Officially Supported Export Credits

A government failure?

written by

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Master’s thesis

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Preface

The hand in of this master’s thesis means the end of a really great time as student in Bergen and at the University of Bergen. During this time I have had the pleasure of meeting people who have become really good friends. I appreciate you a lot!

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Torgunn Kveravik, Bergen 27. August 2008
Abstract

Economic theory shows that export subsidies under most circumstances are not welfare improving, but they are still offered extensively. This master’s thesis focuses on the officially supported export credits offered by the Norwegian government, and tries to reveal and explain the deviations between predictions in economic theory and actual policy choices. Empirical evidence shows that today ships are the goods exported most with officially supported export credits in Norway. Due to this, analyses show that the Norwegian government’s offer of these subsidies is not a government failure. This is the case even though the subsidized export credit system logically favours the already rich and successful sectors in Norway.

The computer program Scientific Workplace is used in section 3.3.1.
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**Introduction**

Economic theory shows that government financed export subsidies are under most circumstances not welfare improving. Even though export subsidies usually are prohibited under international trade law, government financed subsidies are still offered extensively. Officially supported export credits, which are subsidized loans to importers (of exported goods); and guarantees, which are more favourable than other guarantees of exported capital goods and services, are an important category of (the financed) export subsidies. This master’s thesis explores the deviation between predictions in economic theory and actual policy choices on officially supported export credits with a particular focus on Norway. Last year, one of the officially supported export credit arrangements cost the Norwegian government more than 152 million NOK.\(^1\) The expenses associated with the officially supported export credits are expected to increase over the next decade.\(^2\)

This thesis is divided into four parts: First, an introduction of export credits in general, where also the difference between export credits and officially supported export credits is discussed. In addition, international agreements considering export credit arrangements are described. The second part presents the officially supported export credit system in Norway. Empirical evidence shows that maritime, oil and gas are the sectors that benefit the most from officially supported export credits in Norway.\(^3\) The subsidy element in the Norwegian system is also explained.

The third part describes different export subsidy theories.\(^4\) The impact on trade flows, terms of trade and welfare are described. Both perfect and imperfect competition are explained. Fourthly, the thesis turns to deviations between theory predictions and empirical evidence from Norway. This part discusses if officially supported export credits are a government failure. In other words, it is discussed if the Norwegian exporter only or the whole Norwegian nation benefits from the subsidized export credit system.

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\(^1\) The expenses are reported in the Norwegian government’s budget two years after the statement of account. The 2007 figures are in the 2009 budget. The interest rates come in addition to the 152 million NOK.

\(^2\) Personal communication with H. Gabrielsen & T. Stugu, NHD, 14 March 2008.

\(^3\) The main goods exported with officially supported export credits within the maritime sector are ships (and ship equipment). The main good exported with officially supported export credits within the oil and gas sector are ships and drilling equipment, but also services and patents.

\(^4\) Because this master’s thesis is concentrated on officially supported export credits, negative export subsidies (export taxes) are not discussed.
1 (Officially supported) Export credits

An exporter meets a number of barriers when exporting goods, for example different standards, language problems and enforcement of contracts. In addition, the importer’s limited access to credits may turn out to be a challenge. When access to finance is limited export credits may be a solution for the firms.

This chapter on (officially supported) export credits has three parts. The first part describes export credits in general, the different maturity of the credits and supplier’s and buyer’s credit. The second part explains how officially supported export credits differ from export credits and the role of export credit agencies. The third part explains “The OECD Arrangement” which is the main arrangement concerning officially supported export credits. The Berne Union, which is the leading association for export credit and investment insurance worldwide, is also described.

1.1 Export credits

Export credits are loans to foreign buyers of exported goods. Export credits are offered by the exporters when shipping the goods prior to payment, or by commercial and (semi-)government financial institutions. Export credits make the transaction between exporter and importer easier. For the country as a whole it may improve the trade balance. Favourable export credit conditions in terms of amount, maturity, repayment terms and costs are seen as important and sometimes decisive for export.

Most export credit arrangements are established to promote a country's domestic industry in international markets. Export credits can also be offered with the goal to secure employment domestically. The objectives may vary, however. Some arrangements are introduced solely to promote industrial development in poorer countries and may thus have different welfare implications than those established to promote own domestic industry. Since many firms would be very reluctant to enter their markets without the support - also in cases when the local competition is very limited, export credit to promote growth in developing countries may be decisive for the supply of certain goods and services.
Governments will tend to defend their export credit arrangements as part of a pro-
development strategy. The strategies are often described to be a win-win solution, where aid
is combined with commercial interests for their domestic industry. The distinction between
“de facto development promoting arrangements” and “pro forma development promoting
arrangements” can thus be blurred. Since this thesis focuses primarily on the welfare
consequences of export agencies intended to promote domestic industry, this distinction will
not be a central question in this thesis. The analysis will establish criteria for welfare
improvement and these will be relevant also to identify the development potential of a given
export credit arrangement. I will continue this discussion in the conclusion.

- **Supplier’s credit**: The exporter offers the export credits and takes the credit risk which arises with
  the export transaction. The exporter delivers the goods to the importer without getting paid for
  them immediately. He gets the payment later.
- **Buyer’s credit**: A financial institution in the exporting country extends credit directly to the buyer
  or his bank abroad (Bjerke, 1997). The importer is thus able to pay the exporter immediately since
  he gets the loan. The exporter carries in this case no financial risk. All financial risk is carried by
  the national financial institution to the benefit of the exporter. To lower this financial risk, the
  national financial institution may have an agreement with official financial institutions in the
  importing country to ensure repayment regardless of the importers’ payability.
- **Short term export credits**: Loans offered for a time period less than two years.
- **Medium term export credits**: Loans offered for a time period between two and four years.
- **Long term export credits**: Loans offered for a time period more than four years.

**Supplier’s and buyer’s credit**

Export credits are offered to foreign buyers of exported goods, and the arrangement covers
both goods and services. Export credits can be offered in two different ways: **Supplier’s or
buyer’s credit**. Figure 1 illustrates supplier’s credit. The export credits are transferred directly
from seller to buyer. The seller may have to finance the production of exported goods through
a loan in a bank or another financial institution (Grath, 2006). Supplier’s credit is often
offered as **short-term export credits** (Demirgüç-Kunt & Erzan, 1991).
Figure 1: Supplier’s credit

```
Seller’s bank
  ↓ Refinancing
  Supplier’s credit
  ↓ Seller (Supplier) → Buyer
```

Source: Grath, 2006

Figure 2 shows buyer’s credit. The export credits are transferred from the seller’s bank to the buyer’s bank and then to the buyer of the exported goods, or directly from the seller’s bank to the buyer. The seller’s bank normally asks for a guarantee from the buyer’s bank in the latter case. The exporter can now finance the exported goods (Bjerke, 1997). Buyer’s credit is more common when medium- and long-term export credits are demanded.

Figure 2: Buyer’s credit

```
Buyer’s credit

Seller’s bank
  ↓ Alt. 1
  Buyer’s bank
  ↓ Buyer
  ↓ Seller
```

Alt. 1: Buyer’s bank is counterpart

Alt. 2: Buyer is direct counterpart

Source: Grath, 2006
Export credits can be subsidized or not. Moffat (1976) defines a subsidy as the provision of federal economic assistance, at the expense of others in the economy, to the private sector producers or consumers of a particular good, service or factor of production. The government receives no equivalent compensation in return but conditions the assistance on a particular performance by the recipient. This condition has the effect of altering the price or cost of the particular goods or service to the subsidy recipient and thereby encourages or discourages the output, supply, or use of the item and the related economic behavior (p. 262).

Examples of subsidies are explicit cash payments, provision of goods/services at prices or fees below market value, government purchases of goods/services above market price, certain government regulatory actions that alter particular market prices, tax exemptions and lower interest rates than the market rate (ibid.).

