovation policies. It should also be noted that alhough EBPs should be primarily used for higher value goods and services, they are not restricted only to innovation and innovative firms.

commercialization stage. Stage 0 includes basic research, which is usually considered "research" in "R&D" and is dominated by universities and research institutes (Aghion et al. 2021), while few private firms are actively involved in this stage. Stage 1 is applied research, which is also referred to as "development" in "R&D", but is often referred to as R&D in the analysis of private firms, R&D investment, grants, and tax incentives (for review, see Dimos et al. 2022; Vanino et al. 2019; Zúñiga-Vicente et al. 2014). There is a time gap between conducting additional R&D activities, developing new patents, innovative products or services, and selling the new product in domestic or foreign markets (e.g. Vanino et al. 2019). EBPs focus on boosting exports in the short term during the commercialization stage, which can come after stages 0 and 1, but can also be independent of the R&D process and focused on completly standardized or imitative products.

Other forms of state aid, such as public grants outside R&D that are not explicitly aimed at boosting exports are not considered in our analysis. The effects of public grants on SME performance in the EU has been reviewed by Dvouletý et al. (2021), while Kersten et al. (2017) provide an overview of other forms of SME financing in developing countries. We also do not focus on the impact of entrepreneurship support institutions, although these institutions may implement EBPs or provide information on EBPs to firms. For example, cluster policies allow for a finer division of labour and greater proximity between firms, lead to greater trust between firms, and facilitate trade credit between firms, but tend to affect firms' export performance in the medium to long term (Figal Garone et al. 2015; Long and Zhang 2011; Schmitz 1999). Hallen et al. (2020) discuss business incubators and accelerators that can implement EBPs or provide information on EBPs. However, because business incubators and accelerators provide many activities to a small number of both domestic and foreign market-focused firms, among the firm participants of business incubators and accelerators it is difficult to dissentangle the impact of EBP on firm performance. Various types of entrepreneurship promotion infrastructure, such as entrepreneurship zones, export processing zones, or business parks, provide quick access to business infrastructure under favourable conditions. These zones can attract foreign direct investment and have positive effects on the productivity and exports of participating and nearby firms.[5] However, since they do not always have to be export-oriented or require considerable time from the idea to the implementation of the policy measures and finally to the impact at the firm level, we do not deal with them in our study.

In summary, our contribution is to review EBPs and firm performance.

5 For example: Liu and Jin (2022), Wu et al. (2020), Johansson and Nilsson (1997), Kaplinsky (1993).

1.4 Research Statement

There is a vast array of empirical studies on the topic of EBPs with heterogeneous empirical rigour. Over the years, the sheer accumulation of such studies has led to some confusion among policymakers and practitioners about how to support and boost exports. The purpose of this paper is to systematically review robust empirical evidence on the effectiveness of EBPs. In our review, we included only studies with high methodological rigour, this way supporting the so-called *credibility revolution* in applied economics (Angrist and Pischke 2010). The importance of policy evaluation studies with high methodological rigour has been emphasized by many international organisations (e.g. World Bank, OECD, European Commission), many scientific studies (e.g. Khandker et al. 2010; Gertler et al. 2016; Storey 2017) and used as a search filter in systematic literature reviews of policy evaluation studies (e.g. Dvouletý et al. 2021). Since selection into an EBP is not random, various experimental and quasi-experimental approaches have been used, most of which falls on the matching techniques, two-step estimation methods (instrumental variables or Heckman), fuzzy regression discontinuity design (RDD), fixed effects methods and randomised control trials (RCT). We consider a range of EBPs and provide a structured review of 33 studies from 26 countries worldwide. Our study provides insights into the effectiveness of EBPs in terms of extensive and intensive export margins as well as firms' production function and output. We show heterogeneity of effects with respect to different firm characteristics and discuss new evidence on spillover effects of export policies. We move from micro to macro effects and provide an overview of *back-of-the-envelope* calculations that shed light on macroeconomic effects. Finally, we discuss the future research agenda and provide recommendations for policymakers.

2 Methodology and Selection of Articles

2.1 Methodology and Code

Systematic reviews are very convenient for surveying scientific research using quantitative methods (e.g. randomized controlled trials, quasi-experimental designs, etc.) (Tranfield et al. 2003). In order to provide a homogeneous analysis of a policy, this paper provides a systematic overview of microeconometric effects focusing specifically on EBPs and firm performance. To ensure a scientifically rigorous literature review we followed the guidelines of Xiao and Watson (2019) in defining

the purpose and intended objectives of the search, clarifying a detailed and consistent protocol, and developing and refining the screening process and quality assessment. The first step of the research process was to minimize human error and bias using a data extraction form (Tranfield et al. 2003). To systematically find and select articles, we developed a search code based on the original code by Dvouletý et al. (2021: 17). The Thomson Reuters Web of Science Core Collection database (Clarivate Analytics 2020) was selected because it provides the most valuable collection of high-impact articles (Dvouletý et al. 2021). The next step was to form a code review panel composed of five senior scholars respected in the field of international economics, international trade, and/or firm-level public policy evaluation. We received feedback from the review panel in January 2020. After the experts in methodology and theory approved the code, we applied the following search code in the Web of Science database from February 15–20, 2020, to find relevant articles:

TS[6] = *(export subsid OR export-promotion service OR export promotion OR export grant OR export credit guarantee OR export credit insurance facilit OR export rediscount credit OR subsid export loans OR trade missions)*

AND

TS = (business OR firm OR enterprise OR compan)

AND

TS = (firm performance OR productivity OR profit OR employment OR sales OR revenue OR turnover OR value added OR export status OR export intensity OR import intensity OR capital OR raw material OR intermediate input OR wage bill OR destination countr OR number of product OR age OR location)

AND

TS = (experiment OR field experiment OR randomized evaluation OR random OR impact evaluation OR impact assessment OR counterfactual evaluation OR propensity score OR regression discontinuity OR diff-in-diff OR difference-in differences OR difference in differences OR OLS OR fixed-effect OR instrumental variable OR identification strategy OR impact on OR impact of OR causal

Structurally, our code consists of four parts reflecting the policy instruments used to boost exports, the firm as the unit of observation, the outcome variables of interest and the methods used to evaluate counterfactual impacts. At the end of this step, our initial dataset from the Web of Science database encompassed 228 research articles.

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6 *TS* = Topic (Searches the topic fields in all databases in the subscription. Topic fields include titles, abstracts, keywords, and indexing fields such as systematics, taxonomic terms, and descriptors).

In addition, we thoroughly searched the Scopus database via the search engine using the search term "TITLE-ABS-KEY" and found no article that was not already included in the results of the Web of Science Core Collection database. We also searched for studies via Google Scholar search and ResearchGate search to include relevant working papers and press articles. To determine whether we may have missed important studies, we began by searching for cited references, i.e. we searched the reference lists of the selected studies. We also went through the tables of contents of the journals in which most of the 228 studies were published. Finally, we invited a panel of experts to suggest possible studies that might have been overlooked in the search. Based on the citation search and suggestions from the leading scholars in the field, we were able to identify and include 16 additional informative studies. Ultimately, a total of 244 articles met the research criteria and were included in the primary analysis.

2.2 Selection of Articles

In the next step, we downloaded the abstracts of all 244 articles that met the search criteria. Each of the three authors conducted a parallel independent evaluation, scoring each article from 5 (most relevant) to 1 (least relevant) based on the policy instrument, unit of observation, outcome variable, and method used. The mean and standard deviation were calculated from the three authors' scores, after which all articles with a mean score of less than 3.67 were discarded, allowing us to finally include 64 articles in the structured table. In creating the structured table we followed the work of Dvouletý et al. (2021) and focused on several key variables: Country and policy programme, sample and time period, type of policy and target, dependent variables, methods, and key outcomes. In our review, we included only studies with high methodological rigour, supporting the so-called *credibility revolution in empirical economics* (Angrist and Pischke 2008, 2010).[7]

In a further step, we obtained the full texts of the 64 selected articles and conducted an in-depth analysis of the relevance of the articles to our review. The main reasons for excluding an article were *i)* lack of empirical rigour, e.g. studies based on unidentified ordinary least squares or survey data using structural

7 For conducting RCTs in development economics, Kremer, Duflo and Banerjee won the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel in 2019 (also called Nobel Prize in Economic Sciences), while for developing and applying the quasi-experimental research toolkit, Angrist, Card and Imbens won the Nobel Prize in Economic Sciences in 2021. In our study, we define studies employing experimental or quasi-experimental research design – as studies with high methodological rigour.

equation modelling[8] *ii)* analyses conducted at the country or regional level but not at the firm level, and *iii)* a policy instrument that did not focus on promoting exports, i.e. we excluded impact evaluations of R&D grants. Based on the relevance of the articles, we have selected the final 33 studies that were included in Table 1 (see Appendix).[9]

After preparing the first draft manuscript, its structure, and the draft Table 1, we conducted an in-depth analysis of the bibliography list of the 33 core studies during October 1–20, 2020, to identify articles that may not have been selected by our search code (Table 1). We found no additional robust studies and therefore produced the final list of 33 studies in Table 1. The selected articles were published in journals including the following: *Quarterly Journal of Economics*, *European Economic Review*, *Journal of International Economics*, *Journal of Development Economics*, *American Economic Journal: Economic Policy*, *Review of World Economics*, *World Economy*, *Structural Change and Economic Dynamics*, *Canadian Journal of Economics, Economics Letters*, *Economics Bulletin*, *Applied Economics*, *Economic Policy*, and *Economia Politica*.

