Export Credit Guarantees, Moral Hazard and Exports Quality.*

María del Carmen García-Alonso
University of Kent

Paul Levine
University of Surrey

Antonia Morga
University of Kent

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Abstract

We analyze the role played by Export Credit Guarantees (ECGs) to encourage exports to developing countries. The existence of moral hazard on the side of the firm is introduced. Whereas it is claimed that ECGs provide a signal of good quality, we show the possibility that excessive insurance coverage may have the opposite effect. In our setup, firms can actually influence the probability of payment default by cheating on the quality when an experience good is involved. Then the inability of the exporter's government to verify the actual quality of the product will limit its ability to encourage trade through ECGs, once the coverage provided goes beyond a certain threshold. This result provide a rationale behind the limited coverage on ECGs.

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*We are grateful to the ESRC for support under grant R00239388. Correspondence to M.C.Garcia-Alonso@ukc.ac.uk.

Contents

1 Introduction

Offsets play a major role in trade between developed and developing countries, especially in relation to the arms trade. These can take many forms: licensed production, counter trade/barter, joint ventures etc. Many developed countries also use Export Credits to facilitate trade to developing countries, often alongside offset agreements. A common characteristic of these two methods is that they allow the importer country to pay for the product (whether this payment is in cash or through the export of a different good) after it has been delivered. This aspect makes the transaction more risky for both seller and buyer; by the time payment exchange is supposed to be completed, the importer country's financial situation or political preferences may have changed. In addition, in the case of experience goods, the government may rightly claim that the delivered product's quality is not what had been initially agreed. Either of these two events might result in payment default.

In order to protect themselves from a the risk of payment default, exporter firms can take what is called an Export Credit Guarantee (ECG). This service is offered by Export Credit Agencies (ECAs), which usually supported or owned by the domestic government. In the U.K., this service is provided by the Export Credits Guarantee Department[1] (ECGD). The ECGD mission statement claims that its objective is *to benefit the UK economy by helping exporters of UK goods and services win business and UK firms to invest overseas, by providing guarantees, insurance and reinsurance against loss, taking into account the Government international policies.*

ECGs can cover both Foreign Direct Investment and exports. More specifically, they cover 'cash' or near-cash contracts for contract frustration risks or non-payment of amounts due for capital goods and services. The two reports published by the ECGD give breakdown figures of guarantees given and exposure by sector and by country.[2] Subject to examination of each case, the ECGD pays claims against its

[1]Information on the Exports Credit Guarantee Department can be downloaded from *http://www.ecgd.gov.uk/*

[2]See ECGD (1998/99).

guarantees and insurance policies where there is a default by the buyer, borrower or guarantor. Claims authorized in 2000/01 affect countries like Ghana, Zimbawe, Indonesia, Former Soviet Union and Cote d'Ivoire.

It is important to stress that the ECGD provides cover for both commercial and political risk. Commercial risks include the possibility of insolvency of the purchaser and failure to meet contractual obligations. Political risks include actions on the part of the exporter government (introduction of export licensing and embargoes that would mainly apply to defence) and at the importer end of the deal, restrictions on the transfer of money due under the contract, moratorium on external debt and other actions that affect contract performance. It also includes wars, civil disturbances and natural disasters that frustrate the contract or lead to non-payment.

Several separate ECGD instruments are used to provide cover for export credits. Most transactions are financed through Buyer Credits or Supplier Credit Finance Facilities, where the exporter is paid by a bank in the UK and the UK bank offers credit to the overseas buyer. For these transactions ECGD offers an export credit guarantee which differs from an insurance policy in that it provides unconditional cover for non-payment regardless of the cause. Estrin, S. et al. (2000) refers to both types of instruments, insurance and guarantees, as EXIG (export insurance/guarantees).

Over 50 countries have ECAs that provide similar products to EXIG. All ECAs are required to meet the WTO objective to "break even in the long term". Although countries could compete for firms by lowering premiums this is now less likely to happen with the recent establishment of a harmonized country risk assessment and pricing approach system at the OECD level that stipulates a Minimum Premium Benchmarks for seven country risk categories.[3] No OECD ECA is permitted to set premiums below these benchmarks (exemptions exist for certain categories of business, such as military exports). Most ECAs do not charge premiums higher than the benchmark rates.