Non-subsidized export credits are offered at commercial interest rates, the guarantee premiums are based on market prices and the government is not involved. Subsidized export credits improve the export credits conditions. The goods or services would have been more expensive without these subsidies. Subsidized export credits are awarded through subsidy of the loan from the exporter himself or through officially supported arrangements from the government. A subsidy from the exporter himself is equivalent to a discount. Subsidies of export credits from the government are called officially supported export credits. The concept of a “subsidy” is here not clear. However, economists may say that all government influence on framework conditions for exports is a subsidy, regardless of direct transfers.5 When export credits are officially supported they become a trade policy issue.

1.2 Officially supported export credits

Officially supported export credits are offered by or on behalf of a government when goods and/or services are exported. They act therefore like an indirect export subsidy. The purpose of offering officially supported export credits is (usually) to promote national export and maintain an international regime which offers the same competitive condition for its members.6 Officially supported export credit makes the national firms competitive with

5 See box page 6.
6 Personal communication with J. Djupvik, Eksportfinans, 25 March 2008.
foreign competitors who have the same offer, and aim to secure employment. The exporters benefit from the officially supported export credits through increased export.

**Official financing support or pure cover**

Officially supported export credits can be provided as *official financing support* or *pure cover*. Official financing support is offered to buyers of national export, and may also be offered to national buyers with international market activity (Eksportfinans, 2008). Pure cover is offered to (inter)national banks and financial institutions or companies. There may be restrictions considering national share in the export transaction, maturity of the credits, repayment terms, maximum official support etc. This will be explained further in section 1.3 dealing with international rules according to officially supported export credits.

- **Official financing support**: Direct credit/financing and refinancing, or interest support.
- **Pure cover**: Export credit guarantee or insurance.
- **Option**: A right to buy or sell something to an agreed price. This must happen within or at a decided time in the future. In this context an option is the right to use the subsidized loan. This interest rate option can be very profitable when trying to get contracts abroad.

Export credits can be officially supported in different ways. Subsidizing the interest rate makes the interest rate on the officially supported export credits lower than the market rate, and is referred to as an *explicit subsidy*. This subsidy is shown as expenditure in the government’s budget. Subsidizing the premium on guarantees/insurances makes these premiums lower than the market price, assuming the same risk. This subsidy is then referred to as an *implicit subsidy* (Demirgüç-Kunt & Erzan, 1991).

An interest rate *option* connected to the subsidized interest rate is an extra subsidy. With the option the buyer has the right, but not a duty, to use the subsidized loan. The buyer can choose to use other loans with other interest rates if he wants (Econ, 2007). If the option is free it is even more favourable. The duration of the (free) option is also important when it comes to

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7 Personal communication with E. Stang, GIEK, 25 March 2008.
8 Risk has a price. If the risk considering export credits is priced less than market price, it is subsidized.
conditions considering export credits and export contracts. Longer maturity of the free option means better conditions for the borrower (ibid.).

If the export credits are guaranteed by the government, the export credits are favourable compared to other loans even though premiums on guarantees/insurances are not directly subsidized. A government is seldom exposed to the risk of bankruptcy - the firm or institution offering export credits can have confidence in repayment (contract enforcement) from the government. This security makes the export credit covered by the government far more favourable compared to private guarantees/insurances. A government may also be willing to take higher risk than commercial insurance markets since the chance of being held responsible or go bankrupt is close to zero.

Advantages and disadvantages
There are advantages and disadvantages associated with officially supported export credits. These become clearer when distinguishing between the micro and macro level. In a micro perspective firms will always welcome export credits. Export credits improve the competitiveness and may secure employment as well. Export credits may realize contracts which would otherwise not be feasible. But officially supported export credits also provoke discussion. They may divert resources away from the most efficient use, and can distort a market significantly (WTO, 2006). The fiscal costs of offering subsidies can also be very large (Helmers & Trofimenko, 2007). The macro welfare perspective is shown theoretically in section 3.

Export Credit Agencies (ECA)
According to O. Whist, GIEK, all of the members of the Organisation for Economic Co-Operation and Development (OECD) and about 20 other countries have export financing systems. The officially supported export credits systems vary a lot across countries, however (Demirgüç-Kunt & Erzan, 1991). In some countries like Denmark and Finland, banks are offering officially subsidized interest rates on export credits. These banks have to finance their own loans, but they get compensation for the difference between their funding and the subsidized rate, and for administration cost. In other countries like Norway, ECAs offer

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9 Personal communication, 28 April 2008.
10 The financial export credit systems emerged in the 1960s. It was then for the banks too much demand for long-term export credits and too much risk associated with them (Elmér, Jakobsson & Lundin, 1990).
officially supported export credits. In Sweden both banks and the Swedish ECA offer officially subsidized interest rates on the loans (Econ, 2007).

An ECA can provide both pure cover and official financing support. Insurance through an ECA covers the political and/or commercial risks of non-payment (Demirgüç-Kent & Erzan, 1991). The ECA’s share of the risk differs across countries and institutions. Both political and commercial risks can make the exporter lose. An ECA, which is offering export credits, does not necessarily compete with other private financial institutions, even though it offers both officially supported and commercial export credits.\textsuperscript{11} An ECA is more likely to be seen as an agency which is filling a gap when offering officially supported export credits.

- **Political risk**: Risk considering general conditions in the importing country: wars, political instability, currency control, economic factors or actions from the government (amendments, import restrictions) and other restrictions on international payments, civil disturbances, natural disasters that frustrate the contract.
- **Commercial risk**: Commercial risks often arise with insolvency of the purchaser, the purchaser goes bankrupt or disappears, it is impossible to make the purchaser pay or when the purchaser can not meet the obligations in the contract.
- **Counter-guarantee**: A counter-guarantee is a security for the lender and/or the guarantors and implies that the financial institution in the importer’s country carries the risk. If the importer is not paying for the goods as agreed, the financial institution in his country has to pay the amount. If the financial institution is state-owned it implies a transfer of tax revenues to the lender of the export credits. The importing country’s inhabitants are in other words paying the debt if political and/or commercial risk appears. They also have to pay the debt at commercial interest rates.

The ECAs have become large and powerful players in international business, particularly since the ECA itself evaluates whether it should finance a project or not. The project normally has to follow certain standards considering environment, human rights and anti-corruption.\textsuperscript{12} These standards are by many organizations accused of being too weak, even if they are improved by many ECAs. Projects, which according to these organizations should not have been carried out, are being realized due to the role of ECAs. In addition the ECAs often make

\textsuperscript{11} ECAs can also offer mixed credits which combines (officially supported) export credit with a “gift” (loan with low or no interest rate). Mixed credits are given in order to contribute to the economic and social development in developing countries (Bjerke, 1997).

\textsuperscript{12} If the country is Participant of the Arrangement (section 1.3.1) the ECA(s) must follow these standards.
the government, central bank or importer’s bank in the importing country to underwrite 
*counter-guarantees* (WTO, 2000). The reason is that ECAs wish to minimise their exposure 
to risks when they are doing business overseas. An ECA will always seek to recover the 
claims in the case of contract default with the importer.

The first ECA was established in 1919 in England to protect exporters from the risks they could meet in 
foreign markets. ECAs should also make the export credit terms competitive so that the exporters could 
have better chance to make contracts abroad (Larjavaara, 1988). Over the years many ECAs have expanded 
and some are also offering normal commercial banking functions. In 2003 there were 76 ECAs in 62 
countries, most of them governmental or semi-governmental agencies (Hawley, 2003).

