

Export Promotion Agencies Revisited

Daniel Lederman
Marcelo Olarreaga
Lucy Payton

The World Bank
Development Research Group
Trade and Integration Team
&
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Abstract

The number of national export promotion agencies has tripled over the past two decades. Although more countries made them part of their export strategy, studies criticized their efficacy in developing countries. The agencies were retooled, partly in response to these critiques. This paper studies the impact of today's export promotion agencies and their strategies, based on new survey data covering 103 developing and developed

countries. The results suggest that on average they have a statistically significant effect on exports. The identification strategies highlight the importance of EPA services for overcoming foreign trade barriers and solving asymmetric information problems associated with exports of heterogeneous goods. There are also strong diminishing returns, suggesting that as far as export promotion agencies are concerned, small is beautiful.

This paper— is a joint product of the Trade and Integration Team, Development Research Group, and Office of the Chief Economist, Latin America and the Caribbean Region—is part of larger efforts in both departments to study the how the structure of trade affects development. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The author may be contacted at dlederman@worldbank.org.

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Daniel Lederman[†]
Marcelo Olarreaga[‡]
Lucy Payton[§]

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[†]Development Research Group, World Bank, Washington, DC 20433, USA; Tel: (202) 473-9015; Fax: (202) 522-1159; e-mail: dlederman@worldbank.org.

[‡]University of Geneva, 40 bd du Pont d'Arve, 1211 Geneva 4, Switzerland, and CEPR, London, UK; e-mail: marcelo.olarreaga@unige.ch

[§]Boston Consulting Group, Devonshire House, Mayfair Place, London, W1J 8AJUK, UK; e-mail: payton.lucy@bcg.com.

1 Introduction

In 1985, in the midst of the highest levels of hyperinflation ever recorded in the history of the Bolivian economy, President Victor Paz Estenssoro proclaimed that the country was in its death throes and that it could survive only by exporting more of its production. Thus, the phrase "export or die" was coined. As part of the reform package –whose cornerstone was macroeconomic stabilization– an export promotion agency (EPA) was created (INPEX).

Bolivia's search for development through exports is not exceptional. The first EPA –still existing– was created in 1919 in Finland, and in the mid-1960s they became a popular instrument to boost exports and reduce trade deficits, under the auspices of the International Trade Center (ITC, a joint UNCTAD-GATT multilateral organization). By the early 1990s their efficiency began to be questioned (Keesing and Singer, 1991 and 1991a). EPAs in developing countries were criticized for lacking strong leadership, being inadequately funded, hiring staff which was bureaucratic and not client oriented, and suffering from government involvement.¹ As a result, many development institutions withdrew their support to EPAs.² Part of the blame for the failure of the early EPAs was put on the import substituting trade regimes that prevailed at the time. Overcoming such a strong anti-trade bias was probably too much to ask of any specialized agency.

However, more than a decade later, the trade environment has significantly changed in the developing world and some EPAs under the auspices of the ITC have evolved in the direction suggested by Hogan, Keesing and Singer (1991) in their influential piece.³ Prominent development economists now recommend the creation of adequately funded EPAs in Africa to overcome the costs and risks of entering unfamiliar and demanding international markets (Helleiner, 2002). Our objective is to assess the efficacy of EPAs by estimating the effect of

¹Similar critiques emerged for EPAs in developed countries; see Kotabe and Czinkota's (1992) study of sub-national EPAs in the United States.

²Of the 73 export promotion agencies in developing countries surveyed for this paper only 21 had some budgetary support from multilateral donors in 2005, and in only 11 agencies the budgetary support from multilateral donors represented more than 25 percent of the total budget. In the case of one Sub-Saharan African agency, more than 75 percent of its budget in 2005 came from multilateral donors.

³That is, there is more private sector involvement, larger funding, and a stronger organization and leadership.

today's EPAs on national exports.

The objectives of EPAs are to help exporters understand and find markets for their products. The services offered by EPAs can be divided into four broad categories: 1) country image building (advertising, promotional events, but also advocacy); 2) export support services (exporter training, technical assistance, capacity building, including regulatory compliance, information on trade finance, logistics, customs, packaging, pricing); 3) marketing (trade fairs, exporter and importer missions, follow-up services offered by representatives abroad); and 4) market research and publications (general, sector, and firm level information, such as market surveys, on-line information on export markets, publications encouraging firms to export, importer and exporter contact databases).

The economic justification for government involvement in export promotion is based on the theory of asymmetric information and other market failures. There are important externalities associated with the gathering of foreign market information related to consumer preferences, business opportunities, quality and technical requirements, etc. Private firms alone will not provide foreign market information, as companies hesitate to incur research and marketing costs that can also benefit competitors. The same applies to pioneer exporters, who make a considerable investment in attempts to open foreign markets, cultivating contacts, establish distribution chains and other costly activities that can be used by their rivals (Hausmann and Rodrik, 2003). The uncertainty associated with trading across markets with different regulations has also been put forward as a justification for export insurance schemes supported by the public sector.⁴

The argument for public funding of EPAs would ideally be based on an assessment of the social costs and benefits associated with the activities of the EPA. Social benefits are likely to be larger than the social costs if there are large positive externalities associated with higher current exports across firms, sectors or time and within the exporting country.⁵

⁴See Greenaway and Kneller (2005) for a recent survey of the literature on trade and externalities. For a more skeptic view, see Panagariya (2000).

⁵Note that some of these externalities may travel across borders. It is clear that some of the benefits from export promotion activities can be captured by consumers in the importing country for whom search costs are reduced. This undermines the case for national government funding of export promotion programs and calls

It should be clear that program evaluation of EPAs on economic welfare grounds is difficult if not impossible. Thus often –if not always– evaluations of EPAs stop short of an assessment based on welfare grounds, and focus on the more modest objective of assessing whether exports have increased or whether new markets have been opened. This paper is no exception. Our goals are twofold: first, to determine whether EPAs are having an impact on exports; and second, to identify the activities and institutional structures of agencies that are positively correlated with exports.

As far as we know, there has been no cross-country statistical analysis of the impact of EPAs on exports. The exception is perhaps Rose (2007), who estimates the impact of embassies or consulates on bilateral trade using a gravity model. Rose argues that as communication costs fell, foreign embassies and consulates have lost much of their role in decision-making and information-gathering, and therefore are increasingly marketing themselves as agents of export promotion. In a sample of twenty-two exporting countries –of which eight are developing countries– and around 200 potential trading partners, he finds that for each additional consulate abroad, exports increase by 6 to 10 percent.

But EPAs are not consulates. In order to assess their efficiency we undertook a world survey of national EPAs to gather information on their objectives, activities and institutional structure. We then econometrically explore the effect of EPA budgets on exports, as well the impact of different institutional structures, objectives and activities of EPAs on exports.