3 Results

3.1 Export Boosting Policies: Heterogeneous Design

As can be observed from the 33 EBP studies in Table 1, there may be underlying heterogeneity of effects because EBPs are not homogeneous. We begin our in-depth analysis by dividing the policies into demand-side and supply-side export boosting policies. This division is followed by a subdivision of supply-side types and a review of the supply-side policy bundle.

Research Design: Most empirical studies can be classified as observational studies that use data from customs, official statistical surveys or export promotion agencies to draw conclusions about the effects of EBPs by comparing the performance of firms that benefit from an export boosting policy measure (the treatment group of firms) with firms that do not take part in an export boosting programme (the control group of firms). Rare exceptions are studies that use an experimental approach. Here some firms are randomly selected to receive an export promotion measure and others are randomly allocated to the control group of non-treated firms (Atkin et al. 2017; Breinlich et al. 2017).

8 For example, studies on EPPs with unidentified regressions, surveys or case studies can provide interesting insights (e.g. Miocevic 2013); however, we exclude such studies as their interpretation is not causal.

9 PRISMA Flow diagram and the list of initial 244 studies is available in *Supplementary files 1* and *2*.

Table 1: The review of papers focusing on impact evaluation of export promotion.

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
Volpe Martincus et al. (2012)	Argentina; trade supporting activities by fundacion ExportAR	2002–2006, (almost) whole population of argentine exporters (in 2006, 12649 firms with 526 assisted by ExportAR)	Export promotion policy	Firms' export performance along various margins	Matching DiD	Significant effects of support from ExportAR have resulted in increased exports of small-and medium-sized companies, and this has mostly occurred through the growth of the set of destination countries.
Van Biesebroeck et al. (2016)	Belgium and Peru; Restoring the pre-crisis export level	2006–2011, 50,581 firms and 144,045 firm-year observations (Belgium); 22,747 and 49,197 (Peru)	Export promotion policy flanders investment and trade (FIT) covers firms in flanders and Peru's national public export promotion organisation (PROMPERU). Support activities provide: Local market information, subsidies for foreign market prospecting, resolving specific transaction problems, or facilitating participation in industry events.	Export status, firm-level export, log (exports +1), firm-destination exports, binary support indicator	Propensity score matching (PSM), OLS regression, inverse probability weighting with regression adjustment	The firms that received export promotion support during the crisis performed better. They more likely remained active on export markets and exported higher volumes in contrast to control firms. The effects were strong for exports outside the EU for Belgium, while most exports for Peru left the region. The cost-benefit calculation indicated that export promotion is covering its own costs but the net gain in government revenue remains modest.

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
Broocks and Van Biesebroeck (2017)	Belgium; flanders investment & trade (FIT)	2006–2010, 1788 treated firms, universe of control firms.	Export promotion policy all flemish firms. FIT provided four different promotion instruments: 1. question, 2. action, 3. subsidy, and 4. communication.	Dummy firm enters the export market (outside EU), number of employees, log employment, percentage change in employment, log exports	Matching (PSM)	A positive effect of EPP on the probability of extra-EU export market entry. The effects are substantial for subsidy as a form of EPP. The evidence for a weak positive effect on employment growth, firm survival, and low spillover effects (e.g. demonstration effect or passing on the information) to other firms in the same 4-digit sector has been found. Finally, a *back-of-the-envelope* calculation shows each euro in subsidies generates on average 16 to 29 euros in additional export revenue during the next two years.
Cruz (2014)	Brazil; assistance by Brazilian trade and investment promotion agency (Apex-Brazil)	2005–2010, manufacturing sector in Brazil (approx. 300000 firms)	Export promotion policy all firms. Services provided by Apex-Brazil are related to matching domestic sellers and foreign buyers and providing information on foreign markets, including export regulations and market	Export status (t), export status (t + 1), export dummy (t), export dummy (t + 1)	PSM, linear probability model (LPM) using panel fixed effects, DiD	Assistance by Apex has a positive effect on promoting new exporters resulting in 1.3 times more probability of average non-exporting treated firms to become a new exporter one year after the treatment. The average effect of the programme on treated firms is positive in the year of treatment. The impact is positive and statistically significant for micro, small, and medium, but not for large

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
			prospects in partnership with industry associations.			firms. Spillover effect exists on untreated firms that are in the same region and sector of Apex's treated exporting firms.
Van Biesebroeck et al. (2015)	Canada; Canadian trade Commissioner service (TCS)	1999–2006, all active exporting firms at some point in the analysed period	Export promotion policy active exporters. Six groups of services: Information on market prospects, key contacts search, local company information, visits information, face-to-face briefings and trouble shooting.	Total exports, total number of products exported, total number of export destinations served, and the average value of exports across all destination-product markets a firm serves	DiD with firm-fixed effects; matching (nearest neighbor, kernel, and radius); GMM	Statistically significant effect of EPP on export within product-destination already served by firms, but no effect was found for expanding the number of products or the number of markets they serve. The effect on total exports comes exclusively from the intensive margin. EPP takes a few years to kick in. In the case of EPP in form of local-specific assistance, the effects are more pronounced for larger, older firms and firms exporting to many markets, but less effective for experienced exporters which export many products.
Álvarez Espinoza and Crespi (2000)	Chile; promoting exports and improving the insertion of the exporting firms into international markets	1992–1996, 187 treated and 178 control firms	Export promotion policy all firms. National agency for export promotion (PROCHILE) assists through three	Technological innovation, export performance, change in markets, change in	Logit model, tobit model	A positive impact of promotion instruments on firm technological innovation has been found. The results indicate positive actions in improving the competitiveness of firms in external markets. Promotion

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
			programme areas: Economic positioning Campaign, export promotion programme, and Commercial information system.	exported products, change in exports, change in product diversification, and change in market diversification		instruments increase the number of firm export markets and, after a period of four years, they generate more exports and a higher diversification by markets and products. Participation in export committees generates a higher positive impact than participation at fairs or the utilisation of the commercial information system.
Volpe Martincus and Carballo (2010a)	Chile, assistance by PROCHILE export promotion agency	2002–2006, population of Chilean exporters (in 2006, 6879 firms with 1796 assisted by PROCHILE)	Export promotion policy supporting small-and medium-sized firms in their internationalisation process.	Total sales and highly disaggregated export data by product and destination country	Semiparametric quantile treatment effect estimation using first differences	The results indicate heterogeneous effects over the distribution of export performance, along with both the extensive and intensive margins. Smaller firms as measured by their total export sales seem to benefit more from export promotion actions.
Volpe Martincus and Carballo (2010c)	Colombia; export promotion activities	2003–2006, 10,484 treated firms	Export promotion policy PROEXPORT assists more than 2500 firms per year. Services include information and market intelligence, development of export plans,	Growth of exports, growth of the number of countries, and growth of the number of products.	Matching DiD	Bundled services combining counselling, trade agenda, and trade missions and fairs are more effective than isolated assistance actions, e.g. trade missions and fairs alone. Bundled services can be thought of as providing exporters with an integral accompaniment throughout the

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
			organisation of trade missions both for domestic sellers and foreign buyers and coordination of interviews with potential customers.			process of starting export businesses and building up buyer-seller relationships with foreign partners.
Munch and Schaur (2018)	Denmark, export promotion services provided by Danish trade Council	2002–2012, universe of Danish firms, 7658 treated and control firms.	Export promotion policy	Export activities, sales, value added, employment, value added per worker	DiD PSM	Export promotion facilitates entry into export markets and the continuation of export activity across all types of firms. The effects are the largest for small firms. Export promotion increases sales, value added, employment, and value added per worker. For small firms, summing expenditures on export promotion, subsidies, and tax distortions, the gain in value added is roughly three times higher than the direct costs of export promotion.
Karoubi et al. (2018)	France; enhancing the exports of SMEs	2004–2009, 259 SMEs	Export promotion policy SMEs (5–249 employees), a consequent set of measures, i.e. four EPPs	Export intensity, the probability of turning to exports	Matching (PSM)	EPPs increases firm export intensity by 16.27% and its probability of turning to exports by roughly 25%. The impact of public support holds for the sector of services but disappears for