Traditionally ECAs have had a flat premium for insurances, not reflecting the actual risks of non-payment, 
but in the late 1980/early 1990 they started charging higher premiums for projects with higher risk. The 
ECAs can offer guarantees and insurances on their own official export credit or on the export credit that 
other financial institutions provide. With such guarantees and insurances the ECAs contribute considerably 
to reduce exporters’ risks.

ECAs are accused of lacking transparency (Goldzimer, 2003). ECA documents on projects 
are rarely published under the argument that this may harm the company. If the importer 
knows that the export credits are guaranteed/insured he may be less willing to pay the 
exporter (Eggen, 1998). Even if they are published they are published after the decision about 
officially supported export credits has been made (Folkestad & Bøgh-Olsen, 2002). 
According to A. Preston, GIEK says that they publish the project on the internet 30 days
before the contract is signed. During this period organizations and people can express their opinion about the project and try to influence GIEK to make another decision if that is desirable.

According to ECA Watch corruption has been largely accepted among ECAs when supporting projects. They argue that ECAs have financed corrupt foreign investors and projects, and this has become a widespread practice. ECAs have also indirectly supported corruption by condoning corruption among the companies they support. OECD introduced stricter corruption regulations through the “2006 Action Statement on Bribery and Officially Supported Export Credits.” The ECAs now have more obligations, but there are still loopholes. Examples: The new action statement does not require ECAs to debar companies that have convictions for foreign bribery offences, and ECAs are not required to report suspicions of bribery (ECA Watch, 2006).

Despite these accusations, the ECAs have not been much exposed to public debate. In Norway there was an examination of the Norwegian export finance system at the end of the 1980s. Econ’s evaluation of Eksportfinans last year was the first since then. Econ evaluated GIEK in May 2008.

Three Gorges Dam (China): The Three Gorges Dam is the largest project in China in modern times. The project dams up the Yangzte River and makes the largest hydro-electric power station in the world. The project is by many environmentalists considered the most environmentally and socially destructive infrastructure project in the world (ECA Watch). According to Hagerup (2004) the project was estimated to have negative consequences for 340 million people in the region. Some of the ECAs involved are Hermes (Germany) with loan guarantees of $833 million and ERG (Switzerland) with loan guarantees of almost $300 million. The Export-Import Bank in the U.S. refused to support this project (ECA Watch). The Norwegian GIEK is involved through Kværner (Eggen, 1998). But even though the project has negative consequence it produces benefits as well. China needs energy and hydropower has environmental advantages compared to coal-fired plants etc. Because of the Three Gorges Dam project the coal consumption per year will be reduced by 31 million tonnes (Wikipedia, 2008).

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13 Personal communication, FIVAS, 14 March 2008.
14 A. Preston has never managed to find these projects on the internet.
15 Personal communication with H. Gabrielsen & T. Stugu, 14 March 2008.
1.3 International rules and agreements

Export subsidies, including officially supported export credits, may have distortive effects on international trade and is therefore subject to international rules. The first rules considering export subsidies were introduced in the Amendment to the General Agreement on Tariffs and Trade (GATT) already in 1955. GATT was signed in 1947. GATT regulates and reduces tariffs on traded goods and provides a common mechanism for solving trade related disputes (GATT, 2008). The World Trade Organization (WTO), which has 151 members, was established in 1994. WTO includes the GATT. WTO’s objective is to promote rule-based trade and is the only global international organization which is dealing directly with rules of trade between nations. WTO’s “Agreement on Subsidies and Countervailing Measures” regulates and disciplines the use of subsidies in international trade, and includes officially supported export credits to some extent. The agreement prohibits a broad selection of export subsidies for non-agricultural products (Green, Trebilcock & Milat, 2007). Export subsidies in agriculture will be eliminated by 2013.

OECD administers the international agreement that covers officially supported export credits the most. This agreement is called “Arrangement on Guidelines for Officially-Supported Export Credits” (the OECD Arrangement). The OECD Arrangement is a formalization of the “Consensus of Converging Export Credit Policies” (Consensus) from 1976, and became effective April 1, 1978 (Demirgüç-Kunt & Erzan, 1991). The OECD Arrangement is a gentlemen’s agreement and is therefore not legally binding for the Participants. Still, the

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16 Non-agricultural products are those which are not covered by Annex 1 of Agricultural Agreement, for example fish and forestry product.
Participants are supposed to observe rules and agreements. A better framework for exporters than allowed by the OECD Arrangement is considered prohibited. For countries not Participants of the OECD and WTO arrangements, there exist no international agreements on officially supported export credits. If they prefer not to follow the arrangements they can easily obtain export competitiveness compared to the Participants that respect the OECD and WTO arrangements.

1.3.1 The OECD Arrangement

The aim of the OECD Arrangement is to provide an institutional framework for the orderly use of officially supported export credits. The aim is to encourage export competition based on quality and price, not on the best officially supported export credit terms (WTO, 2000). The OECD Arrangement regulates and limits the provision of officially supported export credits, and is established to promote equal conditions for exporters in participant countries. The Participants of the OECD Arrangement are Australia, Canada, the European Community, Japan, Korea, New Zealand, Norway, Switzerland and the United States (OECD, 2007).

Main regulations

The OECD Arrangement covers all officially supported export credits for export of goods and/or services with repayment terms of two years or more. Both commercial and political risks are covered. Military Equipment and Agricultural Commodities are not covered in the OECD Arrangement. The OECD Arrangement is of indefinite duration.

The main regulations in the OECD Arrangement are minimum cash payments, maximum repayment terms, minimum interest rates and minimum premium rates. The minimum cash payment demands that minimum 15% of the export contract value has to be paid in cash at or before the starting point of the credits. This means that the Participants shall not provide officially supported export credits in excess of 85% of the contract value.

The maximum repayment term for the importer on the officially supported export credits is five years if the export item will be used in rich countries (Category 1). If the export item

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17 Not all OECD-countries are Participants of the Arrangement.
18 Personal communication with O. Whist, GIEK, 28 April 2008. Financial leases are also covered (OECD, 2007).
19 Repayment term is defined to be the period beginning at the starting point of credit and ending on the contractual date of the final repayment of principal. The starting point for capital goods and project services can be when the buyer takes physical possession of the goods.
20 The loans should be repaid within five years.
will be used in poor countries (Category 2), the repayment term is ten years for importers.\footnote{Category 1 comprises: (i) Countries whose per capita GNI has been for at least two consecutive years above the World Bank graduation threshold (2005 Per capita GNI: USD 6055, 2006 Per capita GNI: USD 6275) and (ii) countries which had been classified as Category 1 until the previous year according to (i) above and which have fallen below the threshold but have not yet changed their category because of the two consecutive-years rule in Article 11a) of the Arrangement. Category 2 comprises all other than Category 1 (OECD, 2007, p. 5).} For rich countries it is possible to extend the maximum repayment term three and a half years. The maximum repayment term for ships is 12 years, regardless of country classifications.

According to the OECD Arrangement repayment terms can not exceed the life length of the goods and services. The life of goods and services must therefore be minimum two years. The main rule is that the life of the good and services and their repayment terms are the same.\footnote{Exception: When for example consultancy services are financed through officially supported export credits, the services are normally ended before the agreed repayment term of the loan.} The sectors that benefit from officially supported export credits are therefore the sectors exporting medium and long lasting goods, for examples ships, equipment to the oil and gas sector, energy, technology etc.

When it comes to the interest rate, the Participants must apply the Commercial Interest Reference Rates (CIRRs) as minimum interest rates (OECD, 2007).\footnote{CIRRs are meant to represent final commercial lending interest rates in the domestic market of the currency concerned, correspond to the rate for domestic borrowers, and be based on the funding cost of fixed interest-rate finance. They are intended not to distort domestic competitive conditions but closely correspond to the rate available to foreign borrowers (ibid.).} The rules on Minimum premium rates (MPR) for Country and Sovereign Credit risk must also be followed.

