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Export Promotion Via Official Export Insurance

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Abstract

Proponents of free trade argue that export promotion distorts competition and undermines the multilateral trade system. In most countries export insurance is provided by the government and, consequently, is driven more by a broad range of policy objectives than purely insurance principles. This paper, however, shows that export promotion does not necessarily imply trade distortions and that most export destinations do not benefit from insurance premium subsidies. A significant policy implication of these findings is that the WTO and the EU are correct not to banish completely official export insurance.

Introduction

Export promotion by governments remains a matter of profound controversy among academic economists, policy-makers and business representatives. Based on theoretical insights from the strategic trade literature (see Brander and Spencer, 1985) and on real world examples such as the Japanese Ministry of International Trade and Industry (MITI), advocates of an active export promotion policy support the idea of an independent official export agency that strengthens the export position of domestic companies. Proponents of free trade argue that such export promotion distorts competition and undermines the multilateral free trade system (e.g. Bhagwati, 1988). The objectives of official export promotion programmes are moreover likely to be captured by powerful interest groups as emphasised in political economy models of international trade (for a recent survey see Helpman, 1995). For those reasons, free traders support efforts of the World Trade Organisation (WTO) and the European Union (EU) to control export subsidies.

While the debate is often heated, knowledge about the policies and objectives of official export institutions is seldom available. Do official export

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programs distort trade and hence breach the rules of the multilateral trading system? Or is their main objective to create trade without causing major competitive distortions? What kind of policy instruments do they use? To what extent are their policies influenced by political interests and powerful lobby groups?

This paper attempts to close some of this knowledge gap by focusing on export promotion by official export insurance agencies. Our interest is motivated by the multifaceted objective function of official export insurance agencies and their intricate use of trade policy instruments to pursue those objectives. On the one hand, their insurance activity stimulates trade by providing coverage against political and commercial risk of default for exporters operating on high-risk markets. In doing so, they determine insurance premiums and coverage rates following (at least partially) private market insurance principles.[1] This market orientation and the positive effect on trade explain why official export insurance is not prohibited by the WTO Subsidy Code and EU competition policy dealing with state aid. On the other hand, those agencies grant trade-distorting export subsidies that are in conflict with WTO and EU rules. Moreover, the objectives of official export insurance agencies are influenced by political factors and vested interests. In several countries, export insurance is closely intertwined with government policy on official development assistance and debt rescheduling for developing countries. In addition, export insurance subsidies are systematically directed towards selected markets and specific industries, benefiting a clearly identified group of companies and sectors. In this last respect, official export insurance displays some of the features emphasised in the strategic trade literature.

In this paper we analyse in depth the objectives and policy conduct of official export insurance agencies. In the first section, we briefly sketch the institutional background of official export insurance and present aggregate export subsidy estimates for several OECD countries as well as detailed evidence for the Belgian case. In Section two we formally model the behaviour of an official export insurance agency combining elements of the insurance and international trade literature. The third part of the paper is devoted to an empirical estimation of those theoretical relationships using disaggregated Belgian data for the period 1987–1993. A concluding section summarises the insights from our work and derive the implications for the research on export promotion and the control of export subsidies.

1. Institutional aspects and objectives of official export insurance agencies

In many OECD countries public or semi-public institutions provide export insurance against commercial and political risk of default. Official export insurance agencies (OEIAs) insure short-, medium-, and long term export contracts with risky importers and to risky export destinations. Higher risk markets are

often located in developing countries. Domestic exporters pay an insurance premium and, in case of non-payment by the importer, receive the insured amount multiplied by the coverage rate specified in the contract. Coverage is typically very high with maximum coverage rates in OECD countries ranging from 85% to full coverage of 100%. After reimbursing the exporter, the export insurance agency attempts to recover the unpaid amounts (the claims) from the importer.

The statutes of most OEIAs explicitly mention *risk coverage* as their main task. Exporting companies are supported because they can insure themselves against risk of default in higher risk markets. In providing insurance, the agencies are supposed to operate according to sound insurance principles. This implies that, in competitive markets, insurance premiums should be fair, that is—abstracting from administration costs—they should cover expected claims. The statutes of OEIAs usually prohibit any discrimination between domestic exporting companies operating in the same sector. Hence, premiums can and should be differentiated only across export destinations, not across export industries. Likewise, OEIAs can limit their overall risk exposure by reducing the share of riskier export destinations in the total value of insured export contracts. This is achieved by either increasing insurance premium rates or/and by imposing coverage ceilings. For any country group, both contract elements will influence the share in total insured amounts, henceforth labelled as the regional coverage rate. The regional coverage ceiling and the insurance premium rate are the main policy instruments of OEIAs and will be discussed in this paper.

On the other hand, OEIAs are usually obliged by their statutes to actively strengthen the competitive position of domestic exporters on international markets. This means that export insurance should stimulate exports to high-risk markets. For this purpose export insurance should be as cheap as possible. In practice, the objective of *competitive export promotion* has led OEIAs to maintain coverage in markets where insurance principles would advise a reduction in regional coverage rates. This follows directly from the subsidisation of export contracts to some high-risk countries by charging insurance premiums below the fair premium.

This subsidisation is responsible for the heavy financial losses that OEIAs incurred in the eighties and nineties. Such long-term losses are explicitly prohibited by the WTO Subsidy Code because they are seen as a potential source of competitive distortions of world trade. For EU member states, export insurance premiums below private market rates that distort competition on EU markets are in breach with competition policy on state aid.