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
			(financial support, Competencies development, network, innovation) to remove export barriers by lowering the variable or fixed costs of international developments.			industrial firms. The impact of EPPs is significant for profitable enterprises but not for loss-making enterprises. The impact of EPPs is significant for enterprises that are exposed to positive externalities, but not for other SMEs. The efficiency of EPPs depends on the nature of the support, i.e. only financial and innovation EPPs have a significant impact on the increase of intensity (by about 13% each). The only type of EPP that significantly increases the probability of switching to export is network EPP with a roughly 25% increase.
Comi and Resmini (2019)	Italy (lombardia); three types of vouchers (A, B and C)	2010–2014 period, 1260 treated firms, 6295 control firms; about 30,000 firm/year observations	EPP Funds for activities: A-providing technical assistance and counselling. B-organising outgoing economic missions abroad. C – encouraging participation at	Export propensity and export intensity.	Fixed-effect DiD estimator with ex-ante matching	A positive effect of EPPs on export propensity and export intensity has been found. The effects are larger for services classified as “promotional” (e.g. participation at international trade fairs and exhibitions) than for “technical assistance and counselling” activities or “information and knowledge specific provision” services (e.g. participation in economic mission

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
			international fairs and exhibitions held abroad.			abroad). The joint use of multiple services is more effective in promoting exports than individual ones. The impact of trade fairs on export intensity is increased when accompanied by technical assistance and specialised counselling. Heterogenous effects show larger effects for firms with export experience, as well as for micro and small-sized firms. Other, non–promotional support activities are able to increase only the export propensity of non-exporting firms.
Volpe Martincus and Carballo (2008)	Peru; PROMPEX export promotion activities	2001–2005, all exporting firms (in 2005, 6027 firms with 709 assisted by PROMPEX)	EPP	Export performance of firms by intensive and extensive margins	DiD, matching (nearest neighbor, radius, and kernel estimators), system GMM	The research has shown export promotion activities associated with increased exports, primarily along the extensive margin, both in terms of markets and products. The results are robust across alternative specifications and estimation methods.
Cansino, Lopez-Melendo et al. (2013)	Spain; promoting internationalisation of companies	2008, 77 treated and 86 control firms	EPP diagnostic programmes (DP) promote the internationalisation of	Activity, location, sales and number of employees	Matching (PSM)	Companies participating in the DP have a higher exports/sales ratio than companies that have not been involved in the DP (on average 10%).

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
			SMEs in andalusia during their preliminary or initial stages of the internationalisation process.			The results are significant for the four bandwidths used. On average, the DP seems to have significant positive effects on exports for small-and medium-sized companies which have never exported or that have a minimal experience of exporting.
Cadot, Fernandes et al. (2015)	Tunesia, FAMEX export promotion programme	2005–2009, 392 FAXEX beneficiaries, 2319 control firms	EPP firms above a minimum size (measured by turnover) and minimum age of two years	Short run and longer term impact on export levels and export diversification across destination and products	Propensity score weighted regression, weights obtained from probit regression for selection into FAMEX programme including fixed effects	Positive short-run effects on intensive and extensive export margins, but no effects after three years have been found. The results indicate heterogeneous effects on size classes with a positive impact on export levels for medium-sized firms only.
Breinlich et al. (2017)	United Kingdom; export promotion information	July 2013, February 2014, 1000 UK manufacturing firms	EPP SMEs in the UK. A brochure was provided by the UK trade and investment. The brochure included information on benefits from exporting reported by other UK	Perceived benefits of exporting, perceived export barriers and export status, export value, number of destination served,	RCT	The authors find providing information on exports has an asymmetrical effect on perceived exporting benefits, perceived export barriers, and actual export behaviour. The effect is negative on non-exporters' perceived exporting benefits and perceived exporting barriers with somewhat

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
			firms, and case studies describing the successful export experience of firms.	and number of products exported		negative effects on exporting behaviour. On the other hand, the effects are positive for firms already exporting before the treatment.
Cassey and Cohen (2017)	United States; export promotion	2004–2011, 72 unique firms reporting 220 cases of assistance	EPP all Washington state firms. Export assistance programme (EAP) is designed to directly address the needs of SMEs to access foreign markets by offering free services: (1) connecting interested firms with appropriate resources and (2) direct assistance in an export transaction.	Log of employment	PSM DiD	The results display that firm participation in an export assistance programme increases firm-level employment fleetingly, but not in subsequent periods, i.e. the employment effects of the policy are short-lived and disappear after at most two quarters. There is no statistically significant impact of programme participation on long-term employment.
Volpe Martincus and Carballo (2010b)	Uruguay; export promotion	2000–2007; 13904 firms from which 258 treated	EPP Uruguay's institute for promotion of investments and exports of goods and services (URUGUAY XXI). Activities related	Probability of entering a new country market; probability of entering a new OECD country	Matching DiD (for continuous outcomes) discrete choice model with unobserved	The authors find positive effect of export promotion activities on firms' new export destination markets, especially within the Latin american and Caribbean regions as well as the introduction of the new differentiated

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
			to trade promotion assistance.	market; probability of entering a new product market; probability of entering a new differentiated product market; total exports; number of countries; products	heterogeneity (for binary outcomes);	products. There is no evidence of a positive effect on exporting to the more advanced OECD countries or on exporting new products in general.
Kim et al. (2018)	Vietnam; export seminars	2014–2016; 250 firms	EPP 1-day seminars on export promotion for SMEs in traditional industrial clusters in the apparel and textile industry.	Dummy for participation; index for preparation for exporting activity; dummy for accessing e-customs website; dummy for willingness to export	Two-stage least squares (IV)	The results show information provision did not encourage unproductive firms to engage in exporting activity. Large firms were more likely to start exporting directly to foreign buyers shortly after the seminars; however, these effects disappear two years after the seminar. The authors find positive spillover effects of the seminar on non-participants through information exchange networks of firms within each industrial cluster in the village.

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
Rincón-Aznar et al. (2015)	United Kingdom, UK trade and investment (UKTI) services	2005 2010, UKTI client data base matched with firm-level data from other sources	EPP thirty-two different UKTI service categories.	Growth in turnover, employment, productivity and overseas turnover; probability of reporting overseas turnover, probability of survival	DiD PSM	UKTI support had a positive impact on turnover growth and a more modest impact on labour productivity, but none on employment expansion. Support is positively linked with firm survival and improvement in the total value of exports of a firm, the value of turnover of its subsidiaries abroad or a combination of the two.
Mion and Muuls (2015)	United Kingdom, UL trade and investment (UKTI) services	2008 2012, UKTI client data base matched with firm level data from other sources	EPP services provided by UKTI.	Growth of firms' goods exports	PSM; heckman selection model	Strong evidence that the use of UKTI services positively affects firms' goods export performance along the intensive and extensive margins as well as across different markets and groups of firms. The fmpact of UKTI support spans on both, new exporters and current exporters.
Hiller (2012)	Denmark, Danish export association (DEA) membership (private organisation)	1995 2007, firm-level data (machinery sector)	EPP promotion of trade between Danish and foreign firms.	Export sales, coverage of foreign markets, number of traded products	Matching (PSM)	Positive causal effect of membership in private export association on growth of exports and average value per product in the first year after entry, and on growth rate of country coverage two years after entry.

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
Atkin et al. (2017)	Egypt; randomised experiment	2011–2014, Egypt, 303 firms	Foreign demand shock (arranging a foreign business opportunity) rug producers with less than 5 employees. Initial opportunity to fill the orders by producing 110 m^2 of rugs (approx. 11 weeks of work).	Profits, quality, productivity, technical efficiency.	RCT	A positive effect on profits and quality, as well as a negative effect on output per hour have been found. The authors argue for *learning-by-exporting* whereby exporting improves technical efficiency. This is argued with documented positive effects on quality and productivity, in addition to showing, when asked to produce an identical domestic rug, treatment firms produce higher-quality rugs and do not take long to do so. This evidence is accompanied by improvements in learning curves and documented knowledge flowing between foreign buyers, the intermediary, and the producers and no evidence that firms make monetary or time investments in upgrading, or pay, even implicitly, for the knowledge they receive.
Badinger and Url (2013)	Austria, public export credit guarantees	2008, 71 firms 63% used export credit guarantees	Public export credit guarantees alleviate trade frictions arising from difficulties in financing exports.	Firms' exports	Two-stage least squares (IV)	A substantial, economically and statistically significant effect of export credit guarantees on exports, ranging from 80 to 100 percent.