The evidence suggests that on average EPAs have a positive and statistically significant effect on national exports, after correcting for sample-selection and omitted-variable biases, as well as reverse causality. The identification strategies clarify the mechanisms through which EPA services can stimulate national exports. EPAs seem to be particularly effective when they are most needed, namely, when exporters face onerous trade barriers abroad, and when a large share of the export bundle is composed of heterogeneous goods. Nonetheless, there are notable decreasing returns to scale in resources devoted to export promotion. Thus, as far as EPAs are concerned, small is beautiful.

for multilateral interventions.

Regarding EPA's institutional arrangements, objectives and activities associated with their effects on exports, our results suggest the following. EPAs should have a large share of the executive board in the hands of the private sector, but a large share of their budget should be publicly funded. The proliferation of small agencies within a country leads to an overall less effective program. However, we found no statistically significant evidence regarding the allocation of EPAs' expenditures across different activities or types of firms targeted by EPAs (small versus large or established exporters versus non-exporters).

The rest of this article is organized as follows. Section 2 describes our global survey of EPAs and provides some descriptive statistics to help understand the objectives, activities, and institutional structures that exist in EPAs around the world. Section 3 describes the econometric strategy. Section 4 discusses the empirical results, and section 5 concludes.

2 Survey of EPAs: Summary Statistics

During the summer and fall of 2005 we conducted an eighteen-question survey of EPAs around the world.⁶ Through the ITC website (www.intracen.org/tpo) we obtained a database with contact information. We complemented this list with the help of World Bank country economists who provided contact information for national EPAs. We contacted agencies or Ministries in 116 countries, and 92 answered our request (of which 4 responded that they could not respond). Each of the 88 surveys that we received was followed up with phone conversations to confirm and clarify some of the answers. The list of 88 agencies appears in the Appendix Table.

The survey contains five parts: i) institutional structure, ii) responsibilities of the agency, iii) the strategies followed, iv) resources and expenditures, and v) activities and functions. Below we provide summary statistics by region.

⁶The survey is available from the authors upon request.

2.1 Institutional Structure

Around 10 percent of agencies surveyed are fully private; another 5 percent are joint public private entities. The bulk of the agencies –62 percent– are semi-autonomous entities reporting to a Ministry or the Office of the President or the Prime Minister. The remainder –23 percent of the agencies– are sub-units of a Ministry, and therefore subject to government hiring regulations and pay scales.

Within the 73 agencies that reported having an executive board, on average half the seats in the board –53 percent to be precise– represent the private sector.

Finally, 80 percent of the agencies are either the only export promotion agency in the country or are clearly the largest and most important, although there are significant public and private agencies working in closely related areas. This includes umbrella organizations in which all private sector associations are members. In 20 percent of the countries surveyed there are 2 or more agencies of equal importance.

2.2 Responsibilities

In terms of responsibilities, we explored whether the agency in charge of export promotion activities was exclusively dedicated to export promotion, and if not, we asked the degree of priority granted to export promotion within the agency. In high-income OECD countries and in the Middle East and North Africa (MENA) export promotion is the top priority of the agencies in almost 70 to 80 percent of the countries. In LAC and SSA only half of the agencies report export promotion as the top priority.

2.3 Objectives

The main objective pursued by 60 percent of the agencies surveyed is to increase aggregate exports, no matter which sector or how big or small the export volumes. Around 18 percent of agencies aim to promote non traditional exports only, and around 20 percent target specific sectors. Around 2 percent attempt to develop industrial clusters, and other objectives.

2.4 Resources and Expenditures

The average budget of EPAs surveyed is around 0.11 percent of the value of exports of goods and services, with a standard deviation of 0.35 and a median of 0.04 percent. The region with the largest average budget is Latin America and the Caribbean (LAC) at 0.17 percent of exports. It is followed by countries in Eastern Europe and Asia (EEA) at 0.12 percent, and then MENA, Sub-Saharan Africa (SSA), and the OECD with average budgets of around 0.09 to 0.10 percent of exports.

Regarding funding sources, around 52 percent of the agencies obtained more than 75 percent of their budget from public funding; 2 percent of the agencies obtained more than 75 percent of their budget from private funding; 3 percent of the agencies obtained more than 75 percent of their budget from selling their services (customer fees); and 2 percent of the agencies obtained more than 75 percent of their budget from either multilateral or bilateral donors. Thus, public funding seems to predominate as a source of funding. Three quarters of the agencies surveyed had no private funding, and half had no income associated with the selling of their services. When they reported some income, it represented on average less than 10 percent of their budget.

2.5 Activities and Client Orientation

As mentioned, we considered four main activities: 1) country image building; 2) export support services; 3) marketing; and 4) market research and publications. The largest share of EPA budgets is generally spent on marketing and market research and publications. Another item which shows a large median –but also a much larger variance– is other activities not related to export promotion, except in the OECD, where the bulk (more than 75 percent of them) spent less than 10 percent on activities not related to export promotion. At the opposite end, in SSA other activities not related to export promotion represent between 10 and 25 percent of the budget of most agencies (at the median). The importance of export support services is also much larger in SSA than in other regions.

In terms of client orientation, the data cover the percentage of expenditures spent on large

versus small and medium size firms, and established versus new and occasional exporters. A very small share of total expenditure is spent on large firms, whereas a relatively large share is spent on established exporters. Thus, in all regions the focus of the agencies is on small and medium size firms that are established exporters.

In terms of representation abroad, 41 percent of the agencies have offices abroad (22 percent of the agencies in SSA, 33 percent of the agencies in MENA, 35 percent of the agencies in LAC, 47 percent in EEA and 67 percent in the OECD). In most regions agencies spend a small amount of their budget on offices abroad, with the exception of the OECD where on average 39 percent of the EPA budget is dedicated to offices abroad.

3 Empirical Framework and Identification Strategies

Our objective is to disentangle the effects of export promotion agencies, their structure, responsibilities, strategies, resources and activities on overall exports in order to understand what works and what doesn't. The first step is to explore whether there is any correlation between export promotion budgets and exports. Figure 1 provides a plot of exports per capita on EPA budgets per capita. There is a clear positive correlation between these two variables. Figure 1 also provides the predicted value obtained from the corresponding locally weighted regression (*lowess*), which provides us with some *prima-facie* evidence of which are the agencies that are under-performing in terms of exports per capita given their budgets.⁷ For example Rwanda(RWA) would be expected to have a higher level of exports given the budget of its EPA (under-performer), whereas the Irish agency (IRL) would be expected to have a lower level of exports (over-performer).

There are three clear problems with the correlation discussed above. First, the sample might be biased. It is restricted to agencies that answered the survey, even though we had a perhaps surprisingly high 76 percent response rate.⁸ Second, other factors could be correlated

⁷An in depth and robust analysis of each agency performance is beyond the scope of this paper and would need to be tackled through agency-specific studies. In this paper, we limit the scope to averages across groups and variables.