[3]See Dewit (2000) for an analysis of the use of EXIGs as strategic trade policies.

Although in heavy losses during the past 20 years, the ECGD seems to be reaching break-even point following a more rigorous financial objective introduced in 1991 by the government, probably reinforced by the WTO prohibition. However, Estrin, S. et al. (2000) argue that there is still an implicit subsidy by the government based on that there is no provision for making a rate of return on the notional capital required to meet claims. It is also interesting to mention that although ECAs only cover 85% of the contract value, sometimes private sector insurers become involved in this market by providing cover for the 15% of contract value that is not covered by ECA guarantees.

Although one might think of subsidized premia and good coverage for an exporter firm as a direct encouragement to trade, we could argue that this is not necessarily the case. The presence of *asymmetric information* between the different parties involved in a trade agreement covered by and EXIG can make the ECGD's task of increasing the scope for trade with developing nations more demanding. In order to analyze the existence of asymmetric information, we need to assess both political and commercial risk involved in exports to developing nations.

One possible source of asymmetric information would be that the exporter firm could take an action, not observable to the ECGD, which affects the probability of default. Estrin et al. (2000) argues that it is difficult to think of situation in which the firm is more aware about political risk in the importer country than its own government. However, they also recognize that there is more chance for the existence of asymmetry in the knowledge of commercial risks. As the cover that ECAs give is 85%, this seems to reflect that if 100% cover was offered, there would be little incentive for banks or exporters to properly investigate the risks associated with a particular project. Also the exporting company could take actions that would result in non-payment. Estrin et al. (2000) does not mention quality as one of such possible causes for non-payment, it only mentions "non-delivery of the product" and states that such actions would be directly observable by the insurance company and therefore not a moral hazard problem.

However, Estrin et al. (2000) claims that EXIGs can serve as an important device for signalling confidence in the exporter to the importer government. This signal concerns the quality of the ECGD's backed bid and the idea is that if the firm was likely to fail to deliver on quality, the government would not want to cover it since poor quality, if discovered, may lead to payment default. The crucial assumption here is that the exporter's government is more informed than the importing government about the quality of the product or service to be exported. However, this is not always the case, especially when the firm is going to develop a specific procurement project in which the importer government in the only targeted client. Such a projects has the characteristics of an experience good: its quality is not be easily assessed prior to an exports agreement being signed, or even observed by external parties ex post. The whole literature on public procurement relies on the idea of asymmetry of information between the provider/firm and the client/government. If a contract that encourages the firm to incur the required level of effort can be implemented within national borders, how does the problem change when we deal with international procurement contracts?

The objective of our paper is to study the impact of ECGs on trade in the presence of asymmetric information in the form of private information by the firm not shared by either the exporting or importing countries' government. We will illustrate one possible type of asymmetry of information and its impact over the ability of the ECGD to encourage exports to developing nations. Our paper suggests that importers should monitor closely the ECGs provided by the exporter government to its domestic firm as it could be a good method to identify the likelihood of quality cheating on the exporter's side. Given this, the importer will only sign a delivery contract with the exporter if the expected profits of delivering high quality for the firm are higher than those of delivering low quality.[4] We could then face a situation in which trade does not occur if the Incentive Compatibility Constraint of the firm does not hold. The ECA will then play a crucial role in helping or preventing trade.

[4]This type of behavior on the side of the consumer has also been analyzed in the warranties literature, see e.g. Lutz and Padmanabhan (1998).

A minimum coverage is needed in order to encourage a risk averse firm to export to a country which might default payment due to political reasons, however, excessive coverage needs to be avoided in order to give incentives to the firm to invest in high quality and therefore, the commitment power to convince the importer government that it is safe to sign an imports agreement with that firm.

The rest of the paper is organized as follows. Section 2 dicusses the literature related to our model. Section 3 outlines the basic characteristics of our insurance game, setting out the model, the sequence of moves and the Incentive Compatibility and Participation Constraints. It then analyzes the impact of insurance on the scope for trade. Finally, Section 4 provides conclusions and discusses future lines for research.

2 Related Literature

The problem we analyze shares some similarities with Laffont (1995) that analyzes the design of an optimal contract that would provide incentives to the a firm to both behave efficiently and invest in "safety care", which decreases the probability of an environmental disaster. An importer government would also want to design a contract with the firm that ensured a good quality to be delivered. The quality that the firm is offering cannot be verified prior to the contract being signed and can only be verified by the importer government with a certain probability once the product is delivered.