Figure 1 presents information on average subsidisation rates in 15 OECD countries during the period 1988–1992. Subsidy rates are computed as the difference between total claims and total premium income of the OEIA as a percentage of insured exports.[2] According to this subsidy measure, all countries but Portugal grant export insurance subsidies. Subsidy rates range from 2.5 to 7.5% in most countries but exceed 10% in Italy, Spain and Norway.[3]

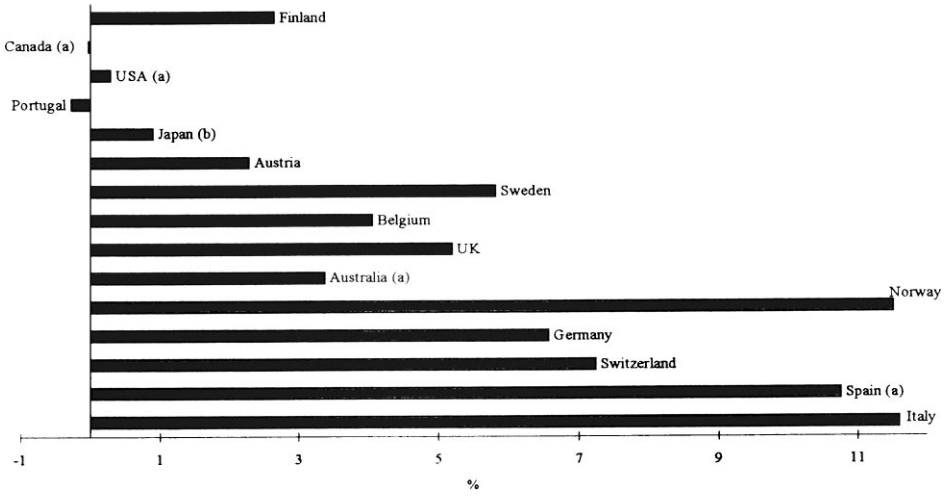

Figure 1. Average international export insurance subsidy rates (i.e., claims-premiums as a percentage of insured amounts) for 1988–1992. (a) Figures refer to 1988–1991. (b) Figures refer to 1989–1991. Source: Calculations based on data provided by the NDD.

These figures represent an average and hide the fact that export insurance subsidies are targeted towards selected sectors and export destinations. Studies for France, the UK, Germany and Belgium by Abraham (1990), Abraham et al. (1992), Dewit (1996) and Messerlin and Melitz (1987) show that a few sectors account for virtually all of the export insurance subsidies. In those sectors, OEIAs are typically subsidising larger companies which conclude sizeable medium and long term export contracts with importers in a relatively small number of higher risk countries. Those companies and those sectors have strong vested interests in the existence of a system of official export insurance.

So do governments because of *political interests*. Often (but not always[4]) official export insurance is closely intertwined with national policies on development assistance and foreign affairs. In several countries, OEIAs are asked to insure politically motivated export contracts on account of their governments. These contracts are usually medium- or long-term higher risk export transactions to those non-OECD countries with whom the government is eager to develop or maintain close economic and political relationships. The practice of tied aid is quite common in this context. A developing country receives official development aid but is required to spend part of the development assistance on exports originating in the donor country. Typically, the development funds cover part of the value of the export contract. To eliminate the risk for the exporting company, the OEIA is asked by the government to insure the contract often at an insurance premium rate well below the fair premium. Political interference also occurs when claims of officially insured contracts are dropped or reduced as part of a debt rescheduling package for less developed countries. OEIAs

are subject to political pressure because they depend on their governments to finance the losses that result from export insurance subsidisation.[5]

The political dimension of official export insurance is clearly seen in the Belgian case for which we obtained detailed data. Table 1 distinguishes between the regional coverage and subsidy rates on export contracts that were insured by the Belgian *Nationale Delcredere Dienst* (NDD) on behalf of the Belgian state and on its own account. In the period 1984–1993, the politically motivated contracts, insured on behalf of the state, account for 22.6% of all policies insured by the NDD. The average subsidy rate amounts to 13.5% of the insured contract value and is five times the subsidy figure for the transactions insured on the own account which are primarily short-term export contracts granted on a commercial basis.

The components of the OEIA's objective function—risk coverage, competitive export promotion and political interests—are reflected in the geographic focus of official export insurance. For instance, Table 1 illustrates how nearly half of the insured contracts on behalf of the Belgian government relate to Africa, mirroring the country's colonial past. Those export contracts to Africa are heavily subsidised. High subsidy rates are also found on contracts to Asia insured on account of the state and to South America when the NDD's own account is considered.

Table 1. Regional disaggregation of Belgian export insurance contracts and subsidies (1984–1993).

Region	Share in total insured contracts (%)	Subsidisation rate (claims-premiums as % of insured amounts)
NDD account	77.38	2.70
Industrialised countries[a]	19.19	0.02
Central & Eastern Europe	12.74	2.25
Africa	22.83	6.39
Central America	4.71	1.77
South America	4.66	8.56
Asia	35.86	1.30
STATE account	22.62	13.47
Industrialised countries	0.00	—
Central & Eastern Europe	22.52	−1.14
Africa	48.76	19.23
Central America	10.92	11.92
South America	3.10	7.34
Asia	14.72	19.21

[a]This country group contains Western Europe, the USA, Canada, Japan, Australia and New Zealand.
Source: Calculations are based on data provided by the NDD.

On the contrary, the NDD's own contracts to Asian countries are only slightly subsidised but account for a large (35.9%) and growing[6] share of the agency's commercial activity, reflecting the rise of several Asian countries as fast growing trading partners. Likewise, the industrialised country group is approximately charged a fair premium while premium income on state contracts to Central and Eastern European countries actually exceeds the claims. Apparently, some export destinations are subsidised while other are "taxed", with which we mean that the premium paid is above the fair premium. In other words, the distinction between trade creating and trade distorting export insurance displays a regional pattern. This last point emerges sharply from a further investigation of disaggregated data at the country level.[7] The majority of countries does not benefit from insurance subsidies. On the contrary, a small and quite similar insurance tax is levied on export contracts to most export destinations.

Summarising, this section illustrates how different objectives are reflected in the policies of the OEIAs. For this reason, a thorough understanding of export promotion through official export insurance requires a full grasp of the objectives that drive OEAIs and the policy instruments at their disposal. The next section develops a formal model for such an assessment.

2. A theoretical model of official export insurance

This section formally derives the export insurance policy chosen by an OEIA. Technically speaking, the theoretical set-up consists of two stages. In the first stage, the official insurer determines the premium rate and the regional coverage ceiling. Risk averse firms simultaneously choose the price and the share of the exports they want to insure in the second stage. Solving the game recursively, we use the results obtained in the last stage to proceed with the determination of the premium and the regional coverage ceiling in the first stage, both of which will influence the observed regional coverage rate.