⁸Even with such a high response rate, it may still not be a representative sample.

with both exports and EPA budgets, which will also result in spurious correlations between the two variables of interest. Third, the direction of causality might go from exports to the EPA budgets, as countries with higher exports might tend to provide more generous funding to their EPAs than other countries.

The estimation of a Heckman selection equation, which explains why some countries were not surveyed, and why some agencies did not answer, addresses the potential selection bias (Heckman, 1979). Our experience collecting contact information for EPAs helped us identify variables that should be part of this selection equation. It was clear that obtaining contact information for the relevant agency in poor and small economies was difficult, and even when we did, it was difficult to get them to answer the survey. So GDP per capita and GDP are part of the selection equation. Aid per capita also seemed to be an important selection variable because many of the poorest agencies were substantially funded by bilateral and multilateral donors. More formally, the selection equation that explains the latent variable z_c^* , which captures the likelihood of obtaining a response to the export promotion survey in country c , is given by:

$$z_c^* = \xi' \mathbf{x}_c + \varepsilon_c; \tag{1}$$

$$z_c = \begin{cases} 1 & \text{if } z_c^* > 0 \\ 0 & \text{otherwise} \end{cases}$$

where ξ is a vector of parameters and \mathbf{x}_c is a matrix of independent variables determining the probability that the EPA in country c answered the survey. The latter includes explanatory variables of the export equation (see below), except the budget of the EPA and the activities of the agency that help us identify the export equation, plus the log of GDP, the log of aid per capita discussed above, and regional dummy variables. The two exclusion restrictions are aid per capita and GDP. Admittedly, economic size and aid per capita (our exclusion restrictions) may be correlated with exports. However, the coefficient on aid per capita is not statistically significant after controlling for the presence of EPAs in the export equation. This suggests that it is a valid exclusion restriction.

Regarding the endogeneity of export promotion, we control for numerous determinants of exports that may be also correlated with export promotion budgets. The control variables are: GDP per capita, an index of trade restrictiveness imposed on imports, an index of trade restrictiveness faced by each country's exports in the rest of the world, volatility of the exchange rate, an indicator of the regulatory burden that measures the average number of days it takes to comply with all necessary regulations to export goods, the geography-determined trade to GDP ratio, and regional dummies for EEA, LAC, MENA, SSA, and the OECD. We also estimated specifications with infrastructure variables (share of paved roads, main telephone lines per capita) and indexes of institutional quality (ICRG indexes) as control variables. These are highly collinear with GDP per capita and were not statistically significant. Moreover, in some cases they significantly reduced our sample. Since this paper is about what works in terms of export promotion, and these variables did not affect qualitatively our results on export promotion, we do not report these specifications.

The basic export equation to be estimated is then:

$$\begin{aligned} \ln(Exp/pop)_c &= \beta_0 + \beta_1 \ln(Bud/pop)_c + \beta_2 \ln(GDP/pop)_c + \beta_3 \ln(T)_c + \beta_4 \ln(MA)_c \\ &+ \beta_5 \ln(Vol)_c + \beta_6 \ln Reg_c + \beta_7 \ln F\&R_c + Dummies_R + e_c \end{aligned} \quad (2)$$

where the β s are parameters to be estimated. Exp/pop_c are exports per capita in country c , and Bud/pop_c is the budget of the EPA per capita in country c . GDP/pop_c is GDP per capita measured as the average for the period 2000-2004 in 2005 constant U.S. dollars from the World Bank's World Development Indicators. T_c is an index of trade restrictiveness imposed by country c on its imports from the rest of the world, MA_c is an index of market access restrictions imposed by the rest of the world on exports of country c , and both are borrowed from Kee, Nicita and Olarreaga (2009). Vol_c is the volatility of the exchange rate in country c , measured by the coefficient of variation of the dollar to local currency exchange rate during the period 2000-2004 obtained from the World Development Indicators. Reg_c is the number

of days it takes to comply with export regulations and procedures from Djankov, Freund and Pham (2009). $F\&R_c$ is the geography-determined trade to GDP ratio provided in Frankel and Romer (1999), which was estimated using a trade gravity framework where only geographic variables were used as explanatory variables of bilateral trade flows.⁹ $Dummies_R$ are regional dummies, and e_c is the standard white-noise error. When testing for what works and what doesn't in EPA modalities we add to (2) the variables discussed in section 2.

To address reverse causality or any remaining unobserved heterogeneity that may lead to omitted variable bias, we instrument EPA budgets. First, we use the number of years to the next election. The idea is that close to election time governments may be willing to increase expenditures for political purposes. We will check for non-linearities in this relationship, because governments with distant elections may also lack incentives to balance the budget as they are not likely to be penalized in the immediate future. The second instrument is the number of years since the creation of the EPA. It is not clear how the longevity of an EPA affects the size of its budget. On the one hand, experienced EPAs could have larger budgets as they become rooted in the government's institutional structure, and its staff become more knowledgeable and influential in budgetary decision making. On the other hand, one of the critiques of the previous generation of EPAs is that they were not adequately funded, and there may be some hysteresis in the corresponding budgets. Again, to capture any potential non-linearity in the relationship we also include as an instrument the square of the number of years since the creation of the EPA.

A concern with the use of the number of years since the EPA was created as an instrument is that it may be correlated with exports per capita. If an EPA is established when exports reach a sufficiently high level (reverse causality), and if this threshold has been increasing over time as world markets became more integrated, then the number of years since the EPA was created may reflect a lower level of exports. To address this issue, we also present results where we control for the level of exports over GDP at the time of the creation of the EPA. If

⁹That is, EPAs cannot influence the geographic components of trade, such as geographic distance and common borders between trading partners, but their budget may be correlated with the geography-determined trade to GDP ratio as countries with larger trade flows might provide better funding to their EPAs.

the mechanism described above is present, then this correction should increase the magnitude of the estimated coefficient on the EPA expenditures variable while the coefficient on the incidence of exports over GDP at the time of the creation of the EPA should be positive.

We pursue two alternative identification strategies that use the mechanisms through which EPAs affect exports to try to address the endogeneity problem. If EPAs have an impact on exports, they are likely to have a larger impact when they are most needed. When would that be? We offer two alternative mechanisms. First, EPAs might be most effective when market access barriers in the rest of the world are high and need to be circumvented. A positive and statistically significant coefficient in the interaction of $\ln MA_C$ and $\ln Bud/pop_c$ would allow us to identify this mechanism. One concern with this strategy is that exporters could affect importers trade policies through multilateral and bilateral trade preferences, but our measure of trade policy restriction is mainly driven by technical regulations and sanitary and phytosanitary measures which are rarely and inefficiently addressed in multilateral and bilateral trade agreements (see Kee, Nicita and Olarreaga, 2009). Moreover, these are areas where EPAs can help through on-shore export support services that help domestic firms understand the technical requirements in the rest of the world.