As with Laffont (1995) then, an importer government should be able to design a contract, involving a punishment to the firm in case of cheating on quality being discovered that would ensure that the promised quality is delivered. However, there is a few reasons why this may not be possible in our case. The first is that the exporting firm may enjoy limited liability with respect to the developing country. In other words, it may be quite difficult to impose a fine on a firm based on a different (developed) country. Second, quality is difficult to verify in a contract. An importer country may have incentives to always claim that low quality was delivered in order

to avoid payment or reputation loss, even if the reason for not wanting the good is a "change of heart", which we will interpret as political default. It is likely to be difficult to verify the real reason for payment default in international courts, which again make punishment implementation difficult, even if the importer discovers that the firm cheated in quality.

The need for finding tools to ensure a good quality of the imports to developing countries is also highlighted in the barter/countertrade literature. In a recent paper, Marin and Schnitzer (1998) suggest an economic rationale for counter-trade agreements is that they address a *double moral hazard problem*: the exporting country may deliver high or low quality goods and quality is not immediately observed, and the importer country cannot pay up front, owing to liquidity constraints, and may then choose to default.

Their model is as follows. Country A produces good 1 which is valued by country B at v_1 and exports to country B at price p_1. Using this good as an input, country B produces good 2 which country A values at v_2 and exports back to country A at price p_2. Products will be exchanged if valuations are high enough, production costs are low enough and there is no better alternative exporter for good 2. In addition to this, if A can deliver two different quality levels but B cannot verify this quality on delivery and B agrees to pay good 1 by delivering a differentiated good, Marin and Schnitzer show that there exists a countertrade price contract p_1, p_2 that induces A to deliver high quality, and B not to default.[5]

Thus the double moral hazard problem is solved by tying together two contracts. There are two effects here at work: first, since good 1 is an input in good 2, if its quality is low, country 2 will not be able to produce good 2. Even if the products are not technologically related, if quality of good 2 is low country 2 will not be able to generate revenues to buy inputs for good 2's production.[6]. The export flow serves

[5]See also Marin and Schnitzer (2002).

[6]That is the model does not just apply to 'buyouts' where good 1 is an input needed to produce good 2, but also to 'counterpurchase' arrangements (the dominant form of countertrade) where this is not the case

as a hostage in the sense of Williamson (1983) which deters cheating on the import of the technology good because if A cheats she loses her collateral. Second, if by the time A has to pay p_2, B has defaulted on p_1, A can withhold the difference between r and p_1 from its own payment. Notice here it is assumed that B cannot default on p_1 and sell good 2 to a third party, C. In that eventuality, it is assumed that A could use the courts of C to seize good 2 as soon as it is delivered.

As in these reviewed papers, we examine the moral hazard problem of unobserved quality. We do not attempt to solve the default problem by the use of countertrade Instead we introduce the ECGD as the principal in a game in which the firm's client is an foreign country. The ECGD will have an interest in ensuring that the firm does not cheating on the quality. The reason for this interest though will not be altruistic, but based on domestic profit maximization. Not ensuring incentives for investing in quality will result in no trade. The importer government will be aware of the terms of the ECG when it decides on whether or not to import a good and these terms will, in turn, show whether the firm has enough incentives to produce the promised quality. Therefore, the ECGD will play a crucial role in aiding *or preventing trade* though the 'signal' it gives about the quality the firm will deliver.

3 The Insurance Game

3.1 The Model

A monopoly in country A exports a single product/project to country B. Since our focus is on the moral hazard problem in country A, for simplicity we assume that country B is risk-neutral with valuation of the product given by

$$U_B = \theta q - p. \tag{1}$$

where q is the quality of the product to be imported, p is the agreed price to be paid to the exporter and θ represents the willingness to pay for quality.

For the firm in country A, producing a good of quality q incurs a cost $\psi(q)$ with

$\psi(0) = 0$. Assuming that pure production costs are c and, for the moment, that the firm receives the full payment, p, the profit of the firm is given by

$$\pi_A = \pi_A(q) = p - c - \psi(q) \tag{2}$$

The firm is risk averse and, for convenience, we assume a separable utility function $U_A = f(p-c) - \psi(q)$ where $f' > 0$ and $f'' < 0$. Since the firm is based in country A, we will refer to it as firm A.