2.1. Official export insurance and the exporting company

Consider any risk averse firm which applies for insurance to the domestic official export insurance agency for exports to markets which are characterised by risk of default. Given the premium rate for the targeted region i, the firm simultaneously decides on the export price (p_i) and the share of the export contract value it wants to insure (γ_i). The firm maximises its certainty-equivalent profit function (EV_i):[8]

$$\max_{x_i,\gamma_i} \mathrm{EV}_i = \mathrm{E}\Pi_i - \frac{\beta}{2}\mathrm{var}\,\Pi_i \quad (\text{s.t. } \gamma_i \leq 1) \tag{1}$$

β is a parameter, representing the degree of risk aversion. The firm's coverage choice is restricted by the legal full coverage constraint.[9] $\mathrm{E}\Pi_i$ and $\mathrm{var}\,\Pi_i$ denote

expected profits and the variance of profits respectively, given by:

$$\mathrm{E}\Pi_i = (1-\bar{\lambda}_i)p_i x_i + (\bar{\lambda}_i - r_i)\gamma_i p_i x_i - cx_i - F \quad \text{with } p_i = p_i(x_i) \tag{2a}$$

$$\mathrm{var}\,\Pi_i = (1-\gamma_i)^2 (p_i x_i)^2 v_i^2 \tag{2b}$$

In this equation λ_i symbolises the share of the contract value that is unpaid which is a stochastic variable with mean $\bar{\lambda}_i$ and variance v_i^2, and with $\mathrm{Prob}\{\lambda_i < 0\} = \mathrm{Prob}\{\lambda_i > 1\} = 0$. We define r_i as the premium rate, i.e., the premium per insured currency unit, and c and F as constants, respectively standing for the marginal and fixed costs of production.

Most officially insured export contracts apply to manufacturing products. Given that our data only refer to export contracts for manufactures (typically characterised by intra-industry trade), it follows quite naturally that the market of the importing country is likely to be characterised by monopolistic competition between companies from several exporting countries with each firm producing one variety of the manufactured product.

Demand preferences in the importing country are captured by a Dixit-Stiglitz "love-of-variety" type of utility function, formally represented by:

$$U_i^* = \left\{ \sum_j x_{ij}^{(\sigma_i - 1)/\sigma_i} \right\}^{\sigma_i/(\sigma_i - 1)} \qquad \sigma_i > 1 \tag{3}$$

This utility function features a constant elasticity of substitution (σ_i) between each pair of varieties. Each country exporting to country i produces n_{ij} $(j = d, f)$ varieties of manufactures sold at a price p_{ij}, with d and f respectively indicating varieties produced by the exporting firms of the domestic country or by its foreign competitors. We assume that firms from the same country are symmetric. In this set-up, country i's demand for variety j, $x_{ij}(p_{ij})$ equals

$$x_{ij}(p_{ij}) = \frac{E_i^*}{P_i} P_{ij}^{-\sigma_i} \quad \text{with } P_i = \sum_j p_{ij}^{1-\sigma_i} \quad \text{and } j = d, f \tag{4}$$

In this equation, E_i^* represents the aggregate expenditure on manufactured products in country i. $n_{ij}x_{ij}$ stands for country i's import demand for manufactures of country j.

A representative domestic exporting firm maximises the profit function of Eq. (1) w.r.t. output and the insured share of the export contract (γ_i) subject to the demand Eq. (4). This yields the following expressions for the firm's optimal pricing and insurance decisions:

$$p_{\mathrm{id}} = \frac{\sigma_i}{\sigma_i - 1} \frac{c}{1 - r_i} \tag{5}$$

$$\gamma_i = \min\left\{1; 1 - \frac{r_i - \bar{\lambda}_i}{\beta p_{\mathrm{id}} x_{\mathrm{id}} v_i^2}\right\} \tag{6}$$

We focus on the effect of the premium rate on the total coverage demand for region i $(I_i = n_i \gamma_i p_i x_i)$. The premium rate affects the insurance demand for region i in two ways. First, we concentrate on the effect via the coverage rate (6). If a fair premium is charged $(r_i = \bar{\lambda}_i)$, the exporter wishes to take full insurance. Moreover, because there is a legal full coverage constraint, the firm is forced to insure at the ceiling if a premium subsidy is granted $(r_i < \bar{\lambda}_i)$. However, if the firm faces a premium tax $(r_i > \bar{\lambda}_i)$, it merely purchases partial insurance. Second, the revenue made in the export market $(p_i x_i)$ is also influenced by the OEIA's premium policy. More specifically, the OEIA strengthens the competitive position of the exporting company by a reduction in the premium rate because a lower premium is translated in a decrease of the export price (5), leading to an expansion of exports ((4) and (5)). Conversely, the OEIA can reduce the risk of its portfolio by raising premium rates in high risk markets. This will force insured exporting companies in those markets to ask higher prices and hence they will loose customers. As a result, a reduction in the premium rate for insurance to region i leads to a surge in the demand for insurance to that market ($\frac{dI_i}{dr_i} < 0$ since $\frac{d\gamma_i}{dr_i} < 0$ for $\gamma_i < 1$ and $\frac{d(p_i x_i)}{dr_i} < 0$).

2.2. The objective function of the public insurance agency

Formally, the objective function of the public insurer is formulated as:

$$\max_{r_i} \mathrm{EW}_i = n_{\mathrm{id}} \mathrm{EV}_i + a_i C_i^* - \mathrm{ES}_i \tag{7}$$

Expression (7) consists of three terms. Certainty-equivalent profits of the insured domestic manufacturing industry are captured by $n_{\mathrm{id}} \mathrm{EV}_i$. In the second term of (7), C_i^* symbolises the foreign consumer surplus generated in the export market from buying domestic varieties, given by:[10]

$$C_i^* = U_i(n_{\mathrm{id}} x_{\mathrm{id}}(p_{\mathrm{id}}), n_{if} x_{if}(p_{if})) - \sum_{j=d,f} n_{ij} p_{ij} x_{ij}(p_{ij}) \tag{8}$$

In the OEIA's objective function foreign consumer surplus enters with a non-negative weight denoted by a_i. The last term in (7) stands for the expected subsidy cost for the insurance agency (ES_i), with

$$\mathrm{ES}_i = (\bar{\lambda}_i - r_i) \gamma_i n_{\mathrm{id}} p_{\mathrm{id}} x_{\mathrm{id}} \tag{9}$$

Expression (7) bears close similarities to the government objective functions commonly used in the international trade literature. The first and the last term measures the expected profits of all insured domestic firms exporting to country i $(\mathrm{E}\Pi_i)$, corrected for the OEIA's subsidisation costs. This part of the objective function is comparable to the welfare function of a government maximising national welfare when total national production is sold in international markets

(see Brander and Spencer (1985), Eaton and Grossman (1986), Helpman and Krugman (1989)). Like Grossman and Helpman (1994) we add an aspect to this objective function that does not appear in the traditional welfare function.