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
Agarwal et al. (2018)	Sweden, public export credit guarantees	2000–2015, 1032 treated firms	Public export credit guarantees	Export status, export value, value added, employment, value added per employee	Matching DiD, fuzzy RDD	No effect on employment, value added and value added per employee, but positive effects on export status and export value. Authors find effects to be strongest for firms of smaller size. Effects are also pronounced for first time users and in service sectors.
Girma et al. (2020)	China; production subsidies	2004–2006, firms with more than $800,000 annual turnover in Chinese manufacturing industry; 36495 treated and 130201 control firms.	Public grants for exporting	Dummy: For firms' export status, for firms' involvement in exports processing, for exporting final products, total exports divided by sales, export processing divided by sales, final products exported divided by sales	Generalised PSM	The direct effect of subsidies on the probability to export to be always positive was found. The effect is increasing for firms in clusters with low levels but diminishes for high levels of subsidisation. Spillover effects show subsidising firms had a negative impact on the export propensity of non-subsidised firms. This effect becomes stronger with a higher proportion of subsidised firms in a cluster. For a very large share of subsidised firms, the effect decreases but remains negative.

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
Helmers and Trofimenko (2013)	Colombia, export subsidies	1981–1991, 1423 manufacturing firms with ten or more workers	Public grants for exporting supporting exporters and domestic firms producing intermediate goods for exporters. A subsidy rate of 2–20% per peso of the export sales value.	Total export value	Heckman model; ANOVA; Autoregressive distributed lag (ADL); GMM	The results indicate a positive effect of subsidies on export (intensive margin). The effect is diminishing with the amount of subsidy and the degree of a firm's connectedness to the government.
Srhoj and Walde (2020)	Croatia; strengthening international competitiveness	2009–2012, 361 treated and 2911 control firms	Public grants for exporting firms of all size. The programme provides grant schemes to firms exclusively for export-oriented commercialisation or technology development activities.	Firm-level growth in: exports, sales, value added, profits, employees, capital stock, intermediate inputs, TFP, and LP	Matching DiD	The export grant scheme induces additionality on firm performance but with no effects on employment and mixed findings for TFP. Technology-oriented grants have consistent and more significant effects compared to commercialisation activities (e.g. subsidising consulting for markets abroad, trade fairs). The cost-benefit analysis shows value-added created by the export grant scheme is 39.5% higher than the grant scheme cost.
Girma et al. (2009)	Germany, production-related subsidies	1999–2002, sample size varies from 16	Public grants for exporting	Export start, share of exports in total sales	Matching (PSM)	The research has shown exports and subsidies are positively related. No impact of subsidies on the probability to start exporting. Weak evidence for

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
		(treated/control) firms to 89 firms				the impact of subsidies on the share of exports in total sales in west Germany, and no effect in east Germany.
Görg et al. (2008)	Ireland; increasing exporting activity	1986–2002, 5002 treated and 5533 control firms	Public grants for exporting supporting all firms that were export oriented, entrepreneurial, technology intensive, skill intensive, linked to the local economy, and likely to be financially constrained.	Log of total exports and incidence of exporting	Matching DiD	Grants can encourage already exporting firms to compete more effectively on the international market. While all sizes of grants may have a positive effect on firms' incidence of exporting, the larger the grant the more likely a firm will export. However, there is no statistically significant evidence that grants encourage firms to become exporters.
Defever et al. (2020b)	Nepal, cash incentive scheme for exports (CISE) – an ad-valorem subsidy of 1 or 2% of the value of select product exports.	Firms exporting selected: 24 industrial and 7 agricultural products; 2011–2014; about 1300 firms per year. Usually large firms.	Public grants for exporting an ad-valorem cash subsidy offered to firms by the government of Nepal with the objective of increasing exports and fostering export diversification to countries other than India.	Total exports, extensive margin – number of export products, destinations, and product-destinations, intensive margin – average sales per product,	OLS, PSM, Mahalanobis matching, inverse probability,	CISE did not have a robust positive effect on total exports. On the other hand, the effect was robust for encouraging firms to export CISE products to new markets. The effects are particularly pronounced for improving the performance of textiles and clothing exporters. The cost-benefit analysis on the costs' side gives about 3.2 million US dollars; however, the benefit side is lacking since the effect on exports is not

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
				destination, and product-destination		robust, which leaves open the question on cost-effectiveness and thus policy success.
Chavez et al. (2020)	Peru, a large $ 300 million per year, subsidy programme designed like a drawback system intended to refund import tariffs to exporting firms.	Exporters; 2008–2011, 12,720 observations	Public grants for exporting A 5–8% subsidy of the FOB value of exports.	Intensive margin: total exports, extensive margin: export status	OLS; IPW, NN PSM with four neighbours mixed with DiD	Treated firms experienced a lower decline in exports, in other words a 22 p. p. higher export growth rate and a lower export exit probability, that is reduced exit probability by 0.09 p. p. in the crisis (2009–2010). Importantly, subsidy rose from 5% in 2008 to 8% in 2009, and then fell back to its initial level in 2011.
Akgündüz et al. (2018)	Turkey; subsidised export loan	2009–2014, 369 treated and 316 control firms	Subsidised export loan Turkey's (Central bank of the Republic of Turkey (CBRT)) export rediscount credit programme provides credit to exporting firms. Export rediscount credit is a pre and postshipment export financing facility for both goods/services	Exports, sales, domestic sales, operating profits, employees	PSM-DiD	The results indicate receiving firms exhibit higher exports and sales (65, 19%). There is no similar increase in profits and domestic sales. Treatment group firms appear to become larger after receiving rediscount credits compared to the matched control firms as their number of employees rises. The firms that entered the programme in 2012 are quite different from the average exporting firm. Already exporting firms may be more likely to benefit from the programme.

Table 1: (continued)

Authors	Country of analysis, programme	Period, sample	Policy type & target	Outcome variables	Empirical approach	Findings
			exports with maturities up to 360 days.			Also, the credit may have been particularly effective during the post-crisis period if firms had difficulties in financing.
Defever et al. (2020a)	Pakistan, the export finance scheme (EFS) and the long-term finance facility for plant & machinery (LTFF)	Exporters; 2015–2017; about 14,500 firms per year	Subsidised export loan 1. EFS short-term loan for working capital 2. LTFF long-term loan for machinery purchase	Total exports, number of export products and number of destinations	OLS, PSM, Mahalanobis matching, inverse probability	Both policies had a positive effect on total exports (7 and 8–11 p.p.). Neither policy had a positive effect on firms' number of export product and the number of export destinations. Cost benefit analysis of the two instruments gives the conclusion that subsidising long-term investment in physical capital is a more cost-effective way to boost exports in comparison to subsidising exporters' working capital needs.

Note: Table 1 is sorted in the alphabetical order of the policy instrument type. Table 1 starts with 22 EPP studies, one foreign demand shock (arranging a foreign business opportunity) study, two public export credit guarantees studies, seven export-oriented public grants studies and one subsidised export loan study

Methods: Observational studies must address a problem familiar from evaluations of any type of policy. A simple comparison of the average performance of firms with and without export promotion (treated vs. non-treated firms) cannot reveal a causal effect of export boosting policy because firms in the two groups may differ in several characteristics (observable and unobservable) that are relevant to performance. While this problem can be addressed by randomly assigning firms to the two groups, observational studies that compare firms from the two groups after this assignment is nonrandom (by self-selecting firms into the treatment group or by agency selection based on criteria not fully known to the researcher) must control for these differences between treated and nontreated firms before treatment. Most of the studies reviewed here do so by using variants of a matching approach, often combined with difference-in-differences (DiD). Some studies use IV methods (2SLS), fixed effects regressions, fuzzy RDD, or RCT.[10]

The heterogeneity of the research design used, the methods employed, and the data examined makes it impossible to perform a formal meta-analysis of the quantitative estimates provided in the studies, so we must provide a more qualitative summary and review of the results.

3.1.1 Demand Side EBP

The only article on the demand side that is also the most rigorously conducted is Atkin et al. (2017), who study the effects of a demand shock on firm performance. They study the learning-by-exporting hypothesis[11] i.e. they randomly assign opportunities to fill orders by producing 110 m^2 of rugs, which is about 11 weeks of work. While this may sound like an EPP, it is different because the programme ensures an opportunity to produce the rugs, unlike EPPs that broker contacts or matchmake between international partners. Atkin et al. (2017) find that a foreign demand shock leads to an improvement in technical efficiency as well as a positive impact on product quality, productivity, and profits.

3.1.2 Supply Side EBP

There is only one study on demand-side policies, but 32 studies on supply-side policies aimed at promoting the supply of firms' products. These other 32 studies are

10 We do not delve into issues related to each method. For more details on counterfactual methods see Angrist and Pischke (2008, 2010).