As in Marin and Schnitzer, we assume that country B faces a financial (credit) constraint and does not pay the agreed price for the good until after this product is delivered. This is due to the cash constraints in country B, we think of this as a developing country. We assume also that this product is an experience good whose quality cannot be verified until the product is used/tested by the imported government.

Country B defaults on the agreed price p if and only if it receives no benefit from the good. This can come about for two reasons:

- With probability δ there is a change in preferences reflected in θ becoming 0. We assume then that $\theta = \bar{\theta}$ with probability $1 - \delta$.

- If $q = 0$ and if with probability γ the importer country will discover the true quality of the imported good

We assume that the above are two independent events.

As quality cannot be verified in international courts, in either of the two above situations once the product is received the importer government has to decide whether to pay the agreed price anyway or incur in default cost r, the maximum payment that can be enforced (again, as in Marin and Schitzer). We do not allow for an importer government might decide to use and not pay for a product if none of the events above have happened. The use of the product is observed as a sign of the above events not having happened. Implicitly we are assuming that the country

would have a high reputation loss (e.g., through the imposition of a high risk premium by financial markets) if it decided to do that. Clearly there will be no incentive to default if $r \geq p$, so in order to create a default possibility we assume that $r < p$.

The sequence of moves is as follows:

1. The firm in country A agrees a price $p > r$ with country B.
2. The firm delivers a high quality good ($q = \bar{q}$) or a low quality good ($q = 0$).
3. The preferences of country B are realized $\theta = 0$ with probability δ and $\theta = \bar{\theta}$ with probability $1 - \delta$.
4. If $\theta = 0$, the imported good is not used and country B defaults incurring a cost r transferred to firm A. If $\theta = \bar{\theta}$ country B tests the quality of the good.
5. With probability γ country B discovers the true quality of the good. If it turns out to be low, the good is not used and default occurs. If it turns out to be high, the good is used and a full payment is made. With probability $1 - \gamma$ country B does not discover the true quality of the good. Then the good is used and full payment is made.

FIGURE 1 HERE

Figure 1 sets out the game tree from event 2 onwards. Using this tree we can immediately write down the following conditional expected profits of the exporting firm and conditional expected utilities of the importing country.

$$E[\pi_A \mid q = 0] = [(1-\delta)\gamma + \delta](r - c) + (1-\delta)(1-\gamma)(p - c) \quad (3)$$

$$E[\pi_A \mid q = \bar{q}] = (1-\delta)p + \delta r - c - \psi(\bar{q}) \quad (4)$$

$$E[U_B \mid q = 0] = -[(1-\delta)\gamma + \delta]r - (1-\delta)(1-\gamma)p \quad (5)$$

$$E[U_B \mid q = \bar{q}] = (1-\delta)\left(\bar{\theta}\bar{q} - p\right) - \delta r \quad (6)$$

3.2 Incentive Compatibility and Participation Constraints

There are three conditions for a price to be agreed and trade to take place. The first is an incentive compatibility condition for firm A that ensures the production of a high quality good. Otherwise if the importer government believes that the firm is lying about the quality it should obviously not import the good (this could change if minimum quality is not zero) and no trade will take place. The condition is

$$\text{IC}_A : E[U_A \mid q = \bar{q}] > E[U_A \mid q = 0] \tag{7}$$

The above basically says that the firm will tell the truth as long as the expected utility when lying is higher that from producing the promised quality. If the exporter government could observe quality or $\Psi(\bar{q})$ (an indirect way of observing quality), it would be optimal for the exporter country's government to implement a punishment system that ensured that incentive compatibility constraint of the firm was fulfilled in order to allow trade. We assume that this is not the case and that the exporter government can only observe the occurrence of payment or default.

Given that IC_A holds and so quality $q = \bar{q}$ is produced, the two remaining conditions are the participation constraints that state that trade is Pareto-improving. That is:

$$\text{PC}_A \quad : \quad E[U_A \mid q = \bar{q}] \geq f(0) \tag{8}$$

$$\text{PC}_B \quad : \quad E[U_B \mid q = \bar{q}] \geq 0 \tag{9}$$

From PC_B it follows that the maximum price country B is willing to pay is such that $E\left[U_B \mid q = \bar{q}\right] = (1-\delta)\left(\bar{\theta}\bar{q} - p\right) - \delta r = 0$.

$$p = \bar{p} = \bar{\theta}\bar{q} - \frac{\delta}{1-\delta} r \tag{10}$$

Thus the maximum price is a increasing function of the valuation of high quality, $\bar{\theta}\bar{q}$, and is a decreasing function of the probability of default, δ and the minimum enforceable payment, r in the event of not using the good.