While the OEIA's premium rate structure is derived from its region-specific objective function, it uses regional coverage ceilings (I_i^C) to preserve a globally sound risk portfolio, given the sum (G) the government is prepared to provide for covering the OEIA's overall budgetary loss:

$$\max_{I_i^c} \sum_i \mathrm{EW}_i \quad \text{s.t. } G \geq \sum_i \mathrm{ES}_i \tag{10}$$

These functions capture the various objectives of the OEIA. First, the motive of efficient *risk coverage* is represented by the variance term $(\mathrm{var}\,\Pi_i)$ in the certainty-equivalent profit function of insured firms (EV_i). From the derivations in the second stage of the game, we know that the share of the contract value for which the firm takes insurance—and hence the risk exposure of the firm—is influenced by the prevailing premium rate. By lowering the premium rate, the OEIA reduces the uncertainty borne by the domestic exporting industry $(d\gamma_i/dr_i < 0 \text{ for } \gamma_i < 1)$. However, once the premium rate for a particular market incorporates a subsidy so that the full coverage constraint becomes binding $(\gamma_i = 1)$, this is no longer true. In other words, in accordance with efficient insurance provision, the OEIA completely relieves firms from uncertainty at fair premium rates. Providing insurance at more beneficial premium terms is no longer in line with sound portfolio risk management, since it only increases exposure to default risk in region i, without affecting the risk allocation between insured and insurer.

Secondly, the *political interests* of the OEIA are captured by the presence of the foreign consumer surplus in the region-specific objective function. The OEIA can contribute to general foreign and development policy goals of its national government by charging low insurance premiums, maintaining coverage in risky markets and writing off claims from past contracts in debt rescheduling negotiations. Those actions provide the importing country with cheaper imports than they would have obtained otherwise which is reflected in a higher foreign consumer surplus. This creates political goodwill for the exporting country and contributes to the economic stability in the importing country, not seldom a developing country.

Thirdly, the goal of *competitive export promotion* enters the regional objective function in two ways. One link runs via expected profits of all insured domestic firms $(\mathrm{E}\Pi_i)$, corrected for the OEIA's subsidisation costs. From Eq. (2a), it is seen that an insurance premium reduction boosts the profits of the insured companies $(\partial \mathrm{E}\Pi_i/\partial r_i = -\gamma_i p_i x_i < 0)$. Moreover, companies benefit from the broader political considerations because the increase in the foreign consumer surplus is achieved by tying the foreign buyer to the products of the exporting country. From the price optimality condition derived in the second stage, we know that prices go down when the premium rate decreases $(dp_i/dr_i > 0)$.

As a result, foreign consumers will buy more of the domestic products which enables domestic producers to reinforce their positions in the targeted export markets.

The OEIA maximises the objective function of Eq. (7) taking into account the pricing strategy and insurance decisions of the exporting firms which are given by Eqs. (5) and (6). This leads to the following premium rating rule:

$$r_i = \bar{\lambda}_i - \frac{a_i}{\sigma_i - 1} \tag{11}$$

Given the OEIA's global budget constraint, the optimal regional coverage ceiling (I_i^c) is:

$$I_i^c = \frac{G - \sum_{i' \neq i} (\bar{\lambda}_{i'} - r_{i'}) I_{i'}}{\bar{\lambda}_i - r_i} = \frac{(\sigma_i - 1)\left[G - \sum_{i' \neq i} (\bar{\lambda}_{i'} - r_{i'}) I_{i'}\right]}{a_i} \tag{12}$$

These expressions illustrate the impact of the various policy objectives on the premium rate and coverage ceiling in an interesting way. It points to the role of risk considerations in official export insurance. When only risk reduction matters (and hence $a_i = 0$), the OEIA charges a fair premium which equates the premium rate with the expected claims rate, $\bar{\lambda}_i$. This principle underlies WTO and EU regulations but is violated in many respects as the subsidy figures in Section 1 clearly indicate. Equation (11) also establishes that the official export insurer should adjust the insurance premium upward when faced with higher risk of default for a specific export destination i (reflected in a higher expected claim rate, $\bar{\lambda}_i$). This positive relation between risk and premium rate is analysed in the regression model below.

In addition, a premium change for exports to region i alters the regional coverage rate, i.e., the share of insured export contracts to region i in the total pool of contracts (h_i):

$$h_i = \frac{I_i}{\sum_i I_i} \tag{13}$$

First, consider a risk-induced premium rise. At fair premium pricing, the demand for insurance for exports to the market involved clearly decreases ($\frac{dI_i}{dr_i} < 0$, hence $\frac{dh_i}{dr_i} < 0$). There is no need for a restricting ceiling if political or business interests do not matter ($a_i = 0$, hence $I_i^c \to \infty$, $r_i = \bar{\lambda}_i$, and I_i is the unconstrained demand for insurance).

A premium reduction increases the insured export package to the destination involved. However, if political and business interests enter the OEIA's policy for a particular market $(a_i > 0)$, export insurance is subsidised. Then, the regional coverage limit may become binding. As suggested by (12), the regional coverage ceiling is more likely to become effective if a concern for export promotion or politically inspired aid is highly important (a_i large). This is logical since, while

such non-risk considerations are translated into lower premiums, the need for a reasonably sound insurance portfolio and an affordable budget deficit keeps regional coverage ceilings relatively low. In that case, the regional coverage rate is determined by the OEIA's restricted supply.

This relationship between regional coverage rate and premium rate lies at the basis of the two hypotheses that we will test in the regression equation for the regional coverage rate. First, we expect higher risk (an increase in $\bar{\lambda}_i$) leading to lower regional coverage through its impact on the premium rate or through the absolute ceilings for the amounts insured in subsidised high risk markets. Secondly, if alternative motives, such as export promotion and political objectives, are effectively transmitted into premium reductions, the OEIA reduces the regional coverage ceiling for that particular destination, making the role of regional coverage ceilings apparent.