Second, exports of heterogeneous goods, which are more likely to be affected by asymmetric information, a barrier that can be overcome with the assistance of EPAs. For example, EPA services might not be needed to export oil or other commodities. Thus a negative and statistically significant coefficient on the interaction of EPA expenditures with a variable that captures the degree of homogeneity in the export bundle would imply that EPAs are more likely to help when the export bundle of a given country has a larger share of heterogeneous goods. To implement this identification strategy, we follow the approach pioneered by Rajan and Zingales (1998) by estimating (2) at the product level (4 digits of the SITC rev. 2 classification),¹⁰ and add as an explanatory variable Rauch's (1999) dummy for homogeneous goods. Rauch (1999) classified goods on the basis of whether they were traded in an exchange (organized), had prices listed in trade publications (reference), or were brand name products

¹⁰For each country and each four digit SITC product, we use average exports during 2000-2004, and divided per capita as in (2).

(differentiated). The homogeneous goods category includes products that are traded in an exchange and those that are reference priced.¹¹ The interaction of the homogeneous good dummy with the the budget of the EPA identifies the asymmetric information problem that EPAs can help resolve.

4 Results

The result from the estimation of (1) and (2) are shown in Table 1 for the whole sample and for developing countries using OLS and a Heckman-selection correction. Across all specifications the EPA budget has a positive and statistically significant effect on exports. The coefficient is not statistically different across estimators or samples, which suggests that there is little heterogeneity in the impact of EPAs on exports per capita.¹² Note however, that the selection parameter λ is statistically different from zero in both samples suggestions that sample selection is an issued to be addressed in both samples.

The elasticity is around 12 percent which is slightly higher than the range of estimates by Rose (2007), which suggest that the presence of a consulate or embassy engaged on export promotion leads to a 6 to 10 percent increase in exports. Also, note that this is not a welfare calculation, and such “returns” may be consistent with a welfare loss associated with EPA’s activities, as discussed earlier. Moreover, a point estimate of 0.12 suggests that there are strong diminishing returns to scale. Consequently, large expansions of EPAs budgets may not be desirable.

Regarding the other explanatory variables, GDP per capita ($\ln GDP/pop$) has a positive and statistically significant sign in all specifications suggesting that richer countries, with stronger and better institutions –including trade institutions– export more. The restrictive-

¹¹Rauch provides a liberal and a conservative classification of homogeneous goods and we will be reporting results for both in the next section. The conservative classification has 495 goods classified as homogeneous out of 1189 SITC rev. 2 4 digit goods, and the liberal classification includes 533 goods.

¹²We also estimate the equation in the first column using a Poisson estimator and a robust regression estimator to correct for Jensen-inequality biases in the coefficients (Santos-Silva and Tenreyro, 2007), outliers or other forms of heteroscedasticity. Results are qualitatively the same and not statistically different from the ones reported here. They are available upon request.

ness of the exporting country import regime ($\ln T$) does not seem to affect export performance, suggesting that general equilibrium effects are not a strong determinant of exports.¹³ In contrast, the restrictiveness faced by exporters ($\ln MA$) in the rest of the world strongly reduces exports across all specifications with a slightly higher coefficient for developing countries, but the differences are not statistically different from zero. Exchange rate volatility ($\ln Vol$) also has a negative impact on exports, although it is statistically significant only before correcting for sample bias.¹⁴ The number of days necessary to comply with export regulation in the exporting country has a negative, but generally insignificant impact on exports. The geography component of the trade to GDP ratio as provided in Frankel and Romer (1999) is always positive and statistically significant.

In both selection equations, size and aid per capita –our exclusion restrictions– have a positive and statistically significant coefficient. Thus, larger countries receiving large amounts of aid were more likely to be in our sample, probably reflecting the agencies’ capacity to answer the survey.

As previously discussed, the results in Table 1 might suffer from reverse-causality and omitted-variable biases. To address these concerns, the first column of Table 2 provides instrumental variable estimates, where the number of years since the creation of the EPA and the number of years to the next election, as well as their squared terms are used as instruments. The second column corrects for sample selection bias. The last two columns reproduce the results of the first two columns, but controlling for exports over GDP at the time of the creation of the EPA.

The interesting result from these 2SLS regressions is that the coefficient on EPA budgets

¹³This result also suggests that in the early 2000s contrary to what was observed by Keesing and Singer (1991a) in the 1980s, the main constraint to exports is no longer the anti-trade bias of the import regime.

¹⁴The lack of a significant effect of nominal exchange-rate volatility on exports is consistent with results reported by Tenreyro (2007). This author shows that estimates of the effect of volatility on exports are quite fragile in the context of the gravity model of trade. The intuitive argument is that on the one hand, volatility reduces trade as it might act as friction against international transactions (i.e., by raising the costs of trade). On the other hand, exchange-rate fluctuations can offer profit opportunities for traders. Hence the net effect might be ambiguous. Also, the existence of financial instruments that help agents protect themselves against risk would also support the view that volatility might not have significant deleterious effects on international trade flows.

declines considerably in the first two columns relative to those presented in Table 1, although the differences are not statistically significant. One potential explanation for this is reverse causality: EPA budgets tend to rise with exports.¹⁵ The coefficients are still positive and statistically different from zero, regardless of whether we correct for sample-selection bias. The point estimates are now within Rose's (2007) range of 6 to 10 percent.

Regarding the control variables, the log of GDP per capita, the log of trade restrictiveness in the rest of the world, and the log of geography-determined trade to GDP ratio are the most robust determinants of exports per capita across specifications. Exchange-rate volatility always has a negative sign as expected, but it is never statistically different from zero.

To validate the instruments, we report the Hansen J-test of over-identifying restrictions, with the null hypothesis being that the instruments are uncorrelated with the error term. The test has a p-value of 0.23 and consequently implies that the exclusion restrictions are valid. Nevertheless, as argued earlier, the number of years may be correlated with exports in the presence of reverse causality and heterogeneity in threshold effects at the time of the creation of the EPA. Thus in the last two columns we control for exports over GDP when the EPA was created. The coefficient on EPA budgets is still positive and statistically significant. The coefficient on the exports to GDP ratio at the time of creation is positive and statistically significant, while the coefficients on EPA budgets is higher than the ones reported in the first two columns, although they not statistically different. This indicates that the number of years since the EPA was created may be negatively correlated with exports at the time of EPA's creation as argued earlier. More importantly, results are robust to this alternative specification.

¹⁵Note that only a handful of countries in our sample report explicitly taxing exports to finance EPA's budget, but other mechanisms, such as political economy considerations, can explain this.