The minimum price for which country B is willing to trade must satisfy both the IC_A and the PC_A constraints. Suppose first that the firm in country A is *risk-neutral*. We then have that $U_A = \pi_A$ up to an affine transformation. The minimum

price that satisfies the IC_A is such that $E[\pi_A \mid q = \bar{q}] = E[\pi_A \mid q = 0]$. Using (3) and (4) the minimum price satisfies $(1-\delta)\gamma(p-r) = \psi(\bar{q})$ giving

$$p = \underline{p}^{IC} = r + \frac{\psi(\bar{q})}{(1-\delta)\gamma} \tag{11}$$

For the risk-neutral case, the minimum price must also satisfy the PC_A constraint at a price given by

$$(1-\delta)(p - c - \psi(\bar{q})) + \delta(r - c - \psi(\bar{q})) = 0$$

i.e., at a price given by

$$p = \underline{p}^{PC} = \frac{\psi(q) - \delta r}{1-\delta} + c \tag{12}$$

Then the negotiated price must lie between the range

$$\max[\underline{p}^{PC}, \underline{p}^{IC}] \leq p \leq \bar{p} \tag{13}$$

We can now distinguish two equilibria: equilibrium I for which $\underline{p}^{PC} = \underline{p}^{IC}$ and only the incentive compatibility constraint can bind for firm A, and equilibrium II for which $\underline{p}^{PC} = \underline{p}^{IC}$ and only the participation constraint can bind for firm A. From (11) and (12), equilibrium I happens iff

$$r > c(1-\delta) - \psi(q)\left(\frac{1}{\gamma} - 1\right) \tag{14}$$

If at $\delta = 0$, $r > c - \psi(q)\left(\frac{1}{\gamma} - 1\right)$, then (14) always holds and we only have type I equilibrium. If $r < c - \psi(q)\left(\frac{1}{\gamma} - 1\right)$, then there exists a threshold $\delta^* \in (0,1)$ for which if $\delta \in [0, \delta^*)$ we have a type I equilibrium whilst for $\delta \in (\delta^*, 1]$ we have a type II equilibrium. Figure 2 illustrates these two cases.[7]

FIGURE 2 HERE

3.3 Insurance

Now suppose that the firm is risk-averse and seeks insurance cover from the government in country A. The firm seeks to cover its potential loss from default equal to

[7] These figures assume that $r > c$.

the difference between full payment and the transfer that can be enforced following default, $p - r$. If the government charges a commercial rate for the insurance the premium rate will be equal to the probability of default, δ. Let $\beta \in [0, 1]$ be the degree of coverage provided. The firm then receives a payment $\beta(p-r)+r$ if default occurs (with probability δ) and full payment p if default does not occur (with probability $1-\delta$). In both cases it pays a premium of $\delta\beta(p-r)$. The net revenues (net of production costs and insurance premia, but excluding the cost of quality) are given by $R_n = p - c - \beta\delta(p - r)$ if no default occurs, and $R_d = \beta(1 - \delta)(p - r) + r - c$ if default does occur. Clearly with full coverage ($\beta = 1$), $R_n = R_d = p - c - \delta(p - r)$, but, as we shall see, this will generate an unexpected problem: the firm will then have an incentive to lie about the quality, and anticipating this the importer will never trade. With this notation we now have that

$$\begin{aligned} E[U_A \mid q = 0] &= [(1 - \delta)\gamma + \delta]f(R_d) + (1 - \delta)(1 - \gamma)f(R_n) \\ E[U_A \mid q = \bar{q}] &= \delta f(R_d) + (1 - \delta)f(R_n) - \psi(\bar{q}) \end{aligned}$$