3. An empirical investigation

3.1. The regression model

In this section of the paper, we examine the export insurance policy of OEIAs empirically by using data[11] for the Belgian official export insurance agency, NDD. We construct a premium rating Eq. (14) and an equation explaining the regional coverage rate (15) on the other hand:

$$\begin{aligned} r_{it} = {} & \alpha_0 + \alpha_1 \mathrm{clms}_{i,\exp} + \alpha_2 \mathrm{rvs}_{i,t-1} + \alpha_3 \mathrm{debt}_{i,t-1} + \alpha_4 \mathrm{debtsv}_{i,t-1} + \alpha_5 \mathrm{fdi}_{i,t-1} \\ & + \alpha_6 \mathrm{gdpcap}_{i,t-1} + \alpha_7 \mathrm{gdpgrw}_{i,t-1} + \alpha_8 \mathrm{mktsh}_{i,t-1} + \alpha_9 \mathrm{oda}_{i,\mathrm{hist}} \\ & + \sum_i \alpha_{i,10} \mathrm{dumreg}_i + \varepsilon_{it} \end{aligned} \tag{14}$$

$$\begin{aligned} h_{it} = {} & \theta_0 + \theta_1 \mathrm{clms}_{i,\exp} + \theta_2 \mathrm{rvs}_{i,t-1} + \theta_3 \mathrm{debt}_{i,t-1} + \theta_4 \mathrm{debtsv}_{i,t-1} + \theta_5 \mathrm{fdi}_{i,t-1} \\ & + \theta_6 \mathrm{gdpcap}_{i,t-1} + \theta_7 \mathrm{gdpgrw}_{i,t-1} + \theta_8 \mathrm{mktsh}_{i,t-1} + \theta_9 \mathrm{oda}_{i,\mathrm{hist}} \\ & + \sum_i \theta_{i,10} \mathrm{dumreg}_i + \varsigma_{it}. \end{aligned} \tag{15}$$

r_{it} is the premium rate for country i in period t, measured by the premium income as a percentage of insured contracts. The regional coverage rate for country i in period t is denoted by h_{it}, calculated as insured contracts for exports to country i as a percentage of the total contract portfolio held by the NDD. The notations for the independent variables are explained in Table 2. Table 2 also shows the expected signs of the coefficients, linking these conjectured signs to the underlying objectives the OEIA may have in determining its export insurance policy. The column headings 'RISK', 'POL' and 'CEP' respectively refer to the objectives of risk coverage, political interests and competitive export promotion. In view of the geographic focus of Belgian export insurance

Table 2. Summary of the independent variables and the expected coefficient signs.

		Expected coefficient signs							
		Premium rate equation (14)				Regional coverage rate equation (15)			
Notation[a]	Explanation		RISK	POL	CEP		RISK	POL	CEP
clms_i^b	Claim payments by the Belgian official export credit insurance agency per insured contracts to country i	α_1	+			θ_1	−		
rvs_i	Foreign currency reserves of country i as a percentage of its total imports	α_2	−			θ_2	+		
debt_i	External debt ratio of country i, expressed as a percentage share of its total exports	α_3	+	−		θ_3	−	+	
debtsv_i	External debt service ratio of country i, expressed as a percentage share of its total exports	α_4	+	−		θ_4	−	+	
fdi_i	Foreign direct investment into country i, expressed as a fraction of the country's external debt	α_5	−			θ_5	+		
gdpcap_i	GDP per capita in country i	α_6	−			θ_6	+		
gdpgrw_i	GDP growth in country i	α_7	−			θ_7	+		
mktsh_i	Share of Belgian exports to country i in total imports of country i	α_8			−	θ_8			+
oda_i^c	Belgian official development assistance to country i	α_9		−		θ_9		+	

[a]All variables except clms_i and oda_i are included in the premium rate and regional coverage rate equations with a one year lag.
[b]This measure refers to 'experienced' (exp) claims, accumulated over the previous three years ($\sum_{x=1} \textit{insured contracts}_{;t-x}$).
[c]Calculated as a weighted average of aid provided in previous years (denoted by 'hist'; hence $\text{oda}_{i,\text{hist}}$, appears in (14) and (15)).

(see Section 1), regional dummies (dumreg) for Africa, South-America, Central America and Asia are added to the model. Those regional dummy variables provide additional information about risk, political interest and competitive export promotion that is not yet captured by the explanatory variables which are discussed below. The error terms in the equations are denoted by ε_i and ς_i respectively.

We now discuss our expectations of the coefficients of the explanatory variables reported in Table 2.

1. Risk coverage. The agency is likely to form its expectations about the future default risk on its claim payments incurred in the past. Hence, we use data on the past claim rate as one of the indicators of the default expected by the OEIA. The practice of experience rating justifies the use of such a claim rate measure in our model. More specifically, a high claim rate in the past will lead to a high expected claim rate for the future. In turn, this implies that the premium rate should be high too, provided that the main objective of the OEIA is sound risk coverage (i.e., $\alpha_1 > 0$). Likewise, the high risk associated with regions with a high claim rate should induce agencies with a sound portfolio management to keep the regional coverage rate to those export destinations down (i.e., $\theta_1 < 0$).

Still, the default expected by OEIAs is based on more than just the claims they had to pay in the past. Indicators of political risk, i.e., the importing country's global risk of default, are captured in our empirical model by a set of one-year-lagged macroeconomic risk variables. Among these are indicators of the external financial position of the export destination. Our model includes the foreign currency reserves ratio (rvs), the external debt (debt) and the external debt service (debtsv) ratios of the export market. A healthy external financial position, reflected in adequate foreign currency reserves and low debt and debt service ratios, is bound to lower expectations of the default risk. So, if sound risk management matters for the OEIA, this should be translated into a negative rvs-coefficient and positive coefficients for the debt and debtsv variables in Eq. (11). In addition, the OEIA could allow the proportion of insured contracts for the region involved to be quite high if that country's external financial position is relatively sound. Therefore a positive rvs-coefficient and negative coefficients for debt and debtsv are expected for the estimation of Eq. (12).