\textit{Commercial Interest Reference Rates}

The CIRR is set at a fixed margin of 100 basis points (1 percentage point) above the Participant’s base rate. If Participants want to finance their customers in another currency they must use the CIRR set for that particular currency (ibid.). The CIRR differs from currency to currency (Bjerke, 1997). The CIRR is decided by OECD the 15\textsuperscript{th} every month and it is in practice valid for maximum 4 months when applied to a transaction. From 15 May until 14 June the Norwegian CIRR-rate was 5,81\%, independent of maturity. The USD CIRRs were 3,43\% for maturity less than 5 years, 4,04\% for maturity between 5,5 and 8,5 years and 4,39\% for maturity between 9 and 12 years (Eksportfinans, 2008). If the export contract was signed within the 14 June the CIRR was reduced with 0,2 percentage points. Countries can have even stricter national rules on their CIRR. The OECD Arrangement defines only the minimum
interest rates that officially supported export credits can have (Econ, 2007). Bjerke (1997) says that the CIRR can be seen as “an experiment from OECD” to establish a non-subsidized market interest rate.

Minimum Premium Rates
The guidelines in the OECD Arrangement also cover the use of premiums connected to guarantees/insurances. They are supposed to cover the risk of non-repayment of export credits, be risk-dependent, converge and be adequate to cover long-term operating costs and losses. The Participants must not charge less than the applicable MPR for Country and Sovereign Credit risk (OECD, 2007). This means that the OECD Arrangement regulates and restricts the minimum premiums for guarantees/insurances for different risks. According to this arrangement, it is not allowed to subsidize the premiums more than this.

Special guidelines
The OECD Arrangement has special guidelines for ships (minimum cash payment of 20% of the contract price by delivery), nuclear power plants and civil aircraft (ibid.). Standards considering the environment and corruption are also mentioned (Econ, 2007). Projects financed by officially supported export credits must at least comply with the environmental standard of the host country. If the international standards (those from the World Bank Group and Regional Development Banks) are more stringent, these standards must be followed (OECD, 2003). In addition Participants are encouraged to take appropriate measures to deter bribery. A prerequisite for obtaining officially export credit support is that the exporter is a “no bribery” undertaking. While historically ECAs have been operating with loss, OECD decided in 1999 that all the ECAs of their members should break even in the long run (Hawley, 2003).24

National share of contract value
Firms can co-operate with national and foreign firms to export goods and services to foreign customers. Many countries have different requirements to the national share of the export country value when offering officially supported export credits. This has to do with the different interpretation of the OECD Arrangement. In Germany the maximum foreign share of the contract is normally 10%, in Spain 15% for countries outside the EU, while in Sweden the

24 This was to meet a goal from WTO (Estrin et al. 2000).
rough estimate is up to 100%. If only small national shares of the contract value are required, exporters are likely to benefit more than if large shares are required. The reason is that exporters now are likely to participate in more contracts connected to officially supported export credits. Furthermore, countries have different interpretations considering the length on the interest rate option (Econ, 2007).

**Legal status**
Because the Arrangement has become a part of the laws of the European Unions (EU) it is legally binding for the EU-members. In addition to the Arrangement, EU-members have to make notification and consult regarding credits with longer maturity than five years. They also have to accept sub-contractions from other members up to 40% on smaller contracts and up to 30% on bigger contracts (Bjerke, 1997). Because Norway is not a member of the EU, GIEK and Eksportfinans do not have to follow the additional EU rules considering officially supported export credits. This is the fact even though Norway is a member of the European Economic Area (EEA) Agreement, which allow Norway, Liechtenstein and Iceland to participate in the Internal EU Market.25

**1.3.2 The Berne Union**
The Berne Union was founded in 1934 and is the leading international, non-profit organization and community for the export credits, investment insurance industry and cooperation between export guarantee institutions. The Berne Union has 51 financial institutions as members and is meant to be a forum for professional exchange among its members (Berne Union, 2008).26 It aims at encouraging international trade and investments through acceptance of sound principles in export credits and investment insurances (Berne Union, 2008).27 The principles are not legally binding, but the principles are highly respected.

The Berne Union is responsible for the harmonization of credit terms valid for less than five years. The members support exports and/or investments to highly developed and emerging markets through insurances or guarantees to exporters and investors. They also insure banks

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25 Personal communication with J. Djupvik, Eksportfinans, 8 April 2008.
26 Examples of members: GIEK Norway, ECGD UK, EH GERMANY Germany, HKEC Hong Kong, PWC Germany, US EXIMBANK USA, and ZURICH USA.
27 Example: “We conduct our business in a manner that contributes to the stability and expansion of global trade and investment on a sound basis that is in accordance with applicable laws and relevant international agreement” (Berne Union, 2008).
against political and/or commercial risks. Some even give direct export credits. Accordingly the members play an important role when it comes to various forms of support in international trade. In 2006 the Berne Union members covered more than US $1,1 trillion worth of business. This counts for about 10% of the world’s total export trade (Berne Union, 2008).

The Prague Club

The Prague Club was established in 1993 by the Berne Union. The Prague Club has 31 financial institutions as members. At the end of 2006 the members of the Prague Club had a business volume at $20,1 billion. The Prague Club works as an information exchange network for new agencies which have not met the requirements from the Berne Union. The Prague club is supporting new and maturing ECAs in setting up and developing export credits and investment insurances schemes. When the members have grown to certain levels they can apply for full membership in the Berne Union. The Berne Union and Prague Club have the same Secretariat (ibid.)

Summary

Most export credits arrangements, which are loans to foreign buyers of exported goods, are established to promote a country’s domestic industry in international markets. When export credits are officially supported (subsidized) they become a trade policy issue. International rules and agreements are established to decrease the distortive effects of officially supported export credits on international trade. We now turn to the Norwegian export credits system.

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28 Examples of members: AOFI Serbia, BECI Botswana, EGFI Iran, KUKE Polen, NAIFE Sudan, TRU Iceland and UZBEKINVEST Uzbekistan.
2 The Norwegian offers of officially supported export credits

There are two institutions in Norway which offer officially supported export credits, Garantinstituttet for Eksportfinans (GIEK) and Eksportfinans ASA (Eksportfinans). GIEK has history back to the early 1920s and is fully owned by the Norwegian government. Eksportfinans was established in the 1960s and is partly owned by the Norwegian government. Their main assignment is to promote Norwegian export.

This chapter has two parts. The first part explains GIEK and Eksportfinans, respectively, and the subsidy element in the institutions’ offer of officially supported export credits. The second part shows empirical evidence from the Norwegian supported export credit system through GIEK and Eksportfinans, respectively. Evidence shows that the maritime, oil and gas sectors, which are the large and successful sectors in Norway, are the sectors that benefit the most from this system. Theoretical predictions follow in chapter 3.

2.1 The Norwegian export credit system

2.1.1 GIEK

GIEK is the Norwegian government’s organ for guarantees and credit insurance of export credits. Guarantees issued by GIEK are therefore state guarantees. The governmental involvement is supposed to ensure that Norwegian exporters have the same competitive conditions as their foreign competitors.

In the 1920s the export guarantees were geographically limited to export to the Soviet Union. The commission managing the guarantees was therefore in 1929 named the Russia commission (Russlandskommisjonen). The guarantees should support export of salted fish, herring and aluminium. The first budget ceiling was 19,3 million NOK. In 1934 the guarantee system was extended to include all destinations, and the name changed to the Government’s Export Credit Commission (Statens Eksportkreditkommisjon). In 1960 the name was changed again to the current GIEK (Stang, 2004).