11 This is the only demand-side study in exporting; however, other studies investigate the effects of demand shocks on firm performance, for example, by evaluating the impact of public procurement contracts (e.g. Srhoj and Dragojević 2023). The key distinction between these studies is whether the demand shock stems from a governmental or an international (e.g. foreign firm) source.

grouped as "*supply side*" because they affect firm costs by decreasing costs of firm activities such as training, information gathering, purchase, guarantees or traveling. In order to delve deeper into the supply-side policies we subdivide them into five types (Table 2). All five types exhibit a positive effect on firm performance.

Table 2: Heterogeneity of export boosting policy design.

Export policy type	Article
A. Demand side	
Policy directly increasing the firms' export product demand	
1. Randomised foreign market access programme	Atkin et al. (2017)
B. Supply side	
Policy indirectly increasing firms' product export demand by loosening the firms' informational asymmetries or capital constraints	
1. Information provided by a public export promotion agency on foreign market prospects and key contact search	e.g. Álvarez Espinoza and Crespi (2000), Breinlich et al. (2017), Broocks and Van Biesebroeck (2017), Cruz (2014), Kim et al. (2018), Munch and Schaur (2018), and Van Biesebroeck et al. (2015)
1.1. Partner search and matchmaking	Broocks and Van Biesebroeck (2017), Munch and Schaur (2018)
1.2. Intelligence and analysis	Broocks and Van Biesebroeck (2017), Munch and Schaur (2018)
2. Grants, subsidies and vouchers for commercialisation activities	Broocks and Van Biesebroeck (2017), Comi and Resmini (2019), Hiller (2012), Srhoj and Walde (2020)
2.1. Vouchers for encouraging firm's participation at international fairs and exhibitions abroad	Comi and Resmini (2019)
2.2. Vouchers for outgoing economic missions abroad	Comi and Resmini (2019)
2.3. Vouchers for external counseling	Comi and Resmini (2019)
3. Grants and subsidies for export production activities	Girma et al. (2020, 2009), Görg et al. (2008), Helmers and Trofimenko (2013), Srhoj and Walde (2020), Defever et al. (2020a), Chavez et al. (2020)
4. Subsidised export loans (i.e. export discount credit programme; subsidising long-term investment in physical equipment, short-term working capital)	Akgündüz et al. (2018), Defever et al. (2020a)
5. Public export credit guarantees	Badinger and Url (2013), Agarwal et al. (2018)
C. Supply side bundle	
A combination of supply-side policies with the aim to indirectly increase firms' product export demand by loosening the firms' informational asymmetries or capital constraints	
1. Trade agenda *AND* counselling	Volpe Martincus and Carballo (2010c)
2. Trade agenda *AND* trade missions	
3. Counselling *AND* trade missions	
4. Trade agenda *AND* counselling *AND* trade missions *AND* fairs	
5. Subsidy for commercialisation activities *AND* requests for information that involve research by public public export promotion agency employees	Broocks and Van Biesebroeck (2017)

Table 2: (continued)

Export policy type	Article
6. Events organised by export promotion agency such as support to participate at a trade fair abroad, organise prospection tours, or domestic seminars *AND* requests for information that involve research by public public export promotion agency employees	Broocks and Van Biesebroeck (2017)
7. Vouchers for: counselling *AND* outgoing missions *AND* trade fairs	Comi and Resmini (2019)
8. Matching grants for: market prospection *AND* promotion *AND* product development *AND* firm development *AND* foreign subsidiary creation	Cadot et al. (2015)

Note: The studies are grouped by institutional setting and policy information provided in the articles. Some articles were ambigous in the policy description, in these cases we restrained from grouping a particular study. When possible, we made policy subdivision. The *Supply side bundle* list provides a non-exhaustive list with bundles of programmes which were shown to work better than a single programme. For more details on bundles, readers are directed to the four referenced studies.

3.1.3 Information Provided by Public Export Promotion Agency on Foreign Market Prospects and Key Contact Search

Seven articles[12] find positive effects of *information provided by public export promotion agencies on foreign market prospects and key contact search* on firm performance with two articles finding positive effects on firm performance of activities described in more detail: i) *partner search and matchmaking* and ii) *intelligence and analysis* (Broocks and Van Biesebroeck 2017; Munch and Schaur 2018).

3.1.4 Grants, Subsidies and Vouchers for Commercialisation Activities

Four articles[13] find positive effects of *grants, subsidies, and vouchers for commercialisation activities* on firm performance. Comi and Resmini (2019) are able to estimate the effects of vouchers for promoting the participation of firms in international fairs and exhibitions abroad, for economic missions abroad, and for external counseling, finding positive effects for each of the supported activities. It should be noted that the policy evaluated by Comi and Resmini (2019) is an EPP; however, the stark difference with other EPPs (in item 1 of Table 2) is that the final provider of the

12 Álvarez Espinoza and Crespi (2000), Breinlich et al. (2017), Broocks and Van Biesebroeck (2017), Cruz (2014), Kim et al. (2018), Munch and Schaur (2018), Van Biesebroeck et al. (2015)

13 Broocks and Van Biesebroeck (2017), Comi and Resmini (2019), Hiller (2012), Srhoj and Walde (2020)

service to the potential exporter is a private firm or an individual expert, while in other EPPs (in item 1 of Table 2) the final service is provided by public officials.

3.1.5 Grants and Subsidies for Export Production Activities

Grants and subsidies provide firms with public funds to purchase machinery to expand their production facilities or catch-up with technology. Six articles[14] find positive effects of *grants and subsidies for export production activities* on firm performance.

3.1.6 Subsidised Export Loans

Two articles find positive effects of *subsidised export loans* (i.e. export discount credit programme) (Akgündüz et al. 2018; Defever et al. 2020a) on firm performance. Beneficiary firms show substantially higher exports, but their profits, domestic sales (Akgündüz et al. 2018), number of exported products and markets did not have the same positive effect (Defever et al. 2020a). We call for more research on this type of EBP.

3.1.7 Public Export Credit Guarantees

Two articles find a positive effect (Badinger and Url 2013; Agarwal et al. 2018) of *Public export credit guarantees* on firm performance. These findings can be complemented with findings from aggregated units of analysis (i.e. Moser et al. 2008) which show credit export guarantees are particularly important for exporters located in countries with higher political risk and when exporter is entering difficult markets. In this sense, risk mitigation could increase exports to markets where exporting firms would not otherwise sell.

3.1.8 Supply Side Bundle

Three articles[15] show evidence that combining EPA works better than promoting through a single activity; however, so far this evidence focuses only on export promotion policies. Comi and Resmini (2019) show that a combination of vouchers for counselling, outgoing missions and trade fairs works better than a single export

14 Chavez et al. (2020), Girma et al. (2020, 2009), Görg et al. (2008), Helmers and Trofimenko (2013), Srhoj and Walde (2020)

15 Broocks and Van Biesebroeck (2017), Comi and Resmini (2019), Volpe Martincus and Carballo (2010)

promotion activity. In a similar vein, Broocks and Van Biesebroeck (2017) show that a combination of public grants with research information provided by public EPA or a combination of participation in events organised by EPAs and research information provided by a public EPA has a stronger positive effect than a single intervention. Finally, Volpe Martincus and Carballo (2010c) show that bundled services combining counselling, trade agendas, and trade missions and fairs have the largest positive effect.

Although EBPs are heterogeneous by design, there is evidence of positive effectiveness for both the demand-side and five supply-side policies, with additional evidence supporting the argument that a bundle of supply-side policies works better. Although we acknowledge the heterogeneity of policy design, given the positive effects across different policy designs, we proceed with our structured review without the breakdown of policy effects by policy type (as in Table 2).

3.1.9 Country Development and EBPs

Next, we provide an overview of studies based on the country grouping of the World Bank's World Development Report (2014: 295). There are no studies in lower-income countries and only four studies[16] in middle-income countries (Egypt, Nepal, Pakistan, and Vietnam). Nine studies[17] assess impacts in seven upper-middle-income countries (Argentina, Brazil, Colombia, Peru, Tunisia, Turkey, and China), while 20 studies[18] assess impacts in 15 high-income countries (Austria, Belgium, Denmark, Croatia, France, Germany, Ireland, Italy, Spain, Sweden, United Kingdom, Canada, United States, Chile, and Uruguay). Studies from lower-middle, upper-middle, and high-income countries report the existence, and thus the possibility, of export boosting policies having positive effects on firm performance. We refrain from making general statements about the effectiveness of policy measures by country group, but instead provide a systematic review of the studies based on reported outcome variables, firm characteristics, policy design, spillover effects, and *back-of-the-envelope* calculation of macroeconomic effects.