In addition to the group of financial macroeconomic variables, we include indicators of the level of development (gdpcap) and the productive capacity of the export market (gdpgrw, fdi[12]) in the regression model. Markets characterised by a high GDP growth, a relatively high level of development and significant foreign direct investment generally can quite comfortably generate export earnings to service their debt. Under these conditions the country risk of default usually is considered to be quite low. Hence, premium rates for markets that perform well in terms of these indicators should be relatively low. In other words, the signs of the coefficients of these variables are expected to be negative in Eq. (11) (see Table 2). Meanwhile, OEIAs are likely to allow markets with a substantial productive capacity to account for a relatively large proportion of total underwritten contracts. The conjectured signs for the coefficients of gdpcap, gdpgrw and fdi in Eq. (12) are therefore positive.

2. Political interests. The expected signs of the coefficients of the variables which may influence the policy of OEIAs through a concern for political interests are reported in the column with subheading 'POL' in Table 2.

Throughout this paper we emphasised the political link between official development assistance and official export insurance. For this reason, we incorporate

Belgian expenditures on official development assistance to each country (oda) in the regression model. We hypothesise that official export insurance supplements the political goals of official development policy by providing cheap insurance and by maintaining insurance coverage in developing countries that benefit from Belgian official development assistance. Therefore, we predict a negative effect on the regression coefficient in the premium equation and a positive sign for the oda coefficient in the regional coverage equation.

Debt rescheduling is another political imperative of importance for official export insurance. OEIAs may be politically pressured to maintain insurance coverage and to set low premium rates in countries that face high debt and debt service ratios in spite of the higher risk of default. If political interests dominate risk considerations, the signs of the regression coefficients of the debt and debt service variables are reversed compared to a scenario where sound risk management dictates the terms of export insurance.

3. Competitive export promotion. We argued before that the efforts of the Belgian NDD to support the foreign sales and raise the profits of domestic exporters are reflected in the substantial premium subsidies to specific export destinations. Unfortunately, it is not simple to come up with measures that capture this policy objective in a regression model. We restrict our attention to a market share indicator (mktsh) that expresses Belgian exports to country i as a percentage share of world exports with the same destination. If Belgian firms occupy a relatively large market share in a particular export market, they benefit substantially from low insurance premiums and high regional coverage rates. They therefore have a strong incentive to jointly lobby for favourable insurance premiums to those export markets. Ceteris paribus, the official mandate of the Belgian export insurer to support business interests makes a lower premium rate and a higher regional coverage rate a likely outcome ($\alpha_8 < 0$ and $\theta_8 > 0$).

3.2. The regression results

Based on the cross section data-set described in the Appendix, Tables 3 and 4 present the regression results for Eqs. (11) and (12). The estimation method used is ordinary least squares. In addition to estimating the total sample, we make a distinction between export destinations that have received export insurance subsidies from the Belgian NDD and those that have been taxed.

The regression results provide interesting insights in the objectives and the functioning of the Belgian export insurance agency:

1. Risk coverage. In providing export insurance to companies, the NDD takes into account risk characteristics of the export market. Taking a look at regional coverage rates in Table 4 first, we find highly significant positive regression coefficients for the foreign reserve ratio (θ_2) ranging from 0.247 for the taxed countries, to 0.283 in the full sample and to 0.424 for the subsidised countries. In accordance with sound risk management, the NDD provides more insurance

Table 3. Determinants of premium rating (14) in Belgian public export insurance.

	Global	Sub	Tax
c(α_0)	2.411[c]	1.391[c]	2.273[c]
	(5.039)	(5.319)	(4.733)
clms(α_1)	−0.007	−0.005	0.884[c]
	(−1.697)	(−1.515)	(9.996)
rvs(α_2)	−0.057	0.027	−0.013
	(−1.210)	(0.461)	(−0.252)
debt(α_3)	−0.0003	−0.0003	0.001
	(−1.008)	(−1.219)	(0.897)
debtsv(α_4)	0.009	0.001	0.006
	(1.632)	(0.257)	(0.951)
fdi(α_5)	0.051	0.027	−0.010
	(1.660)	(0.765)	(−0.275)
gdpcap(α_6)	0.0003	0.001	−0.002
	(0.146)	0.266)	(−0.956)
gdpgrw(α_7)	0.002	0.004	−0.001
	(0.538)	(1.178)	(−0.131)
mktsh(α_8)	−0.147[c]	−0.183[c]	−0.124[c]
	(−3.811)	(−3.575)	(−2.922)
oda(α_9)	0.001	0.002[d]	0.001
	(1.542)	(2.090)	(0.943)
dumafr[a]($\alpha_{afr,10}$)	−0.410	0.372	−0.733
	(−0.956)	(1.885)	(−1.915)
dumcam[a]($\alpha_{cam,10}$)	−1.100[d]		−1.290[c]
	(−2.558)		(−3.371)
dumsam[a]($\alpha_{sam,10}$)	0.154	0.183	0.155
	(0.608)	(0.672)	(0.539)
dumas[a]($\alpha_{as,10}$)	−0.314	−0.556	0.033
	(−1.359)	(−1.765)	(0.136)
Adjusted R^2	0.157	0.204	0.590
n[b]	186	77	109

[a]These are the regional dummies for Africa, Central America, South America and Asia respectively.
[b]n stands for the number of observations.
[c]Significant at 1% level.
[d]Significant at 5% level.

Table 4. Determinants of regional coverage rates (15) in Belgian export insurance.

	Global	Sub	Tax
$c(\theta_0)$	0.859	−0.079	0.206
	(1.159)	(−0.127)	(0.255)
clms(θ_1)	−0.009	−0.013	−0.018
	(−1.445)	(−1.567)	(−0.124)
rvs(θ_2)	0.283[c]	0.423[c]	0.247[c]
	(3.880)	(3.002)	(2.799)
debt(θ_3)	−0.001	−0.000	−0.002
	(−1.789)	(−0.298)	(−1.245)
debtsv(θ_4)	0.059[c]	0.022	0.092[c]
	(6.712)	(1.649)	(8.069)
fdi(θ_5)	−0.090	−0.077	−0.069
	(−1.871)	(−0.930)	(−1.152)
gdpcap(θ_6)	0.011[c]	0.012[d]	0.008[d]
	(4.064)	(2.177)	(2.585)
gdpgrw(θ_7)	0.003	0.003	0.001
	(0.475)	(0.419)	(0.153)
mktsh(θ_8)	−0.293[c]	−0.453[c]	−0.282[c]
	(−4.919)	(−3.720)	(−3.967)
oda(θ_9)	0.005[c]	0.008[c]	0.004[c]
	(5.234)	(3.226)	(4.621)
dumafr[a]($\theta_{\text{afr},10}$)	−1.397[d]	−0.249	−0.869
	(−2.103)	(−0.533)	(−1.350)
dumcam[a]($\theta_{\text{cam},10}$)	−2.106[c]		−2.425[c]
	(−3.161)		(−3.770)
dumsam[a]($\theta_{\text{sam},10}$)	−1.874[c]	−2.315[d]	−1.295[c]
	(−4.764)	(−3.584)	(−2.680)
dumas[a]($\theta_{\text{as},10}$)	−0.066	−1.990[d]	0.856[d]
	(−0.185)	(−2.661)	(2.106)
Adjusted R^2	0.435	0.217	0.615
n[b]	186	77	109