The minimum price that satisfies the IC_A now is found from equating these two expressions; i.e., from

$$(1 - \delta)\gamma(f(R_n) - f(R_d)) = \psi(\bar{q}) \tag{15}$$

If the firm is only slightly risk-averse, it will still seek insurance and the IC_A constraint then implies $(1 - \delta)\gamma(p - r)(1 - \beta) = \psi(\bar{q})$ at a value for the price given by[8]

$$p = \underline{p}^{IC} = r + \frac{\psi(\bar{q})}{(1 - \beta)(1 - \delta)\gamma} \tag{16}$$

From this we see that insurance would actually *increase* the minimum price at which the incentive provide high quality holds. For the more risk averse firm the relationship between the minimum price and coverage is found from differentiating (15) to obtain

$$\frac{dp}{d\beta} = -\frac{(p - r)(\delta f'(R_n) + (1 - \delta)f'(R_d))}{(1 - \delta)\beta f'(R_d) - (1 - \beta\delta)f'(R_n)} \tag{17}$$

[8]This uses $R_n - R_d = (p - r)(1 - \beta)$.

By the mean-value theorem there exists a $\alpha \in (R_d, R_n)$ such that $f'(R_n) - f'(R_d) = (R_n - R_d)f''(\alpha) = ((p-r)(1-\beta)f''(\alpha)$. Hence (17) becomes

$$\frac{dp}{d\beta} = \frac{(p-r)(\delta f'(R_n) + (1-\delta)f'(R_d))}{(1-\beta)[(1-\delta)\beta f''(\alpha) + f'(R_n)]} \tag{18}$$

Since $f''(\alpha) < 0$, we cannot sign this derivative derivative unambiguously, except at $\beta = 0$ where it is positive. But for sufficient low degree of risk aversion the denominator will be positive so that again, more coverage increases the price at which IC_A holds.

Insurance also changes the participation constraint of the firm. With IC_A holding, the minimum price that satisfies the PC_A constraint is given by

$$(1-\delta)(f(R_n) - \psi(\bar{q})) + \delta(f(R_d) - \psi(\bar{q})) = f(0)$$

Differentiating with respect to β the slope of the PC_A curve in its binding form is then given by

$$\frac{dp}{d\beta} = \frac{\delta(p-r)[f'(R_n) - f'(R_d)}{[(1-\delta\beta)f'(R_n) + \delta(p-r)f'(R_d)} < 0 \tag{19}$$

since $R_n > R_d$ and $f'' < 0$. Figure 3 illustrates the IC_A constraint (for a sufficiently low degree of risk aversion) the PC_A constraint and the PC_B constraint (which remains unchanged) as coverage $\beta \in [0,1]$ increases. Let $\underline{\beta} \geq 0$ and $\overline{\beta} < 1$ be the points at which PC_A and IC_A intersect PC_B. Let β^* be the point at which PC_A and IC_A intersect. Then trade occurs with coverage $\beta \in [\underline{\beta}, \overline{\beta}]$. In the interval $[\underline{\beta}, \beta^*)$ there is a type II equilibrium where PC_A binds. In this interval increased insurance coverage *lowers* the minimum price at which the firm is willing to participate and therefore improves the scope for trade. In the interval $(\beta^*, \overline{\beta}]$ there is a type I equilibrium where IC_A binds. In this interval increased insurance coverage *increases* the minimum price at which the firm is willing to participate and reduces the scope for trade. We summarise this result as:

Proposition

Let $\beta \in [0,1]$ be the degree of insurance coverage. Then for $\beta \in [\underline{\beta}, \beta^*]$, increased coverage improves the scope for trade by reducing the minimum price at which the firm will participate; however for $\beta \in [\beta^*, \overline{\beta}]$, it

reduces the scope for trade by increasing the minimum price at which the incentive compatibility constraint is satisfied. Thus for low coverage the scope for trade improves, while for high coverage the scope for trade is reduced. Finally, with full coverage ($\beta = 1$), there is no incentive for the firm to provide high quality, and trade does not occur.

The intuition for this result goes as follows. The minimum price at which the firm is willing to trade is derived from the Participation Constraint. To satisfy this constraint, an increase in coverage calls for a decrease the minimum price since it increases the expect profits of the firm. However, at the same time, an increase in coverage decreases the expected losses that the firm will suffer if it delivers low quality. That decrease will need to be compensated by an increase in the price (if payment occurs) for the incentive compatibility constraint to still hold. Both effects must be taken into account to assess the impact of increased coverage on the scope for trade.