The organization

GIEK claims to be an independent institution and is supposed to make all decisions without political involvement. However it is organized under the Ministry of Trade and Industry
(Nærings- og Handelsdepartementet, NHD) which makes the general rules for GIEK’s activities. GIEK promotes Norwegian export through providing guarantees of Norwegian export of capital goods and services (in)directly to Norwegian producers on behalf of the Norwegian government.\(^{29}\) GIEK can also guarantee for deliveries of Norwegian equipment, ships and drilling vessels to ship owners registered in Norway. These deliveries may not be seen as export but are still guaranteed for if they have earnings from sea transport and offshore activity.

The government is the debtor and decides also the budget ceiling. The budget ceiling covers both new and old guarantees. The budget ceiling is 50 billion NOK in the general scheme (supplier’s and buyer’s credit), 5 billion NOK when it comes to guarantees of loans connected to ship building and 2,1 billion NOK when it comes to guarantees of investments in developing countries and export to developing countries.\(^{30}\)

Information, knowledge and the firm’s capability to accomplish the trade are important when GIEK examines cases. Each executive officer in GIEK has large discretionary influence on the amount which is to be covered by GIEK’s arrangement. All decisions are settled by the board of directors. There is no right of appeal for the applicant.\(^{31}\) GIEK’s Managing Director is per 2008 Wenche Nistad, the Director is Edvard Stang and the Chairman of the board is Bjørn Kaldhol.

**GIEK guarantees**

GIEK today offers coverage of export risk to 150 countries. The coverage includes insurance of goods and services, as well as commercial and political risk. Hence, the range of guarantees/insurances is broad: Buyer’s credit, supplier’s credit, pre-shipment guarantee, bond guarantee, investment guarantee, building loan guarantee, tender guarantee and whole turn-over scheme. Buyer’s and supplier’s credit are the most common. GIEK offers guarantees/insurances of buyer’s credit to Norwegian or foreign banks, or financial institutions. Guarantees of supplier’s credit are offered to the exporter or to the exporter’s

\(^{29}\) Capital goods are goods used in the production, for example machines, tools, ship, fish boxes.
\(^{30}\) Personal communication with T. Stugu, NHD, 23 May 2008.
\(^{31}\) Personal communication with E. Stang, GIEK, 25 March 2008.
bank. GIEK covers up to 90% of buyer’s and supplier’s credit when it comes to commercial risk, and up to 95-100% in the case of political risk.32

GIEK differs from other financial institutions because it is 100% government owned. Guarantees of credits from GIEK can act as a security for banks and other finance institutions. This makes financing easier, because the exporter or other financial institution does not have to carry all the risk themselves. This makes GIEK an attractive and secure partner for exporters and other financial institutions. GIEK has customers from every part of Norway. They may be small and inexperienced exporters or huge companies and exporters with long international experience. GIEK can also cover the risk for non-Norwegian exporters if a Norwegian exporter is participating in the contract. If the contract is huge GIEK may ask for re-insurance from the non-Norwegian exporter’s bank or another financial institution.33

GIEK Kreditforsikring AS
GIEK Kreditforsikring AS (GK) was established in 2001. GK is 100% owned by GIEK, but the Ministry of Trade and Industry receives the profits. GK covers credits with maximum repayment time of two years, and focuses mostly on small and medium sized firms. GK covers up to 100% of commercial risk. Political risk is also covered. GK was earlier a part of GIEK. Because of a resolution in EU/EEA, which says that short-term credits can not receive officially support, GK was separated into a separate business part in 1995. In 2001 it became a private limited liability company (Econ, 2008). GK’s Managing Director is per 2008 Knut Regbo, the Director is Thor Høstmark Løve and the Chairman of the board is Bjørn Kaldhol. GIEK appoints the management. GIEK’s Managing Director, Wenche Nistad, is today one of the seven members of this management.

GIEK and international regulations
The Government’s Export Credit Commission became member of the Berne Union in 1951. GIEK must therefore follow the guiding principles of the Berne Union (Stang, 2004). Because Norway is a Participant of the OECD Arrangement it covers Norwegian institutions, GIEK included. Participants of the OECD Arrangement must for example follow restrictions on risk-based premiums, and they must not charge less than the applicable MPR. The restrictions

32 This is a restriction from GIEK, not the Arrangement. 100% is covered if the buyer comes from a low risk country or if a government is the buyer.
33 Personal communication with O. Whist, GIEK, 28 April 2008.
on the national share in contracts are not clearly defined by the OECD Arrangement. GIEK prefers a Norwegian share of at least 30% when guaranteeing for loans.34

When it comes to environment and corruption, GIEK has stricter rules than what is stated in “OECD Common Approaches” and the “OECD’s Action Statement on Bribery and Officially Supported Export Credits”.35 In addition, GIEK has no profits or deficits in the long-run. This is to meet a goal from the WTO.

2.1.2 Eksportfinans

Eksportfinans is not like commercial banks. Eksportfinans is the only specialized export credit institution in Norway. In addition Eksportfinans is the only institution which offers government supported loans. Eksportfinans offers loans with repayment periods between two and 12 years.36 As mentioned, the maximum repayment term for goods (ships not included) and services is 10 years. Maximum repayment term for ships is 12 years. The most demanded loans offered by Eksportfinans are loans with 12 years repayment.

Eksportfinans ASA was founded 2 March 1962 by Norwegian commercial banks with the purpose of getting access to long-term fixed interest rate loans. With these the Norwegian exporters could be financed (Elmér, Jakobsson & Lundin, 1990). In the 1960s and 1970s Eksportfinans could offer competitive conditions for the exporters without any subsidies from the government. At the end of the 1970s however, the interest rate in the domestic bond market increased. This was the start of the government supported export loans in Norway: the 108-arrangement. The government now started to subsidize the interest rate for the export credits (ibid.).

The 108-arrangement

The 108-arrangement was funded by the Norwegian government in 1978 and is the name of the Norwegian arrangement for officially supported export credits managed by Eksportfinans. The 108-arrangement is not a law or a rule, but authorized in the Proposition to the Storting

34 Personal communication with E. Stang, GIEK, 9 April 2008.
35 The corruption rules are for example practiced within the Norwegian legislation.
36 Officially supported export credits are not offered on loans with repayment periods less than two years. The reason is ETFAs Surveillance Authority’s definition of short-term credits to be covered through the commercial insurance- and capital market (personal communication with T. Stugu, NHD, 20 June 2008).
No. 108 (1977-1978). This Proposition gives name to the arrangement.\textsuperscript{37} Eksportfinans is today 15\% owned by the Norwegian government and 85\% owned by 21 Norwegian banks, where DnB NOR is the biggest shareholder (Eksportfinans, 2006).\textsuperscript{38} The Managing Director is per 2008 Gisele Marchand.

\textit{CIRR-loans}

The 108-arrangement is supposed to provide competitive conditions for the Norwegian exporters, in line with the OECD Agreement. Norwegian export credit contracts can therefore be financed through CIRR-loans. The 108-arrangement covers export credits of goods and services, and is therefore offered to (foreign) buyers of Norwegian exported capital goods and services. These are normally financed through long-term credits but Eksportfinans also covers medium-term credits (Grath, 2006).

The exporter, who is exporting goods financed with officially supported export credits, must be a firm which is registered in Norway. The foreign buyer or the Norwegian exporter may apply for the loan. CIRR-loans are since 2002 also offered to Norwegian buyers of ships, equipment and drilling vessels, which have earnings from offshore and foreign trade.\textsuperscript{39} In these cases the borrowers are usually Norwegian shipping companies.\textsuperscript{40} The borrower can choose between the CIRR, which is valid at the signing of the contract, and the CIRRs which have been valid from the loan commitment until the signing of the contract. The latter gets a 0.2 percentage point mark up. The period between the loan commitment and signing of the contract is maximum 120 days (Econ, 2007).