16 Atkin et al. (2017), Defever et al. (2020a), Defever et al. (2020b), Kim et al. (2018)

17 Akgündüz et al. (2018), Cadot et al. (2015), Cruz (2014), Girma et al. (2020), Helmers and Trofimenko (2013), Van Biesebroeck et al. (2016), Volpe Martincus and Carballo (2008, 2010c), Volpe Martincus et al. (2012)

18 Álvarez Espinoza and Crespi (2000), Badinger and Url (2013), Breinlich et al. (2017), Broocks and Van Biesebroeck (2017), Cansino et al. (2013), Cassey and Cohen (2017), Comi and Resmini (2019), Girma et al. (2009), Görg et al. (2008), Hiller (2012), Karoubi et al. (2018), Martincus and Carballo (2010), Mion and Muuls (2015), Munch and Schaur (2018), Rincón-Aznar et al. (2015), Srhoj and Walde (2020), Van Biesebroeck et al. (2016), Van Biesebroeck et al. (2015), Volpe Martincus and Carballo (2010a)

3.2 From Export Boosting Policy to Impact

While the previous section found positive effects for all EBP types and country-level of development, this section examines the relationship between EBP and individual firm outcomes in more detail. As we discussed in the introduction, one of the distinguishing characteristics of EBPs is their ability to quickly generate positive effects on firm performance. This feature of EBPs is also of interest to policymakers who want to achieve results during their political mandate and can therefore combine EBPs with other medium-and long run policies and reforms to increase exports. Our Table 1 shows that ten articles[19] examine the time to positive effect, and eight articles find that the effect occurs in the first year after the introduction of the EBP.

Since the goal of EBP is to increase exports, the first-order outcomes are the export-related outcome variables. For first-order outcomes, we report not only the direction of the effects (i.e. positive, negative, or nonsignificant), but also the magnitudes from the original studies (i.e. point estimates and standard errors). We divide first-order outcomes into five main types: first, the start of exporting by non-exporters, second, and third, the export-intensive margin variables: total exports and export intensity, followed by two extensive margin variables: the number of exported goods and the number of exported markets.

3.2.1 First-Order Outcomes 1. Export Initiation by a Firm

Eleven articles evaluate the effect of EBPs on the start of exporting, from which eight find positive effects[20] for example, Munch and Schaur (2018) find on average 3.9 percentage points (p.p.) (±0.4 p.p.)[21] higher probability of export start in the year of support, and 5.9 p.p. (±0.5 p.p.) two years later, Van Biesebroeck et al. (2016) find 4.1 (±0.9 p.p.) to 8.6 (±1 p.p.) p.p. in Belgium and 6.8 (±1.4 p.p.) to 13.1 p.p. (±1.6 p.p.) in Peru, Girma et al. (2020) find 6 p.p. (n.a.), Broocks and Van Biesebroeck (2017) find 8.5 p.p. (±1 p.p.) while Comi and Resmini (2019) a 14.2 p.p. (±2.7 p.p.). On the other hand, three studies[22] find no significant effect on the start of exporting. In regard to the start of exporting, Görg et al. (2008) find larger grants increase the probability of firms starting to export.

19 Cadot et al. (2015), Cruz (2014), Hiller (2012), Munch and Schaur (2018), Srhoj and Walde (2020), Van Biesebroeck et al. (2016), Volpe Martincus and Carballo (2010a). Two studies find the effects do not occur in the first year (Akgündüz et al. 2018); Van Biesebroeck et al. 2015).

20 Van Biesebroeck et al. (2016, Broocks and Van Biesebroeck (2017), Comi and Resmini (2019), Cruz (2014), Girma et al. (2020), Hiller (2012), Mion and Muuls (2015), Munch and Schaur (2018)

21 Standard errors (s.e.) provided in brackets. Munch and Schaur (2018) provide ATT and t-statistic, and we calculate s.e. = estimate/t-statistic.

22 Breinlich et al. (2017), Girma et al. (2009), Görg et al. (2008)

3.2.2 First-Order Outcomes 2. Firms' Export Intensity

Four articles[23] evaluate the effect on export intensity, from which three find positive effects. The positive effects on export intensity range from on average 1.8% (±0.4 p.p.) (Comi and Resmini 2019) to 10% (±4.2 p.p.) (Cansino et al. 2013), while one paper finds only weak evidence (Girma et al. 2009).

3.2.3 First-Order Outcomes 3. Firms' Export Volume

Twenty-one articles evaluate the effect on total exports, from which eighteen[24] find positive effects, for example, Munch and Schaur (2018) document a weak positive effect on exports in the magnitude of 5.8% (±3.3 p.p.) two years after receiving support, Van Biesebroeck et al. (2015) find 9.8% (±2.1 p.p.), Srhoj and Walde (2020) find 12.7% (±4 p.p.)[25] Van Biesebroeck et al. (2016) find a range of 19.5 (±6.7 p.p.) to 24.2% (±7.3 p.p.) (in Belgium) and 13.4 (±8.1 p.p.) to 22.5% (±6.3 p.p.) (in Peru), Broocks and Van Biesebroeck (2017) find 14.4% (±0.5 p.p.), while Volpe Martincus and Carballo (2010c) find 13.8% (±3.5 p.p.) (for the trade agenda) and 28.5% (±5.4 p.p.) (for the bundle of services), on the other hand, three studies find no evidence of a positive effect (Breinlich et al. 2017; Defever et al. 2020b; Girma et al. 2009).

3.2.4 First-Order Outcomes 4. Number of Goods Exported

Twelve articles evaluate the effect on the number of goods exported, from which nine find positive effects[26] for example, Van Biesebroeck et al. (2015) show on average a positive effect on the number of goods exported of 2.1% (±1 p.p.)[27] Cadot et al. (2015) find 8.6% (±3.1 p.p.), and Volpe Martincus and Carballo (2008) find 9.4% (±3 p.p.), while on the other hand three studies find no effect.[28] Volpe Martincus and Carballo

23 Cansino et al. (2013), Comi and Resmini (2019), Karoubi et al. (2018)

24 Agarwal et al. (2018), Akgündüz et al. (2018), Álvarez Espinoza and Crespi (2000), Broocks and Van Biesebroeck (2017), Cadot et al. (2015), Chavez et al. (2020), Defever et al. (2020a), Helmers and Trofimenko (2013), Hiller (2012), Karoubi et al. (2018), Volpe Martincus and Carballo (2008, 2010a, 2010c), Mion and Muuls (2015), Munch and Schaur (2018), Srhoj and Walde (2020), Van Biesebroeck et al. (2015), Van Biesebroeck et al. (2016)

25 It should be noted, in comparison to other point estimates provided in this sentence, apart from Srhoj and Walde (2020) who estimate the effects of export-oriented public grants, other studies in the sentence estimate the effects of EPP.

26 Álvarez Espinoza and Crespi (2000), Cadot et al. (2015), Defever et al. (2020b), Hiller (2012), Mion and Muuls (2015), Broocks and Van Biesebroeck (2017), Van Biesebroeck et al. (2015), Volpe Martincus and Carballo (2008, 2010c)

27 This estimate is sensitive in some specifications.

28 Breinlich et al. (2017, Defever et al. (2020a), Martincus and Carballo (2010)

(2010a) in Uruguay for firms with a higher share of differentiated products find higher probability to start exporting additional differentiated products, but they do not find a positive effect on exporting new products in general.

3.2.5 First-Order Outcomes 5. Number of Export Markets

Twelve articles evaluate the effect on the number of countries exported to, from which 11[29] find positive effects, for example, Van Biesebroeck et al. (2015) find on average a positive effect on the number of export markets of 2.5% (±0.7 p.p.),[30] Volpe Martincus and Carballo (2008) find 7.5% (±2 p.p.), and Cadot et al. (2015) find 10.4% (±2.2 p.p.), while one article finds no effect (Defever et al. 2020a). In addition to the extensive margin with respect to the number of countries served, it is also worth noting the mixed results in terms of the type of new countries served. Broocks and Van Biesebroeck (2017) in Belgium find on average positive effects on entering market of non-EU countries, which include non-OECD countries (6.1 p.p. (±0.7 p.p.)), OECD countries (4.8 p.p. (±0.6 p.p.)), non-OECD G20 countries (2.6 p.p. (±0.4 p.p.)), and Switzerland and Norway (2.5 p.p. (±0.4 p.p.)). On the other hand, Volpe Martincus and Carballo (2010a) find positive effects on new export markets in Uruguay when the export markets are neighbouring countries in the Latin America and Caribbean region, but not in the more advanced OECD countries.

Second-order outcomes of interest to economists and policymakers are inputs to the production function of firms and their outputs, including sales, value added, profits, employment, capital, and productivity.