4.1 Alternative Identification Strategies

We explore two alternative identification strategies that draw on different mechanisms through which EPAs may affect exports.¹⁶ The first explores whether the impact of EPAs is stronger when exporters face strong trade barriers abroad. The idea is that EPAs help exporters circumvent these barriers through exporter support services that provide technical assistance to exporters on technical regulations and other requirements in foreign markets. This mechanism is captured by the interaction of EPA budgets with the degree of foreign market access restrictions.

The first two columns of Table 3 show the results with and without the sample-selection correction. They confirm the intuition that the effect of EPA is more notable when market access barriers are high. The relevant interaction term has a positive and statistically significant coefficient. Note also that the coefficient on EPA budgets is still positive and statistically significant as well. The size of this coefficient is significantly larger than the ones reported in Table 1, but it only captures the partial effect of EPA budgets on exports. The derivative of the left hand side with respect to $\ln BUD/pop$ and evaluate at the mean of $\ln T$ (which is equal to -2.4, which is also its median) reflects the total effect. It is equal to 0.140 with a standard error of 0.035 in the first column and 0.148 in the second column with a standard error of 0.031, both of which are not statistically different from the ones reported in Table 1. More importantly, the effect of EPAs rise with the severity of barriers to access to foreign markets, thus providing valuable information about the mechanisms through which EPAs may be working.¹⁷

¹⁶The endogeneity issue could further be tackled with a differences-in-differences estimator, but this requires panel data. There are at least two problems with this. First, the agencies of the 1980s were apparently a very different animal from the agencies of today, and different agencies have reformed at different times. This heterogeneity of the impact of EPA on exports across time would not be captured by a differences-in-difference approach. Also, some of our explanatory variables are only available for the early 1990s. This is the case of the trade restrictiveness index and the market access trade restrictiveness index which are borrowed from Kee, Nicita and Olarreaga (2009).

¹⁷We also tested whether EPAs would be more efficient when facing larger geographic barriers abroad. We did not have strong priors on this issue, because it is not clear how EPAs could help exporters overcome geographic barriers. In any case, the interaction of EPA budgets with the Frankel and Romer variable yielded negative but statistically insignificant results. We also used a theoretically derived measure of market potential by Mayer (2008), but again the interaction term was statistically insignificant. Perhaps EPAs help overcome

The second mechanism we explore is whether EPAs help overcome asymmetric information affecting exports of heterogeneous goods. The specification presented in the third column of Table 3 uses Rauch’s conservative classification of homogeneous goods and the last column the liberal classification. The interaction between the homogeneous good classification and EPA budgets is negative in both cases, suggesting that an increase in EPA budgets has a smaller effect on exports of homogeneous than on heterogeneous goods, as expected. The rest of the variables have the expected signs, with the exception of the volatility of exchange rates (again, see Tenreyro (2007) for an explanation).

Two additional issues are raised by the specification presented in the last two columns of Table 3. First, the right-hand-side variable varies by country and product, whereas the only explanatory variable that does so is the interaction variable. Consequently the regression errors may be correlated across countries or product categories. Second, unobserved heterogeneity could be a source of biased estimates. Table 4 shows results where national exports per capita at the SITC 4-digit level are explained by SITC 4-digit and country fixed effects in addition to the interaction of EPA budgets with either Rauch’s conservative or liberal measure of homogeneous goods. We also provide adjusted estimates of the standard error, namely White robust errors, clustered by country and clustered by SITC 4-digit products. The interaction is negative and statistically significant, regardless of how standard errors are computed, thus suggesting that EPAs may be more efficient when economies need to overcome the asymmetric information associated with a large share of heterogeneous goods in the export bundle.

4.2 What Works, What Doesn’t?

To explore the type of institutional structures, strategies, and activities that are more efficient we added to our basic specification in (2) some of the variables discussed in section 2. Results using OLS, 2SLS and a 2-step Heckman estimators are presented in Table 5. Some words of caution are appropriate before discussing these results. First, the sample has been reduced to 52 observations due to the fact that many agencies did not answer all questions in the

policy-induced barriers to trade but not geography.

survey. Second, some of these additional variables may also be endogenous and therefore the coefficients should be interpreted as nothing more than conditional correlations.

The top of the table shows the estimates for the variables in (2), which are qualitatively similar to the ones in Tables 1-3. EPA's budget per capita, GDP per capita, and the geography-determined trade to GDP ratios have a positive and statistically significant effect on exports per capita in both samples. The trade restrictiveness of the rest of the world faced by exporters and the volatility of the exchange rate have a negative and statistically significant effect on exports per capita in both samples. In contrast with earlier results, the burden of export regulations has a negative and significant effect on exports per capita.

The bottom of the table reports estimates for the additional variables capturing EPA modalities. In all regressions, exports increase with the share of the EPA executive board seats that are held by the private sector. But there is also weak evidence that exports also increase with the share of EPA funding coming from the public sector (although this effect is significant only when we use the 2SLS estimator). This suggests that agencies that are directed by the private sector, but have public funding are the best performers. After all, the rationale for export promotion is about externalities, and it may be difficult to raise private sector funding when benefits are diffuse.

The proliferation of agencies dedicated to export promotion within a country ("Degree of decentralization of agencies") is negatively correlated with exports. A single and strong EPA seems to be more effective than multiple agencies with overlapping responsibilities.¹⁸ Note, however, that the OLS coefficient is not statistically significant.

The allocation of expenditures between country image, export support services, marketing and market research do not have any statistically significant correlation with exports. We also have no evidence regarding EPA targeting of large versus small firms, nor about targeting established exporters versus non exporters. The same is true for the presence of EPA representation offices abroad or the overall strategy of the EPA (sectoral focus versus broad

¹⁸This is a discrete variable that takes the value 1 if there is only one EPA in the country, 2 if there is one large, but many small agencies, 3 if there are two mayor agencies and several small, and 4 if there are more than two large agencies and several small agencies.

export objectives).

5 Concluding Remarks

In their influential study of export promotion agencies in the 1980s, Hogan, Keesing, and Singer (1991) argued that EPAs in developing countries were not effective, because they lacked strong leadership, had inadequate funding, were too bureaucratic, were not client oriented, and had heavy government involvement. Moreover, they also had to overcome strong anti-export biases induced by trade policies.

Over the last decade, the structure and activities of EPAs changed in the direction suggested by Hogan, Keesing and Singer, under the auspices of the International Trade Center in Geneva. Also, trade policies became more export-oriented. Our estimates suggest that today's EPAs are effective in terms of having an impact on national exports. Our point estimate suggests that a 10 percent increase in EPA budgets at the mean leads to a 0.6 to 1 percent increase in exports, after correcting for selection and endogeneity biases. More interestingly, EPAs seems to be more effective when they can help circumvent trade barriers abroad or asymmetric information associated with a large share of heterogeneous goods in the export bundle.