Both buyer’s credit and supplier’s credit can be offered with CIRR-loans. Eksportfinans has until now never received an application for CIRR-loans on supplier’s credit (Econ, 2007). The payment of the loan and the delivery of the goods go on simultaneously. The payment of the loan goes directly from Eksportfinans to the exporter, and the money is directly connected to the Norwegian contract. Eksportfinans can offer loans in many convertible currencies. There is no upper limit to the amount of the subsidized loan. If the rules are fulfilled and debtor is approved the loan applicant is offered officially supported export credits.\textsuperscript{41}

\textsuperscript{37} Personal communication with J. Djupvik, Eksportfinans, 26 May 2008.
\textsuperscript{38} The Government bought 15\% of Eksportfinans in 2001.
\textsuperscript{39} The company which is buying the export good must be registered in Norway.
\textsuperscript{40} Personal communication with J. Djupvik, Eksportfinans, 18 April 2008.
\textsuperscript{41} Personal communication with J. Djupvik, Eksportfinans, 13 March 2008.
Free option

In Norway there is a free interest rate option on CIRR-loans. The exporter/importer must apply for a CIRR-loan before the contract is signed. When the export contract is signed, the borrower must normally decide within six months if he wants to engage to the CIRR-loan agreement. The right to engage the CIRR is the option. The option becomes better the longer the time is between the setting of the CIRR and the declaration time. The option period depends therefore on the delivery time in the commercial contract (Econ, 2007).

According to T. Nordahl, DnB NOR, the CIRR-level is normally decided 1-2 years before ships are delivered. Three months before the delivery of the ship the buyer normally must decide if he wants to use the CIRR-loan or not. If the CIRR-loan is offered at a rate below the corresponding commercial interest rate at that time, the importer chooses the CIRR-loan and benefits from the subsidized loan from the time of delivery and through the maturity of the loan. If the CIRR is higher than the corresponding commercial rate, the borrower will not engage the CIRR. Econ (2007) has estimated that CIRR-loans in Norwegian kroner (NOK) are getting attractive if the interest rate level increases with 0,20 percentage points during the option period. For CIRR-loans in Euro and Dollar the interest rates must increase with 0,45 and 0,25 percentage points, respectively.

A borrower, who wants to engage the CIRR, can withdraw from the deal if payment has not started. If the payment has started the borrower must compensate the government and Eksportfinans for the expenses of arranging the deal. A borrower who does not want to engage the CIRR-loan can not regret and choose CIRR-loan to finance the export contract. The exception is loan where the payment comes in several parts. The borrower can have the first payments at commercial interest rate and then choose later payments at CIRR. When the whole loan is paid, the borrower can choose to keep the commercial rate and the CIRR on the different parts of the loan, or convert the whole loan to the CIRR. Payments, which are paid at CIRR, can not convert to commercial rate.

42 Six months are not the absolute deadline.
43 The declaration time is when the buyer must decide if he wants to use the CIRR-loan or not.
44 Personal communication, 27 May 2008.
45 Personal communication with J. Djupvik, Eksportfinans, 2 June 2008.
Not only Norway has free option, but some of the other banks/agencies offering free option on behalf of their governments demand fees or have respite of the validity of the free option. These limit the advantage of it. Eksportfinans does not limit the advantage of the free option to the same degree. According to T. Stugu, NHD, several countries allow a maximum six months option period. If the period is extended a new and higher CIRR is set. In Norway, however, the length of this option period normally is considerably longer. For ships the period is up to three years (ibid.). This creates a competitive advantage for the Norwegian exporters. Free option entails that the buyer of the Norwegian export goods gets the cheapest financing possible. Free interest option is not common among commercial loans.

**Rating**
Because Eksportfinans is 15% owned by the Norwegian government and does not carry any risk when lending to firms and projects, Eksportfinans is rated high by the credit rating agencies. How a financial institution is rated is important for how good their funding conditions are. Good funding conditions are important in the international capital market because it makes the funding cheaper. Eksportfinans has obtained the best credit rating an institution can get, AAA, from Fitch Ratings and Moody’s, and AA+ from Standard & Poor’s. These good ratings make the loans cheaper for the exporters and their customers. According to T. Nordahl, DnB NOR, Eksportfinans’ cheap funding costs are a huge advantage for Eksportfinans compared to other financial institutions, because funding costs for the commercial banks have increased a lot.

**Compensation**
Even though Eksportfinans manages the 108-arrangement it is not responsible for the economical result. The Norwegian government handles this. Eksportfinans receives compensation from the Norwegian government for the management of the 108-Arrangement. This compensation is a margin on the outstanding CIRR-loans (NHD, 2007). According to H. Gabrielsen & T. Stugu, NHD, Eksportfinans is benefiting very much from the 108-

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46 Personal communication, 2 April 2008.
47 Personal communication 27 May 2008.
48 To keep the government’s expenses as low as possible, Eksportfinans will not use government resources if the contract is already completed. In addition, Eksportfinans keeps the government’s expenses lower than they could have been, because it carries no risk on the export credits it lends to firms and projects. Eksportfinans requires that GIEK or banks are guaranteeing 100% for their CIRR-loans (Econ, 2007). This 100% requirement is not a requirement established from the Norwegian government. It is just Eksportfinans’ business model. Eksportfinans may take some risk on governments and banks.
49 Outstanding CIRR-loans are loans which are not paid back to the lender.
arrangement through this margin. Until 2007 this margin was fixed at 0.95% of the outstanding CIRR-loans but was then changed. Especially for large loans the managing fee has decreased a lot. This reduces the Norwegian government’s loss on the 108-arrangement in the future. The new margins are shown in Table 1.

Table 1: Margins for the 108-arrangement

<table>
<thead>
<tr>
<th>Size of the CIRR-loans</th>
<th>Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 40 million NOK</td>
<td>0.95</td>
</tr>
<tr>
<td>40-100 million NOK</td>
<td>0.67</td>
</tr>
<tr>
<td>Over 100 million NOK</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Source: Personal communication with T. Stugu, NHD, 2 April 2008

Eksportfinans also receives the difference between the lending rate (CIRR) and the funding rate from the Norwegian government if the CIRR is less than the funding rate. Eksportfinans’ cheap funding costs decrease the government expenses connected to the 108-arrangement.

Eksportfinans and GIEK

There is a good relationship between GIEK and Eksportfinans. Today GIEK guarantees for about 50% of Eksportfinans’ officially supported export credits. 51 50-60% of GIEK’s guarantees have Eksportfinans as lender. Figure 3 illustrates how much of GIEK’s buyer’s credit guarantee has been financed by Eksportfinans.

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50 Personal communication, 14 March 2008.
51 Personal communication with E. Stang, GIEK, 25 March 2008.
Figure 3 shows that until 2000 Eksportfinans dominated as lender. Since 2000 the share has varied between 26% and 75%. Commercial banks have taken market shares. The rapid decline in Eksportfinans’ share of GIEK’s buyer’s credit guarantee probably reflects lower market interest rates compared to CIRRs in the beginning of the 2000s. A low interest rate means less demand for CIRR-loans which again reflects Eksportfinans’ lower percentage share of GIEK’s buyer’s credit guarantees. Another reason can be increased GIEK’s buyer credit guarantees of loans offered by commercial banks.

**Eksportfinans and international regulations**

Eksportfinans must follow the restrictions in the OECD Arrangement when offering CIRR-loans. Even though the OECD Arrangement allows CIRR-loans to be 85% of the contract value, Eksportfinans offers on average CIRR-loans which are 75-80% of the contract value.⁵² When it comes to corruption, Eksportfinans has stricter rules than what is stated in the “OECD’s Action Statement on Bribery and Officially Supported Export Credits”. Environment standards are practiced in accordance with “Recommendation on Common Approaches on Environment and officially supported Export Credits.”