3.2.6 Second-Order Outcomes 1: Firm Sales, Value Added and Profits

Nine articles evaluate the effect of EBPs on sales, and all[31] find positive effects. Three articles evaluate the effect on value added from which two find positive effects (Munch and Schaur 2018; Srhoj and Walde 2020) and one no effects (Agarwal et al. 2018).[32] Three articles evaluate the effect on profits, from which two find positive effects[33] and one study finds no effects (Akgündüz et al. 2018).

29 Álvarez Espinoza and Crespi (2000), Cadot et al. (2015), Hiller (2012), Mion and Muuls (2015), Broocks and Van Biesebroeck (2017), Volpe Martincus and Carballo (2010a), Van Biesebroeck et al. (2016), Van Biesebroeck et al. (2015), Volpe Martincus and Carballo (2008, 2010c)

30 This estimate is sensitive in some specifications.

31 Akgündüz et al. (2018), Cansino et al. (2013), Comi and Resmini (2019), Helmers and Trofimenko (2013), Hiller (2012), Munch and Schaur (2018), Rincón-Aznar et al. (2015), Srhoj and Walde (2020), Volpe Martincus and Carballo (2010a)

32 Agarwal et al. (2018) find positive effect on the subsample of small firms and for novice users.

33 Atkin et al. (2017), Srhoj and Walde (2020)

3.2.7 Second-Order Outcomes 2: Firm Inputs

Srhoj and Walde (2020) find positive effects of export-oriented grants on capital. Eight articles evaluate the effect on employment out of which five find positive effects (Akgündüz et al. 2018; Broocks and Van Biesebroeck 2017; Cansino et al. 2013; Cassey and Cohen 2017; Munch and Schaur 2018), one article finds positive effects to be short-lived (Cassey and Cohen 2017) and three articles find no effects (Agarwal et al. 2018; Rincón-Aznar et al. 2015; Srhoj and Walde 2020).

3.2.8 Second-Order Outcomes 3: Firm Productivity

Four articles evaluate the effects on productivity, of which two find positive effects (Atkin et al. 2017; Munch and Schaur 2018) and two articles find no effects (Agarwal et al. 2018; Srhoj and Walde 2020).

We now delve deeper into several study details: Heterogeneity by firm size, export experience, and sector. We then report and discuss policy spillover effects and the documented *back-of-the-envelope* calculations of macroeconomic effects based on microeconometric estimates.

3.3 Heterogeneity of Export Boosting Policy Effects

The empirically identified heterogeneity of effects can help researchers understand the mechanisms by which export boosting policies operate and can help policy-makers design more effective policies. It should be emphasised that heterogeneity was found along several dimensions and much remains to be learned. Most evidence in the structured review is found for firm size, with some evidence for sectors, and export experience.

3.3.1 Firm Size

Small firms are shown to better respond to EBP. One of the most important activities in expanding abroad is finding business partners in the foreign market (e.g. distributors, customers), but even once a business partner is found, the question is how reliable they will be. The search for business partners can be faster and more successful the larger the business network (Chaney 2014), so a policy focused on finding business partners might be more helpful for smaller firms (Munch and Schaur 2018). Compared to larger firms, smaller firms are less likely to have separate export departments, but have lower levels of skills and organizational knowledge, so export boosting policies could be particularly effective (Cruz et al. 2018). Finally, smaller

firms have lower productivity, cash, assets, and potential for bank loan, all of which are important for promoting firm growth, compared to larger firms (Coad and Srhoj 2020; Rostamkalaei and Freel 2016; Wagner 2007, 2014).

Fourteen articles evaluate the effect on firms of different sizes or focus only on small firms, of which eleven find positive effects on small firms, six find positive effects on medium-sized firms, and only three find positive effects on larger firms. Technically, these studies use quite different thresholds for grouping firms by size, e.g. Atkin et al. (2017) focus only on firms with up to five employees, Munch and Schaur (2018) divide firms into categories based on the number of employees, namely up to 20, 20–50, and more than 50 employees, Cadot et al. (2015) define medium-sized firms as firms with 20–100 employees, Volpe Martincus and Carballo (2010a) and Akgündüz et al. (2018) subdivide firm size based on the export distribution of firms.

3.3.2 Firm Export Experience

Fifteen articles investigate impact with respect to export experience, from which ten[34] find positive effects on firms with some export experience, while six find positive effects on firms with no export experience.[35] Along these lines, Eaton et al. (2021) suggest search to identify new clients is costly even when a firm already exports, which is exactly what is empirically found, for example, Van Biesebroeck et al. (2015) for EPP and Agarwal et al. (2018) for guarantees find positive effects for firms with export experience.

3.3.3 Sectors

Most studies that find positive effects focus on firms in the manufacturing sector; one study finds positive effects on both the service and manufacturing sectors (Agarwal et al. 2018), while one study finds heterogeneity (Karoubi et al. 2018) with positive effects on firms in the service sector but no effects on firms in the manufacturing sector. The paucity of studies examining the effect of EBP on firms in the service sector is a suggestion for further research. Karoubi et al. (2018) also find positive effects for profitable but not for loss-making firms.

34 Agarwal et al. (2018), Akgündüz et al. (2018), Breinlich et al. (2017), Broocks and Van Biesebroeck (2017), Comi and Resmini (2019), Görg et al. (2008), Kim et al. (2018), Mion and Muuls (2015), Van Biesebroeck et al. (2015), Volpe Martincus and Carballo (2010b), Volpe Martincus et al. (2012)

35 Cansino et al. (2013), Cruz (2014), Broocks and Van Biesebroeck (2017), Mion and Muuls (2015), Volpe Martincus and Carballo (2010a), Volpe Martincus et al. (2012)

In summary, EBPs are more effective for smaller firms, while evidence exists in favour of positive effects on manufacturing firms, and both, firms with export experience, and non-exporters with export potential.

3.4 Spillovers and Cost-Benefit Analysis

As shown in Table 1, all 33 articles examine direct effects on intensive or extensive export margin or firm performance. Of the 33 articles, six[36] examine possible spillover effects on firms that do not directly benefit from EBP. Examining spillover effects is important for at least two reasons, one economic and one methodological. From an economic perspective, a true cost-benefit analysis (CBA) should calculate not only direct spillover effects but also indirect spillover effects. In particular, if the spillover effects are large, they should be included in the CBA calculation. In this sense, one of the economic justifications for government intervention with EPPs is to address market failures in the form of information spillovers, and therefore the study of spillovers is particularly important. Evidence from France (e.g. Koenig et al. 2010) suggests that when a firm is active in a foreign market, the probability of exporting increases for firms close to the exporter. In terms of methodological rationale, note that 28 articles identify the effects of EBPs using matching algorithms (alone or with DiD), two using the IV approach, two using RCT, and two using fixed effects estimation (see Table 1). Matching, IV, and RCT are all counterfactual methods with the same basic assumption, the stable unit treatment value assumption (SUTVA), which essentially assumes that there are no spillover effects from treated firms to control firms. When the SUTVA is violated, the estimates are biased: On the one hand, the effect would be overestimated if there are negative spillover effects on the control group such that the use of EBP leads to a decrease in the control group, while on the other hand, the effect would be underestimated if the treatment leads to an increase in the control group.

3.4.1 Spillovers

Six studies use five different approaches to identify spillover effects. Atkin et al. (2017) use geographic proximity, Kim et al. (2018) assume information exchange networks within the same village, Broocks and Van Biesebroeck (2017) use NACE 4-digit sectors, Cruz (2014), Cadot et al. (2015) consider the same region and sector, and Girma et al.

36 Atkin et al. (2017), Cadot et al. (2015), Broocks and Van Biesebroeck (2017), Cruz (2014), Girma et al. (2020), Kim et al. (2018)

(2020) use cluster membership. Of these six articles, three[37] report positive spillover effects, two report no spillover effects (Atkin et al. 2017; Cadot et al. 2015), and one reports negative effects (Girma et al. 2020). Two studies require further comment. Broocks and Van Biesebroeck (2017) show within the same NACE 4-digit industry, that the (indirect) spillover effects of an EPP on the probability of starting to export are positive, on average 0.7 percentage points, which is ten times smaller than the direct positive effect. Girma et al. (2020) estimate the spillover effects of export subsidies within a cluster and find that they have a large negative effect (about 30 p.p.) on the propensity to export of nontreated firms in the cluster. Moreover, this negative effect increases the higher the share of treated firms in a cluster, while the negative effect decreases once the share of treated firms in a cluster is very high.