Regarding what works and what doesn't, our estimates suggest that EPAs with a large share of the executive board in the hands of the private sector, but a large share of public sector funding, are associated with higher national exports than other countries. In other words, full privatization of EPAs may not be ideal. A single strong EPA rather than the proliferation of small agencies within countries is also positively correlated with exports.

Last but not least, words of caution are warranted. First, regarding the methodology used to derive these conclusions, cross-country regressions cannot fully capture the heterogeneity of policy environments and institutional structures in which agencies operate. Case studies are needed provide more specific policy advice. Second, the relatively large average "returns" to EPA expenditures do not provide a justification for those budgets on welfare grounds,

as these will need some measurement of the externalities and net benefits associated with export promotion. Moreover, higher returns may be obtained by investing those resources in improving the overall business climate (e.g., infrastructure, education, etc.). The analyses discussed herein, however, do provide guidance about EPA's institutional design, objectives and activities. Finally, the evidence of diminishing returns to scale in EPA budgets suggests that small is beautiful when it comes to EPAs.

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Table 1: EPA's budget: Does it Help?

	All countries		Developing countries	
	OLS	Heckman Export Eq. Selection	OLS	Heckman Export eq. Selection ^a
Log of Budget per capita (<i>ln Bud/pop</i>) ^a	0.116** (0.032)	0.122* (0.065)	0.118** (0.035)	0.126** (0.061)
Log of GDP per capita (<i>ln GDP/pop</i>)	0.706 ** (0.152)	0.838 ** (0.254)	0.573** (0.159)	0.710** (0.242)
Log of Trade restrictiveness (<i>ln T</i>)	-0.109 (0.128)	-0.194 (0.247)	-0.117 (0.127)	-0.195 (0.231)
Log of Trade restrictiveness in ROW (<i>ln MA</i>)	-1.308** (0.340)	-1.319** (0.489)	-1.686** (0.387)	-1.625** (0.502)
Log of Forex volatility (<i>ln Vol</i>)	-0.193* (0.111)	-0.187 (0.239)	-0.206* (0.111)	-0.199 (0.217)
Days to comply with export regulation (<i>ln Reg</i>)	-0.011 (0.007)	-0.007 (0.013)	-0.012 (0.009)	-0.009 (0.014)
Log of geo-trade/GDP ratio (<i>ln F&R</i>)	0.519** (0.098)	0.423** (0.166)	0.598** (0.115)	0.481** (0.177)
Log of GDP (<i>ln GDP</i>)				0.663** (0.267)
Log of Aid per capita (<i>ln Aidc</i>)				0.761** (0.260)
Constant	-3.76** (1.269)	-5.063** (2.432)	-3.862** (1.365)	-5.094** (2.292)
Regional dummies ^b	Yes	Yes	Yes	Yes
<i>P</i> – value of F or Chi-squared Wald-test. ^c	0.000	0.000	0.000	0.000
Number of observations	79	103	64	88
Number of uncensored	79	78	64	63
R-squared	0.945		0.938	
λ^d	NA	0.769* (0.416)	NA	0.697* (0.381)

^a Standard errors in parenthesis are white robust. ** stands for significance at the 5 percent level; and * stands for significance at the 10 percent level.

^b The regional dummies are LAC, OECD, EEA, MENA, and SSA.

^c In the case of OLS regressions we report the F-test and in the case of the Heckman estimator we report the Wald test of the joint significance of all coefficients.

^d The selection parameter λ (Mills ratio) captures the extent to which selection is a problem in the sample. When statistically different from zero, this suggest that there is a sample bias that needed to be corrected.

Table 2: Two-stage-least-square estimates^a

	2SLS	2SLS Heckman	2SLS	2SLS Heckman
Log of Budget per capita ($\ln Bud/pop$) ^b	0.043* (0.022)	0.052** (0.019)	0.089* (0.045)	0.095** (0.044)
Log of GDP per capita ($\ln GDP/pop$)	0.820** (0.146)	0.978** (0.135)	0.848** (0.130)	0.951 ** (0.143)
Log of Trade restrictiveness ($\ln T$)	-0.158 (0.142)	-0.274** (0.127)	0.043 (0.134)	-0.047 (0.123)
Log of Trade restrictiveness in ROW ($\ln MA$)	-1.255** (0.348)	-1.316** (0.285)	-0.921** (0.294)	-0.969** (0.257)
Log of Forex volatility ($\ln Vol$)	-0.160 (0.155)	-0.163 (0.145)	-0.109 (0.125)	-0.109 (0.120)
Days to comply with export regulation ($\ln Reg$)	-0.013* (0.008)	-0.009 (0.007)	-0.008 (0.007)	0.005 (0.006)
Log of geo-trade/GDP ratio ($\ln F\&R$)	0.525** (0.181)	0.403** (0.085)	0.431** (0.084)	0.363** (0.079)
Log of Exp/GDP at time of EPA creation			0.272** (0.076)	0.224** (0.071)
Constant	-4.759** (1.372)	-6.476** (1.173)	-4.351** (1.340)	-5.425** (1.353)
Regional dummies ^c	Yes	Yes	Yes	Yes
<i>P</i> -value of Chi-squared Wald-test	0.000	0.000	0.000	0.000
Number of observations	78	102	74	102
Number of uncensored	78	77	74	73
R-squared	0.952	0.961	0.967	0.970
λ^d	NA	0.944** (0.258)	NA	0.530** (0.200)

^aAll regressions used a 2SLS estimator. EPA's budget per capita is instrumented using the number of years since the EPA was created and the number of years to the next election, as well as their squared terms. Estimates for the first stage regression are provided in the Auxiliary Regressions Appendix that is available on-line or upon request from the authors. In the case of the Heckman estimates we also correct for sample selection bias, using a two step approach.

^bStandard errors are in parenthesis; ** stands for significance at the 5 percent level; and * stands for significance at the 10 percent level.

^cThe regional dummies are LAC, OECD, EEA, MENA, and SSA.

^dThe selection parameter λ (Mills ratio) captures the extent to which selection is a problem in the sample. When statistically different from zero, this suggest that there is a sample bias that needed to be corrected.