4 Conclusions

Export Credit Agencies are agencies supported or owned by developed countries whose aim is to help domestic exporters to export their goods to, or invest in, developing countries, often alongside offset agreements. ECAs provide guarantees, insurance and reinsurance against loss due to failed contract or payment default, taking into account the government international policies.

In our paper, we claim that contract frustration or non-payment can arise for two different reasons: political default owing to a change in the priorities of the importer government or commercial default owing to the importer country being unhappy with the quality of the product, once this is delivered. In deciding whether to import or not a product a government must assess the incentives that the firm has to produce a high quality good. We discuss that, in this assessment, it will be crucial to observe the terms of the contract provided by the ECA to the domestic

firm. This provides an additional tool for ensuring that high quality products are delivered to developing countries.

Our results suggest that an ECGs can improve the scope for trade by encouraging risk averse firms to trade with countries which might engage in political default but, it may also reduce the scope for trade by increasing the incentive of firms to export low quality. This suggests that an excessive level of coverage will have a negative impact on trade. The reason being that high level of coverage will decrease the expected losses of the firm if it decided to deliver low quality and therefore, it will discourage the importer country from signing an exports deal with the firm.

There is a number of ways in which our model could be extended. The ECG as a sub-optimal mechanism in which the ECGD is constrained to break even. If we allow the ECGD to extract rent from the firm, our analysis would get closer to the optimal mechanisms of Laffont and Marimort (2002), and we could also explore the possibility of existence of cost reducing effort on the side of the firm, therefore, getting closer to Laffont (1995).

A second possible extension of our model would look at the agency relationship with the ECA acting as an agent of the government in the exporting country, while still being the principal in the insurance game with the firm. In this framework, we might investigate the issue of the ECA being 'captured' by the firm, and thus address the impact of interest group power over the export credit guarantees and therefore, over the scope for trade (see e.g., Becker (1983), Fiorina (1985) and Laffont (2000)).

An additional line of research could look at the possibility that the exporter government provides incentives to the importer government so that it reveals the signal that he observes about the quality of the good produced by the firm. Following Faure-Grimaud et al (2000), we could extend our model so as to address the possibility that the importer government and the firm *collude* at the expense of the exporting government.

5 Bibliography

Becker, G. (1983) The Theory of Competition among Pressure Groups for Political Influence *Quarterly Journal of Economics* 98, 371-400.

Dewit, G. (2001) Intervention in Risky Export Markets: Insurance, Strategic Action or Aid? *European Journal of Political Economy* 17, 575-592.

ECGD Annual Report and Accounts 1998/99, *http://www.ecgd.gov.uk/*

Estrin, S. et al. (2000) The Economic Rationale for the Public Provision of Export Credit Insurance by ECGD. NERA-National Economic Research Associates, *http://www.ecgd.gov.uk/*

Faure-Grimaud, A., Laffont, J.J. and Martimort, D. (2000) Collusion, Delegation and Supervision with Soft Information. Mimeo, 2000.

Fiorina, M. Group Concentration and Delegation of Legislative Authority, in *Regulatory Policy and the Social Sciences*, ed. Noll, R. G. Berkeley, University of California Press, 1985.

Ingram, P. and Davis, I. (2001) UK Government Financial Support for Arms Exports. Mimeo.

Laffont, J. J. *Incentives and Political Economy.* Oxford University Press, 2000.

Laffont, J. J. (1995) Regulation, Moral Hazard and Insurance of Environmental risks. *Journal of Public Economics* 58, 319-336.

Laffont and Martimort, D. *The Theory of Incentives. The Principal Agent Model.* Princeton 2002.

Lutz, N. A. and Padmanabhan (1998) Warranties, Extended Warranties and Product Quality. *International Journal of Industrial Organization* 16, 463-493.

Marin, D. and Schnitzer, M. (1998) Economic Incentives and International Trade. *European Economic Review* 42, 705-716.

Marin, D. and Schnitzer, M. (2002) The Economic Institution of International Barter. *The Economic Journal* 112, 293-316.

Rogoff, K. and Bullow, J. (1989) A Constant Recontracting Model of Sovereign Debt. *Journal of Political Economy* 97, 155-178.

Williamson, O. (1983) Credible Commitments: Using Hostages to Support Trade. *American Economic Review* 73, 519-540.