3.4.2 Cost-Benefit Analysis

Results on spillover effects remain mixed; however, if positive, they should be included in the CBA calculations. Six articles use *back-of-the-envelope* calculations (without spillover effects) to provide insights into CBA by comparing direct EBP costs to benefits created, whith benefits measured based on microeconometric causal effects on value added in two articles (Munch and Schaur 2018; Srhoj and Walde 2020) and on the amount of exports in four articles.[38] Using additionality in value added to estimate benefits in two small open economies, Croatia and Denmark, Srhoj and Walde (2020) find for export-oriented public grants that the benefits to be 139.5%, while Munch and Schaur (2018) find for EPP the benefits to be 300% of the direct policy costs. When export additionality is used, benefits are reported to massively exceed EPP costs, by 16–29 times in Belgium (Broocks and Van Biesebroeck 2017), 19 times in Tunisia (Cadot et al. 2015)[39] 9 times in Italy (Comi and Resmini 2019) and 1.2 to 11.7 times in Pakistan (Defever et al. 2020a). Few studies report programme costs and find no effect on export value. For example, Defever et al. (2020b) report programme costs of about 4 million US dollars a year for a cash transfer programme in Nepal, which was an ad-valorem subsidy of 1% or 2% of the export value of government-selected export products types, but find no positive effect on export value, so the scheme was not cost-effective.

Defever et al. (2020a) show that the additional exports triggered by subsidised loans for long-term investment in fixed assets (LTFF) exceeded the direct costs of the

37 Broocks and Van Biesebroeck (2017), Cruz (2014), Kim et al. (2018)

38 Cadot et al. (2015), Broocks and Van Biesebroeck (2017), Comi and Resmini (2019), Defever et al. (2020a)

39 In the paper by Cadot et al. (2015) we compare additional exports from Table 15, row “c” (TY) and total private and public cost of the FAMEX programme.

scheme by 11.7 times, while the additional exports triggered by subsidised loans for working capital (EFS) exceeded the direct costs of the scheme by 1.2 times. Defever et al. (2020a) present a first CBA showing that subsidised loans for long-term investment in fixed assets increase export value more than subsidised loans for working capital. Along these lines, Srhoj and Walde (2020) suggest that public grants for exporters' technological upgrading create more value in the economy than grants for commercialization activities such as international product placement.

Finally, it should be noted that two studies go a step further and attempt to construct a CBA with benefits based on tax revenues (Cadot et al. 2015; Defever et al. 2020a). This is a different angle in conducting a CBA that focuses not on how much additional exports EBPs generate, but how much additional tax revenue. Cadot et al. (2015) show for Tunisia that the additional tax revenues and net after-tax gains are twice the total cost of the programme. However, Defever et al. (2020a) show that both types of subsidised loans in Pakistan (EFS and LTFF) are not cost-effective in increasing exports because the additional tax revenues do not cover the financial costs of the two types of subsidised loans (only 7.18% for EFS and 69.6% for LTFF).[40]

4 Conclusion

Boosting exports is a policy goal for countries around the world and is especially important for small open economies that want to increase the prosperity of their citizens. Export boosting policies (EBPs) support firms in the final stages of the commercialization process, and our objective was to answer the question, are EBPs effective in the short-run? To this end, we provided a structured review of 33 rigorous microeconometric studies from 26 countries on five continents. All reported studies use robust microeconometric methods, however, matching algorithms are probably the least compelling within these microeconometric tools, but are used in 25 of 33 included articles. Matching is a method that has a weakness – unobservable confounders, and this may be even more pronounced if the control group did not intend to participate in the EBP. This raises the question of potential bias: How large is the effect of selection in the EBP compared to the effect of the EBP? This question is difficult to answer. For example, export promotion policies (EPPs) are conducted by public agencies that are reluctant to reject exporting firms-EPP candidates because the marginal cost of providing additional services is low, potenially resulting in low number of applicants to form a suitable control group in an RDD setting. In addition, although some of the studies included in our review show negative or no effects, it is

40 Percentages based on Defever et al. (2020a) Table 9 – *Financial cost for SBP* and *Additional tax revenues collected.*

not clear how large is the potential publication bias in the EBP evaluation field. We leave these interesting questions on potential bias for future research. With these limitations in mind, we provide nine important findings.

Finding 1

This article presents an arsenal of EBPs divided into two levels: the demand side and the supply side. We show that five types of supply-side EBPs have a positive effect. While we cannot draw conclusions about which of the supply-side policies yields the largest benefits per public euro invested. Two studies suggest that providing subsidies or soft loans for technological improvements and machinery is more cost-effective than subsidising working capital and marketing activities. Of the EBPs, few studies examine the effects of export credit guarantees and subsidised export loans. We call for further research on these two policies.

Finding 2

Combination of multiple EBPs has a more beneficial effect than a single intervention (Table 2). Current evidence focuses on export promotion activities, which are sometimes combined with public grants, but further evidence is needed on the bundling of different types of EBPs (i.e. with loans and guarantees). EBPs support firms in the final stage of commercialization, which may be after the R&D process. However, EBPs and R&D policies are usually analysed separately, although they should be "*under the same umbrella*" (Altomonte et al. 2013). Future research could address the heterogeneous effects of EBPs as a function of firms' R&D intensity, public R&D subsidies, and tax incentives.

Finding 3

Access to foreign markets had a positive effect on firm performance, with the mechanism being *learning-by-exporting* – increased product quality, technical efficiency and productivity of firms that were randomly allocated an export opportunity (Atkin et al. 2017). This finding opens a debate on the use of public procurement as a means to build capabilities (Stojčić et al. 2020). For example, Srhoj and Dragojević (2023) estimate a positive impact of public contracts on employment in construction firms, with a mean public cost per job created at €58,600. However, due to *learning-by-exporting* mechanism, benefits might be larger for international procurement,

and initial evidence in 19 low-income Sub-Saharan African countries show how cross-border procurement auctions can provide growth opportunities for firms (Hoekman and Sanfilippo 2020).

Finding 4

Export promotion agencies are frequently mentioned in the context of developing countries, which might have lead to an opinion of EBPs sole focus on less developed countries, but we show evidence of positive EBP impacts also in developed countries. Both less and more developed countries show favourable impacts of EBPS, and it is not clear in which country context EBPs are more effective. A country's level of development is a potential source of heterogeneity in policy effects, for example, due to country-of-origin effects (Verlegh and Steenkamp 1999) or a country's political risk (Moser et al. 2008). We therefore call for an international micro-level study with standardized dependent variables.

Finding 5

Most studies find positive impact on first-order outcomes at intensive and extensive margin. In particular, current evidence shows positive EBPs impact on whether non-exporters start exporting, on total exports and export intensity (intensive margin). Current evidence also shows positive impacts on the number of export products, and number of export markets (extensive margin), but it is not yet clear whether additional export products are new and innovative, nor whether firms manage to sell their products in more developed countries for a higher price.

Finding 6

For second-order outcomes, results are somewhat mixed. Current evidence show positive EBP impacts on firm sales, but mixed evidence for productivity, value added, profits and employment, with insufficient evidence for capital.

Finding 7

EBPs have heterogeneous impacts. EBPs are more effective for smaller firms. Most evidence for positive impacts in accumulated among manufacturing firms. EBPs

seem to be effective for both, firms with export experience, and non-exporters with export potential.

Finding 8

One of the EBP indirect targets are spillovers to other firms. On the one hand, three out of five studies examining the spillover effects show positive results. On the other hand, there are also studies showing no or negative effects, which begs for more evidence to support the argument of positive spillover effects. Future research on this topic is critical, as spillover effects could significantly change the cost-benefit analysis (CBA) of EBPs.

Finding 9

Back-of-the-envelope calculations of CBA show that the value added or exports generated by EBP are much higher than the direct costs of EBP. Few studies use additional tax revenues instead of value added and exports to calculate benefits and show mixed results and lower cost-effectiveness of EBPs. Calculations tend to focus on causally identified benefits and direct costs, ignoring the costs of public officials involved in design, implementation and monitoring, or spillover effects. Future studies should include these other costs and potential benefits in the estimation.

There is still much to be learned on the EBPs impact. Luckily, there is considerable research interest in this exciting field. To highlight this point, we briefly discuss three interesting studies published in the late 2022. Manaresi et al. (2022) examine a novel EBP aimed at SMEs in Italy, which subsidizes contracting a temporary export manager for the period of six months. Study finds positive effects of this policy on revenues, profits, employment and productivity. Revenues increased substantially due to exports outside EU, while effects were particularly positive for smaller firms and firms with lower productivity. Buus et al. (2022) provide a detailed examination of mechanisms though which export promotion has an impact on firms. Study does not find a positive impact on prices, markups, quality, and marginal costs, but finds a positive impact on exports within markets. Finally, Cusolito et al. (2022) conduct a six-country experiment in Western Balkans, where treatment was a combination of training and consulting on topics such as search engine optimization and *Facebook* content to increase firms' digital presence and better reach foreign customers. Study finds positive impact on the number of customers and exports.

As our review shows, export boosting policies are successful public policies implemented around the world, in developing and developed countries, and will remain an interesting field of academic research.

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