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⁵² Personal communication with J. Djupvik, Eksportfinans, 5 May 2008.
Eksportfinans is not so restrictive considering the national share of contracts compared to other countries/ECAs. This improves the competitive conditions for Norwegian exporters because they can participate in more contracts. Eksportfinans normally demands that minimum 50% of the contract value has to be Norwegian. In some cases the Norwegian share may be lower, but never less than 30%. The local share must not be bigger than 15% (Econ, 2007).

Commercial loans
In addition to CIRR-loans Eksportfinans also offers commercial, non-subsidized loans. In this area they compete with other commercial banks, normally in the case of short-term loans. However, commercial banks will normally not be able to offer as good conditions as Eksportfinans, because of the good rating they have in the market (Elmér, Jakobsson & Lundin, 1990). Commercial export credits are offered to foreign buyers of Norwegian capital goods, equipment and services. The same conditions are offered to Norwegian exporters who want to borrow for investment and acquisition abroad. These commercial loans can be offered as medium- and long-term credits and at variable or fixed rates in most currencies. In contrast to an officially supported loan, this rate can first be made fixed from the disbursement (Bjerke, 1997). Because commercial lenders are not subject to the Arrangement, they can be financed up to 100%. But if GIEK guarantees/insures the commercial loan, it is considered officially supported. This means that the Arrangement restrictions are valid (ibid.).

Commercial loans and CIRR-loans are offered with the same loan period and repayment terms. There is a good reason for this, namely that the decision whether a loan is rated with commercial rates or CIRRs is made very late in the process. Eksportfinans also offers loans to Norwegian banks which are financing business related to export, combination loans, ship financing, mixed credits and consulting services.

53 Up to 50% of the contract value may therefore be provided by foreign subcontracts. Personal communication with J. Djupvik, Eksportfinans, 25 March 2008.
54 The local share is the share from the importing country.
55 Personal communication with J. Djupvik, Eksportfinans, 9 April 2008.
56 Mixed credits from Norway are untied which means that the credit is not tied to Norwegian export. Projects become international tender (Bedin, 2007). There is now little activity connected to untied mixed credits in Norway. The last disbursement was in 2005 (personal communication with J. Djupvik, Eksportfinans, 23 May 2008). Elmér, Jakobsson and Lundin (1990) write about the Norwegian offer of mixed credits.
2.1.3 Subsidy elements in the Norwegian system

*GIEK*

GIEK represent the state-owned part of the subsidy element connected to the Norwegian officially supported export credits. This subsidy can result in favourable factors as lower premiums on guarantees than the market premiums assumed the same risk, no need for arranging buffers, cover of riskier projects than private financial institutions are willing to cover and cheaper funding.

*Lower premiums*

Lower premiums on guarantees of exported capital goods and services than market premiums, assumed the same risk, represent subsidies. Lower premiums can be a result of free access to part of a government’s budget or total governmental risk-taking. GIEK has free access to its budget ceiling. If the use of guarantees does not have additional effects, it would represent a transfer of value from the government to the private sector. This transfer would be characterized as a subsidy. Since GIEK has promoted Norwegian export, these guarantees have additional effects. GIEK’s free access to part of the government’s budget has not resulted in lower premiums on guarantees than the market premiums assumed the same risk. In addition, GIEK normally shares the risk with other private financial institutions when guarantees for exported goods and services are provided. Premiums on GIEK-guarantees are therefore adjusted to open market conditions and are not subsidized.

*Buffer*

GIEK is (probably) the safest partner for banks and firms in Norway. The reason is that GIEK can not go bankrupt. It is therefore not necessary for customers to arrange a buffer when GIEK covers the risk connected to export of capital goods and services. A buffer, which represents an economic security for the customer, is in this context saved money which can be used if the institution guaranteeing for the contract value can not cover the export as agreed.

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57 Guarantees of exported goods and services have additional effects if the export contracts would not have been realized without these guarantees.
58 Guarantees from GIEK are not the decisive factor in every case. Some of the contracts would have been realized without these guarantees. But GIEK is partly the decisive factor for single contracts (for example where high risk is connected to the export). GIEK also contributes to enlarged capacity in the export financing market because government guarantees can enlarge the limits for the banks guarantees. GIEK contributes therefore to enlarged export volume (Econ, 2008).
59 Personal communication with E. Stang, GIEK, 25 March 2008.
60 Personal communication with J. Djupvik, Eksportfinans, & E. Stang, GIEK, 13 March 2008.
61 This can be the case if the guarantee institution goes bankrupt.
To arrange and hold a buffer costs money. Because of this GIEK guarantees are more favourable than commercial guarantees, and guarantees from GIEK are therefore to some degree subsidized.

Cover of risky projects
As GIEK is state-owned, it may be more willing to cover risky projects than other private financial institutions. GIEK may here offer an advantageous service compared to other institutions. As long as risk has a cost, GIEK represent a subsidy through its owner.

Cheaper funding
According to GIEK, banks are not required to make provision in connection with loans guaranteed by GIEK. The buyer’s credit and the supplier’s credit guarantees give therefore cheaper funding for the banks. This is a favourable factor with some degree of subsidy.

Eksportfinans
The 108-arrangement is not an instrument to correct failures considering the offer of small export credits in the export credits market (Econ, 2007). The 108-arrangement is therefore a subsidized arrangement. According to Econ (2007) the subsidy element is the free interest rate option.

Free option
Econ suggests in its evaluation of the 108-arrangement from 2007 the free option to have a value of 0.45 percentage points of the loan. The subsidy element may be 0.35 – 0.40% of the value of the contract. Statistics Norway, SSB, has calculated that this subsidy can increase the volume of an export contract of capital goods with the same percentage (ibid.) The subsidy element connected to CIRR-loans varies with the market conditions, the size and maturity of the loan, the length of the option period and the currency.

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62 According to Econ (2007) there exists a market failure considering the offer of small export credits in Norway. Since the subsidies connected to CIRR-loans mainly are paid to large transactions, the 108-arrangement does not correct for this market failure. If the 108-arrangement had corrected this failure, the negative welfare effects shown in section 3 had decreased.

63 The free option subsidy estimate is based on option prices calculated by Nordea Markets 17 January 2007, an option period of one year and a loan maturity of 10 years. The 0.45 percentage points is a weighted average of basis points for loans in American Dollar, Norwegian kroner and Euro.

64 CIRR-loans can not amount to more than 85% of the export contract value. If ships are exported, CIRR-loans can not amount to more than 80% of the export contract value.
Since the option period normally is longer in Norway than the one year calculated option period by SSB in Econ (2007), the subsidy element is normally stronger than here assumed. This is the case especially with export of ships which can have a free option period up to three years. In addition the loan period is calculated to be 10 years. In reality the repayment period can be 12 years for ships. As mentioned, loans with 12 years repayment is the most demanded CIRR-loans in Norway. Because longer option periods and longer repayment terms create stronger subsidies, the effect of subsidies is stronger on the export of ships than other capital goods and services. Due to this, CIRR-loans offered on behalf of the Norwegian government increase the volume of ships contracts with more than 0,35-0,40% for Norwegian exporters.

Lower interest rate
In addition to the free option, the CIRR represents a subsidy in itself if it is lower than the commercial interest rate. The difference between the lower CIRR and the commercial rate is the subsidy. From 15 May 2008 to 14 June 2008 the Norwegian CIRR was 5,81%, independent of maturity. If the contract was signed within 14 June 2008 the CIRR decreased to 5,61% (Eksportfinans, 2008). According to DnB NOR’s interest rates per 27 May 2008 the NIBOR was 6,09% when the maturity was 3 years, 5,79% when the maturity was 5 years, 5,66% when the maturity was 7 years and 5,61% when the maturity was 10 years. 65 If the CIRR was compared to the commercial interest rates from DnB NOR in this period, and the contract was not signed before 14 June, there existed a subsidy (0,28%) on the 3 years loan only. If the contract was signed before 14 June a subsidy element existed in all cases except when the maturity was 10 years.