[a]These are the regional dummies for Africa, Central America, South America and Asia respectively.
[b]n stands for the number of observations.
[c]Significant at 1% level.
[d]Significant at 5% level.

to countries that possess more foreign reserves in relation to their imports. The larger coefficient for the subsidised export destinations suggests that the NDD monitors the reserve ratio more closely for countries that receive insurance premium subsidies. Likewise, the positive coefficient for the per capita GDP variable indicates that the NDD reduces the risk of its portfolio by limiting exposure in lower income countries. Note also that the claims and debt variables, while not statistically significant from zero, have the negative sign that we would expect for an insurance company eager to limit risk.

Concern for risk management is furthermore seen in the significantly negative regional dummies for the African, Central and South American, and subsidised Asian export markets. Ceteris paribus, the NDD is less willing to insure exports to those countries. Considering that those regions already received the bulk of the insurance subsidies (see the discussion earlier in this paper) and include several countries that faced serious economic problems in the late eighties and early nineties, lowering the regional coverage rate is a reasonable thing to do from an insurance point of view.

The insurance premium rate is also used as an instrument of risk management but clearly less so than the regional coverage rate. In Table 3 the expected claims rate is the only risk variable that has a statistically significant impact on the insurance premium rate. The significance is moreover limited to the taxed country group. This result is consistent with our hypothesis that risk considerations in export insurance to subsidised countries are more likely to appear through the OEIA's direct control of the coverage rate than through the indirect coverage effect via the premium rate. Risk management by premium setting is limited to countries that do not benefit from subsidies. For those countries an increase of the claim rate by 10 basis points leads to an upward adjustment of the insurance premium rate by 8.8 points. This amounts to a close to full pass-through of default risk in insurance premium setting.

Macroeconomic measures of country risk are not taken into account in determining the premium rate. Apparently, the regional premium policy of the Belgian OEIA is based on its own experience with unpaid export contracts as reflected in the claims variable.

While risk matters, the NDD does not always adhere strictly to insurance principles. The most striking illustration is the absence of risk considerations in premium setting for export destinations that receive export insurance subsidies. In effect, neither the claims rate nor any other risk measure in Table 3 significantly affects the insurance premium rate of the subsidised country group. As a consequence, the explanatory power of the risk variables is low for the subsidised country group and for the total sample when compared to the taxed export destinations. In other words, the NDD no longer differentiates premium rates according to risk for those countries that are granted export insurance subsidies. Clearly other objectives play an important role in this case.

2. How important are *political interests* in Belgian official export insurance? There exists a statistically significant relation between official development

assistance and the regional coverage rate (see the coefficient of oda in Table 4). The NDD directs a larger share of its insurance activities to countries that are the main beneficiaries of Belgian official development aid. A comparison of regression coefficients learns that this link between development aid is stronger for contracts to subsidised than to taxed export markets.[13] Those findings are consistent with the earlier discussed practice of tied aid where the NDD is asked to insure politically motivated export contracts at favourable insurance premium rates which are financed partially by Belgian official development funds.

Political interference is also reflected in the regression coefficient for the debtsv indicator in the estimation equation for the regional coverage rate (see Table 4). With a substantial part of their export earnings going to meeting their debt obligations, countries with a large debt service ratio have less funds available to pay for their imports. In fact, countries with a high debt service ratio are typically the ones that are involved in renegotiating and rescheduling the debt.

Under those conditions, we would expect an insurance company to reduce exposure and hence decrease the regional coverage rate. Yet, the NDD does exactly the opposite: the regression coefficient for debtsv is positive. This result is explained by the political link between debt rescheduling and official export insurance. In order to avoid a politically and economically undesirable dramatic reduction of Belgian exports, the NDD is asked to maintain coverage for specific countries with payment problems.

The commitment to political imperatives is not absolute. We already pointed to the role of the risk variables in the determination of the regional coverage rate. Analogously, the NDD balances some of the politically motivated risk by charging a higher insurance premium rates for countries that receive Belgian official development assistance (see the positive sign of the oda variable in Table 2). This last finding illustrates the degree of freedom obtained by the availability of several policy instruments. The NDD serves political interests by using the regional coverage rate but reduces the risk involved by raising insurance premiums.

3. The market share variable is introduced in the regression model as an indicator of *competitive export promotion*. This variable is highly significant in the estimation equation of the insurance premium rate. Exporters to markets where Belgian firms already occupy a relatively strong market position, are able to negotiate lower premium rates on newly insured contracts. The premium reduction ranges, depending on the sample considered, from 1.2 to 1.8 percentage points for every 10 percentage point increase in the share of Belgian exports in world exports to a particular country. For the same market share, the subsidised country group obtains the largest premium advantage. As mentioned in Section 1, the subsidised firms are concentrated in few industries and export to a limited number of subsidised export destinations. Further evidence[14] moreover shows that the NDD tends to insure a larger proportion of total Belgian exports in markets with a higher Belgian market share. All of this adds up to a picture that accords well with the predictions of a political economy model of trade policy.

Groups of companies with common interests are well established in selected high-risk markets and rely intensively on official export insurance to eliminate the substantial risk. They obtain a better premium deal than comparable export firms in markets where Belgian firms capture a smaller share of the market.

The influence of business interests is not reflected in the regional coverage rate. Quite on the contrary, the market share variable in Table 4 is negative. This may be motivated by the need to keep the cost of charging lower premium rates to targeted export markets under control by restricting the share of those markets in the global insurance portfolio. If this explanation is correct, we again observe an interesting example of how insurance policy instruments are combined to balance the various policy objectives.