Table 3: Alternative identification strategies: disentangling the mechanisms

	Overcoming MA barriers		Overcoming heterogeneity	
	OLS	Heckman	Conservative ^b	Liberal ^b
Log of Budget per capita (ln <i>Bud/pop</i>) ^a	0.491** (0.158)	0.550** (0.133)	0.054** (0.003)	0.055** (0.003)
Log of GDP per capita (ln <i>GDP/pop</i>)	0.764** (0.148)	0.917** (0.141)	0.775** (0.031)	0.775** (0.031)
Log of Trade restrictiveness (ln <i>T</i>)	-0.136 (0.119)	-0.234* (0.111)	- 0.469** (0.037)	-0.469** (0.037)
Log of Trade restrictiveness in ROW (ln <i>MA</i>)	-1.180** (0.319)	-1.180** (0.270)	-2.600** (0.068)	-2.599** (0.068)
Log of Forex volatility (ln <i>Vol</i>)	-0.192 (0.123)	-0.188* (0.109)	0.090** (0.008)	0.090** (0.008)
Days to comply with export regulation (ln <i>Reg</i>)	-0.008 (0.008)	-0.003 (0.007)	-0.008** (0.002)	-0.008** (0.002)
Log of geo-trade/GDP ratio (ln <i>F&R</i>)	0.524** (0.093)	0.420** (0.082)	0.407** (0.022)	0.407** (0.022)
Interaction Budget and Trade Restrictiveness in ROW	0.164** (0.069)	0.188** (0.060)		
Interaction Budget and Homogeneous good dummy ^b			-0.015** (0.004)	-0.016** (0.004)
Constant	-3.996** (1.213)	-5.476** (1.109)	-24.68** (0.327)	-24.68** (0.327)
Regional dummies ^c	Yes	Yes	Yes	Yes
<i>P</i> – value of F or Chi-squared Wald-test. ^d	0.000	0.000	0.000	0.000
Number of observations	78	103	58540	58540
Number of uncensored	78	77	58540	58540
R-squared	0.957	0.965	0.373	0.374
λ^e	NA	0.832** (0.230)	NA	NA

^aWhite robust standard errors are in parenthesis; ** stands for significance at the 5 percent level; and * stands for significance at the 10 percent level.

^bThis is Rauch dummy for homogeneous goods (see Rauch, 1999). The third column Rauch conservative definition of homogeneous goods and the fourth column the more liberal definition.

^cThe regional dummies are LAC, OECD, EEA, MENA, and SSA.

^dFor OLS estimates we report the F-test and for Heckman estimates we report the Wald test on the joint significance of all coefficients.

^eThe selection parameter λ (Mills ratio) captures the extent to which selection is a problem in the sample. When statistically different from zero, this suggest that there is a sample bias that needed to be corrected.

Table 4: EPAs and exports of homogeneous goods: controlling for unobserved heterogeneity

	Conservative def.	Liberal definition
Interaction EPAs Budget and Homogeneous good dummy ^a (ln <i>Bud/pop</i> *Homo) ^b	-0.047 (0.003) [0.010] { 0.006 }	-0.046 (0.003) [0.010] { 0.006 }
SITC 4 digit dummies	Yes	Yes
Country dummies	Yes	Yes
<i>P</i> – value of F -test.	0.000	0.000
Number of observations	60923	60923
R-squared	0.619	0.620

^aThis is Rauch dummy for homogeneous goods (see Rauch, 1999). The first column uses Rauch conservative definition of homogeneous goods and the second column the more liberal definition.

^bWhite robust standard errors are in parenthesis (); Standard errors clustered by country are in squared brackets [], and standard errors clustered by SITC 4 digit product are in curly brackets or braces { }.

Table 5: EPAs: what works, what doesn't?^a

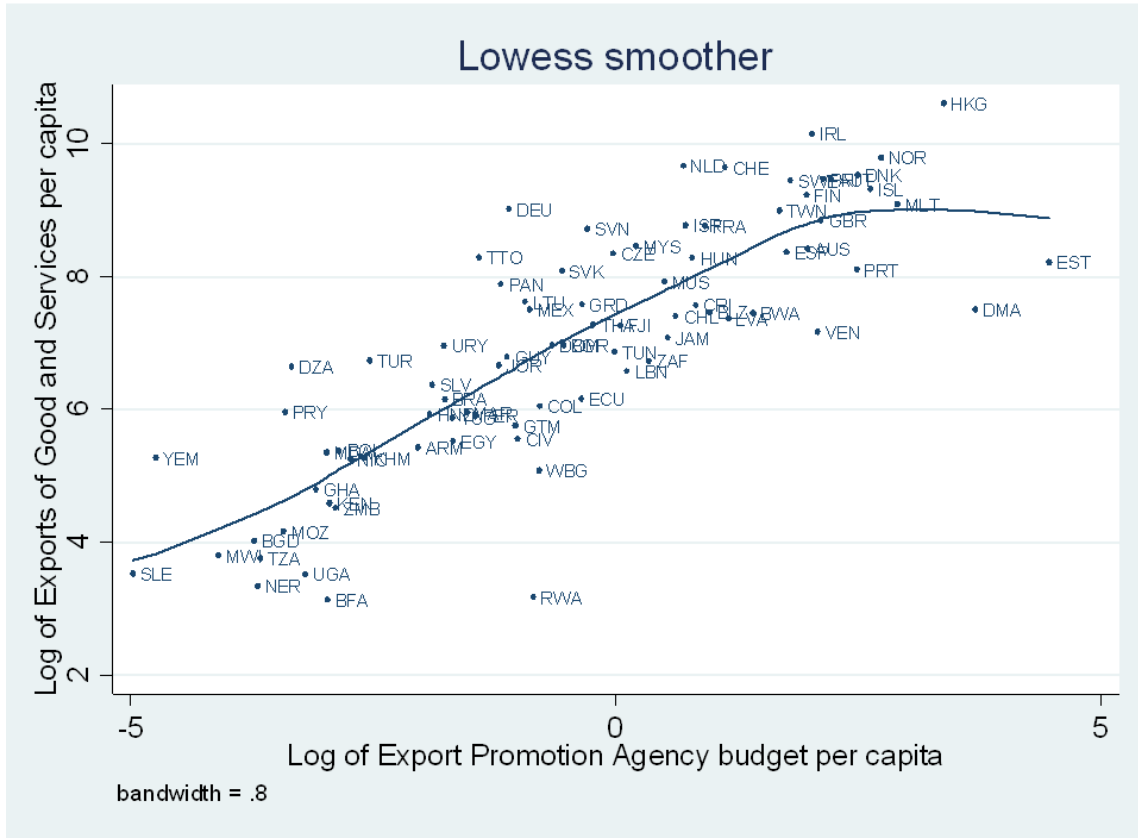
	OLS	2SLS	2SLS + Heckman
Log of Budget per capita ($\ln Bud/pop$) ^b	0.064 (0.064)	0.089** (0.026)	0.072** (0.022)
Log of GDP per capita ($\ln GDP/pop$)	0.669** (0.206)	0.477** (0.189)	0.577** (0.164)
Log of Trade restrictiveness ($\ln T$)	-0.132 (0.215)	-0.176 (0.196)	-0.212 (0.167)
Log of Trade restrictiveness in ROW ($\ln MA$)	-1.366** (0.587)	1.504** (0.460)	-1.605** (0.432)
Log of Forex volatility ($\ln Vol$)	-0.350** (0.164)	-0.384** (0.153)	-0.366** (0.130)
Days to comply with export regulation ($\ln Reg$)	-0.024* (0.016)	-0.032** (0.010)	-0.030** (0.008)
Log of geo-trade/GDP ratio ($\ln F\&R$)	0.398** (0.145)	0.336** (0.106)	0.305** (0.094)
Executive Board seats to private sector	0.535* (0.288)	0.631** (0.235)	0.545** (0.199)
Degree of decentralization of agencies devoted to exp. prom.	-0.169 (0.122)	-0.217* (0.119)	-0.262** (0.093)
Share of agency budget spent on non-export promotion activities	0.029 (0.073)	0.092 (0.060)	0.081 (0.049)
Strategy focuses on non traditional exports or sector specific	0.038 (0.095)	0.062 (0.072)	0.028 (0.066)
Share of EPA funding coming from public sources	0.087 (0.054)	0.102** (0.046)	0.055 (0.042)
Share of country image activities in EPA's expenditure	-0.055 (0.088)	-0.069 (0.076)	-0.062 (0.070)
Share of marketing activities in EPA's expenditure	-0.020 (0.070)	0.014 (0.068)	0.013 (0.054)
Share of research activities in EPA's expenditure	0.013 (0.116)	0.009 (0.102)	-0.035 (0.076)
Share of export support serv. in EPA's expenditure	0.029 (0.074)	0.008 (0.063)	0.016 (0.055)
Share of large clients in EPA expenditure	0.001 (0.084)	-0.001 (0.084)	-0.017 (0.071)
Share of established exporters in EPA expenditure	-0.010 (0.049)	-0.059 (0.045)	-0.065 (0.040)
EPA has representation offices abroad	0.012 (0.186)	0.233 (0.177)	0.213 (0.163)
Constant	-3.091 (1.841)	-1.607 (1.711)	-2.224 (1.414)
<i>P</i> -value of Chi-squared Wald-test	0.000	0.000	0.000
Number of observations	52	52	52
λ^c	NA	NA	0.706** (0.284)