Conclusion

This paper takes a detailed look at official export insurance as a real world case of export promotion. We provide a theoretical, institutional and econometric assessment of the multidimensional objective function of a typical official export insurance agency. We show how the Belgian OEIA combines the regional coverage and the insurance premium rate as instruments to achieve those policy objectives.

The analysis leads to several insights in real world export promotion. One important finding is that export promotion does not necessarily imply trade distortion. A key objective of OEIAs is to insure the risk of default in high risk markets. In this way, they support exports to markets where exporting companies would perhaps not sell otherwise. An outcome of the theoretical model is that this objective of risk reduction can be achieved without subsidisation by charging a fair premium. And this is what actually happens in many export contracts that are insured by the Belgian NDD. We found that most export destinations do not benefit from insurance premium subsidies. Moreover, the NDD takes risk characteristics into account in its premium setting and in the regional composition of its portfolio. In this way, the NDD operates, at least partially, like a private insurance company with positive effects on international trade. Second, the opposite side of the coin is that OEIAs actively support companies from a selected group of sectors, exporting to a limited number of targeted export destinations. They provide insurance premium subsidies and do not fully adjust premium and regional coverage rates to higher risk of default in the importing country. This should not come as all that much of a surprise because OEIAs are usually mandated by their statutes to strengthen the competitive position of domestic exporters. In doing so, they are influenced by the preferences of those (groups of) companies that actively use official export insurance to establish a strong market position in selected markets. From a free trade point of view, this type of competitive export promotion is worrisome. A third theme concerns the close relationship between export promotion and other areas of policy-making. Wider political considerations matter considerably for official export insurance.

In the Belgian case, we found policies on official development assistance and debt rescheduling to significantly affect regional coverage rates and insurance premium rates.

These findings carry important implications for supra-national subsidy control. Risk reduction yields positive effects on trade. Therefore the WTO and the EU are right not to throw out the baby with the bath-water by outlawing official export insurance altogether. Having said this, it remains a formidable task to rule out the trade distortion that arises from competitive export insurance. The WTO Subsidy Code stipulates that OEIAs are not allowed to accumulate long-term losses guarantees. This guarantees that a fair premium is charged for all insured export destinations combined. Yet, it does not rule out that trade distorting insurance premium subsidies are granted on contracts to selected export markets. More binding restrictions on premium rates run the risk that the OEIA shifts to different insurance policy instruments in their efforts to expand exports of domestic companies. In turn, the close link between official development assistance and official export insurance offers considerable scope to camouflage some of the losses of the official export insurer as development aid. In sum, effective control of official export insurance requires close scrutiny of individual cases and considerable enforcement power. This may be feasible within the framework of EU competition policy but, unless a voluntary agreement within the WTO or the OECD can be reached, is difficult to achieve on a multilateral scale.

The insights presented are also relevant for academic research on trade policy. It is well known from strategic trade literature (e.g. Eaton and Grossman (1986)) that trade policy prescriptions are highly sensitive to variations in the competitive conduct and the structural factors of the targeted industries. We demonstrate that, even within the same export promotion agency, different policy objectives result in divergent policy outcomes. Therefore a careful modelling of the institutions that conduct trade policy contributes significantly to the understanding of trade issues. This paper takes one step in this direction.

Appendix

The data for the premium and regional coverage rates were obtained from the NDD and refer to the total of short and long term commitments, primarily related to the public agency's own activities. They are provided on an annual basis, covering the period from 1984 to 1993. We have information on the value of insured contracts, premium income, claims and recovered amounts on a country-by-country basis for approximately 120 countries of destination. We used these data to construct the r_i, h_i and $\mathrm{clms}_{i,\mathrm{exp}}$ variables. Since we need the first three years to calculate the adaptive claims ratio, the regressions run from 1987 to 1993.

For the explanatory variables, we used data from various sources. The variables rvs_i, gdpcap_i, gdpgrw_i and fdi_i are based on figures from the IMF's

International Financial Statistics. Data for the debt_i and debtsv_i variables were taken from the World Debt Tables published by the IMF. For $\mathrm{oda}_{i,\mathrm{hist}}$, we used data from "Geographical distribution of financial flows to developing countries" (OECD, 1990, p. 341).

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Notes

1. Mainly due to moral hazard, export insurance for risky export destinations is usually not available in the private sector.
2. Insured exports represent only a small share of total exports (less than 15%) in the selected countries. The exceptions are Japan (41%) and Austria (20.8%) which apply lower subsidy rates to a broader group of exporters.
3. An alternative definition takes into account recoveries. These are the amounts collected from the defaulting importer after the OEIA has compensated the insured exporter for his loss. Since recoveries enter the OEIA's accounts in different ways across countries, we adopt the subsidy definition without recoveries in the remainder of the paper. This does not alter in any respect the main conclusions of this section. Subsidy rates including recoveries can be obtained from the authors.
4. In countries such as the Netherlands and Austria OEIAs are (semi)-private companies.
5. In Belgium, part of the losses of the OEIA are since 1991 covered by funds from the official development agency pointing to the close relation between export insurance and development policies.
6. The regional coverage rates for the 1984–1988 and the 1989–1993 periods are respectively 30.1% and 41%.
7. For more detailed information on the Belgian data, we refer to Dewit (1996), pp. 124–125.
8. We adopt a mean-variance approach to simplify the theoretical derivation of the premium rating rule. For a more general expected utility formulation of the firm's problem, we refer to Dewit (1996).
9. The full coverage constraint for individual contracts incorporating a commercial risk of default is justified by most OEIAs' policy to offer contracts close to full coverage.
10. The underlying indirect utility function is equal to $V_i^* = E_i^* + C_i^*(p_{\mathrm{id}}, p_{\mathrm{if}}, \ldots)$.
11. We refer to the Appendix for a description of the data.
12. Frankel and Rose (1996) incorporate this variable in a model explaining the determinants of currency crashes in emerging markets.
13. The absolute regression coefficient for the subsidised country group is twice the one for the taxed subsample. To better understand what this means, it is useful to compute the implied elasticities at the mean values of the dependent and the independent variables. An increase by 1% of Belgian official development assistance to a country leads to an increase in the

regional coverage rate of 2% for the subsidised country group and by 0.7% for the taxed export destinations.

14. Reported in Dewit (1996, p. 147) and available from the authors.

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