^aThe first column reports OLS results; the second column 2SIS and the third column reports 2SLS that also correct for sample selection. Regional dummies included in all regressions.

^bWhite robust standard errors are reported in parenthesis; ** stands for significance at the 5 percent level; and * stands for significance at the 10 percent level.

^cThe selection parameter λ (Mills ratio) captures the extent to which selection is a problem in the sample. When statistically different from zero, this suggest that there is a sample bias that needed to be corrected.

Figure 1: Export Promotion Agency Budgets and Exports per capita^a



^aAuthors' calculations using data from the survey and World Bank's World Development Indicators. The lowess smoother involves the estimation of a locally weighted regression of the log of exports of goods and services per capita on the log of the export promotion agency budget per capita for small sub-samples of data (we used STATA 10 default options).

Appendix Table: Sample Coverage

Country	Name of the Agency	Region
Albania	ANE	EEA
Algeria	ALGEX	MENA
Armenia	ADA	EEA
Australia	Austrade	OECD
Austria	Austrian Trade, Austrian Federal Economic Chamber	OECD
Bangladesh	EPB	EEA
Belize	Belize Trade & Investment Development Service	LAC
Bolivia	CEPROBOL	LAC
Botswana	BEDIA	SSA
Brazil	APEX-Brasil	LAC
Bulgaria	BSMEPA	EEA
Burkina Faso	ONAC	SSA
Cambodia	Export Promotion Department, Ministry of Commerce	EEA
Chile	PROCHILE	LAC
China	CCPIT	EEA
Colombia	ProExport	LAC
Costa Rica	Procomer	LAC
Cote d'Ivoire	APEX-CI	SSA
Czech Republic	Czech Trade	EEA
Denmark	Trade Council of Denmark	OECD
Dominica	DEXIA	LAC
Dominican Republic	CEI-RD	LAC
Ecuador	CORPEI	LAC
Egypt, Arab Rep.	ExpoLink	MENA
El Salvador	Exporta El Salvador	LAC
Estonia	Enterprise Estonia	EEA
Fiji	FTIB	EEA
Finland	Finpro	OECD
France	UBIFRANCE	OECD
Germany	BFAI	OECD
Ghana	GEPC	SSA
Grenada	Trade & Industry Unit, Ministry of Finance	LAC
Guatemala	AGEXPRONT	LAC
Guyana	GO-INVEST	SSA
Honduras	FIDE	LAC
Hong Kong, China	HKTDC	EEA
Hungary	Hungarian Investment and Trade Development Agency	EEA
Iceland	Trade Council of Iceland	OECD
Ireland	Enterprise Ireland	OECD
Israel	Israel Export & International Cooperation Institute	MENA
Jamaica	JAMPRO	LAC
Jordan	JEDCO	MENA
Kenya	Export Promotion Council	SSA
Latvia	LIDA	EEA
Lebanon	IDAL	MENA
Lesotho	Trade Promotion Unit	SSA
Lithuania	LDA	EEA
Malawi	MEPC	SSA
Malaysia	MATRADE	EEA
Malta	Malta Enterprise	MENA
Mauritius	Enterprise Mauritius	SSA
Mexico	Bancomext	LAC
Moldova	MEPO	EEA
Morocco	CMPE	MENA
Mozambique	IPEX	SSA
Netherlands	EVD	OECD
Nicaragua	APEN	LAC
Niger	ANIPEX	SSA
Norway	Innovation Norway	OECD
Panama	National Direction of Investment & Export Promotion	LAC
Paraguay	PROPARAGUAY	LAC
Peru	Prompex	LAC
Portugal	ICEP Portugal	OECD
Puerto Rico	Compania de Comercio y Exportacion	LAC
Rwanda	RIEPA	SSA
Senegal	ASEPEX	SSA
Serbia and Montenegro	SIEPA	EEA
Sierra Leone	SLEDIC	SSA
Slovak Republic	SARIO	EEA
Slovenia	TIPO	EEA
South Africa	TISA	SSA
Spain	ICEX	OECD
Sweden	Swedish Trade Council	OECD
Switzerland	OSEC Business Network Switzerland	OECD
Taiwan, China	TAITRA	EEA
Tanzania	Board of External Trade	SSA
Thailand	Department of Export Promotion	EEA
Trinidad and Tobago	TIDCO Limited	LAC
Tunisia	FAMEX	MENA
Turkey	IGEME	EEA
Uganda	Uganda Export Promotion Board	SSA
United Kingdom	UKTI	OECD
Uruguay	Uruguay XXI	LAC
Venezuela, RB	BANCOEX	LAC
Vietnam	Vietrade	EEA
West Bank and Gaza	Paltrade	MENA
Yemen, Rep.	Yemen Export Supreme Council	MENA
Zambia	EBZ	SSA