2.2 Empirical evidence
Sectors, which are exporting goods and services financed/guaranteed with officially supported export credits, differ from country to country. This has to do with the fact that some countries are more competitive than others in some sectors. In Finland the main sectors are forest, telecom and ship building (cruise ships), in Denmark windmills and cement fabrics, and in Sweden buyers of Swedish forest, telecom and transport find officially supported export credits attractive. 66 In the U.S. and Germany the sector that obtains most export credit benefits is airplane, and in the U.K. the sectors are weapons and aircraft. Although the sectors vary

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65 Personal communication with T. Nordahl, DnB NOR, 27 May 2008.
66 Personal communication with T. Stugu, NHD, 2 April 2008.
across countries there are some common trends internationally. The sectors benefiting from the officially supported export credits are the big exporters of capital goods in each country. The buyers of the exported goods are more often private, and political risk is less covered than before. The officially supported export credits are offered to OECD-countries more frequently than before. In addition, the trend is that countries do not require the same high share of national participation as earlier.

Applications for officially supported export credits have traditionally been connected to export of hydro power in Norway, but the main sectors are now the maritime (ships and equipment to ships), oil and gas. This has to do with who the big Norwegian exporters of capital goods are. The increased extraction of oil and gas in Norway and international demand has also contributed to that the oil and gas sector obtain a lot of export credit benefits.67 68

2.2.1 GIEK

According to Econ (2008) GIEK promotion of Norwegian export has been significant. In the long run there are mainly profitable Norwegian firms which get their export guaranteed through GIEK’s officially supported export credits.69 The main sectors are the maritime, oil and gas sector. There is an inconsistency in the information on GIEK found on GIEK’s website and received from E. Stang, GIEK.70 However, the received data on the general scheme from 2004-2007 confirms that the maritime, oil and gas sector are the sectors where definitely most buyer’s and supplier’s credit are issued. No firm dominates as seller and no country/firm dominate as buyer, but Rolls-Royce Marine, Nera Networks, Havyard Leirvik AS and AKVA Group ASA are mentioned several times as exporters.

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68 Even if 90% of the Norwegian produced seafood is exported, the exporters of fish and other seafood are most likely not able to make use of the officially supported export credits (Ocean Futures, 2005). As mentioned, officially supported export credits are only available to finance goods which have a life length of more than two years. Seafood exporters will mainly apply for short time credits, not medium- and long-term credits. This is also the case with trade of services. Personal communication with T. Stugu, NHD, 2 April 2008.
69 Personal communication with E. Stang, GIEK, 25 March 2008.
70 Issued guarantees and total guarantee volume are higher on GIEK’s website.
In 2006 GIEK issued 35 supplier’s and buyer’s credit polices (insurances) worth over 3,3 billion NOK. The maritime sector got 19 polices issued, which counted for 54,32% of the total guarantee volume. GIEK’s new guarantee liabilities for the maritime sector was 47,43% of the total guarantee volume. Three of these cases were connected to the oil and gas sector, two were connected to the maritime sector. Norway was the buyer in three of these cases (ibid.).

In 2007 GIEK issued 36 new supplier’s and buyer’s guarantees issued from GIEK were worth more than 1,7 billion NOK. The maritime sector got 16 polices (of 33) worth 11,11% of the total guarantee volume, while the oil and gas sector got 10 polices worth 72,78% of the total guarantee volume. The largest guarantee from GIEK was worth 329 million NOK. The seller was Havyard Leirvik which sold supply ship to the Russian buyer CJSC Sevmorneftegaz. GIEK guaranteed three cases with more than 250 million NOK. Two of these were supply ship contracts between Havyard Leirvik and CJSC Sevmorneftegaz. The last one was also connected to the oil sector and was a contract between Oceanteam Shipping AS and Pemex Exploracion y Produccion (Mexico) (ibid.).

In 2004 GIEK issued 35 supplier’s and buyer’s credit polices (insurances) worth over 2 billion NOK. The maritime sector got 12 of these polices, which counted for 30,48% of the total guarantee volume. The oil and gas sector got 5 polices issued, which counted for 54,32% of the total guarantee volume. Prosafe Rigs AS was the largest guarantee from GIEK. Prosafe Rigs AS sold services connected to the oil and gas sector worth of 344 million NOK. PEMEX Master Trust (the U.S.) was the buyer. GIEK issued guarantees worth more than 200 million NOK in five of the cases this year. Three of these cases were connected to the oil and gas sector, two were connected to the maritime sector. Norway was the buyer in three of these cases (ibid.)

In 2005 the total supplier’s and buyer’s guarantees issued from GIEK were worth more than 1,7 billion NOK. The maritime sector got 15 polices (of 33) worth 11,11% of the total guarantee volume, while the oil and gas sector got 7 polices worth 72,78% of the total guarantee volume. The largest guarantee from GIEK was worth 329 million NOK. The seller was Havyard Leirvik which sold supply ship to the Russian buyer CJSC Sevmorneftegaz. GIEK guaranteed three cases with more than 250 million NOK. Two of these were supply ship contracts between Havyard Leirvik and CJSC Sevmorneftegaz. The last one was also connected to the oil sector and was a contract between Oceanteam Shipping AS and Pemex Exploracion y Produccion (Mexico) (ibid.).
Share of Norwegian export

The GIEK-guaranteed share of Norwegian export (except oil and gas) has varied between ca 1% and 5,5% from 1997 to 2006. In 2006 the share was 5,5% which was the highest share in the period.\(^71\) The increase is probably a result of the increased export of capital goods compared to other export.\(^72\) The general scheme has from 2000-2006 assisted to export worth ca 82 billion NOK (NHD, 2007). In 2006 GIEK participated in export contracts and investments abroad worth 20,3 billion NOK. In 2007 this increased to 33,3 billion NOK. The application volume was in 2007 almost 45 billion NOK, where almost 40 billion NOK were application to the general scheme. This was an increase from 31 billion NOK in 2006. The increase was a result of huge and many exports contracts within the maritime and oil sectors.

During 2007 GIEK issued new guarantees in worth of 13,6 billion NOK compared to 6 billion NOK in 2006. 95% of the cases considered private buyers. 11,4 billion NOK of the guarantees issued in 2007 considered the general scheme. This is more than twice the amount in 2006 (4,9 billion NOK). GIEK also increased the supplier’s and buyer's credit policies compared with 2006 (77 new polices) and 2005 (77 new polices). GIEK issued in 2007 101 new policies (Nilsen, 2008).

Budget limit

GIEK’s budget limit considering the general scheme increased from 40 billion NOK in 2006 to 50 billion NOK in 2007. This shows an increased demand after guarantees from GIEK. Per 31.03.2008 34,1 billion NOK of these were in use (GIEK, 2008). Since the budget limit was not increased in 2008, there exists a danger of reaching the budget limit this year. This will have consequences for the Norwegian industry and trade, especially along the coastline. Suppliers of equipment to the ship, oil and gas sectors represent many jobs in the districts (GIEK, 2007).\(^73\)

Outstanding guarantee liabilities

GIEK had ultimo 2007 total outstanding guarantee liabilities worth 24,7 billion NOK.\(^74\) 88,26% (21,8 billion NOK) of these came from the general scheme.\(^75\) Buyer’s credit is the

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\(^71\) Personal communication with T. Stugu, NHD, 2 April 2008.
\(^72\) Capital goods are the export goods which find CIRR-loans most attractive.
\(^73\) This statement sounds like a lobbying argument from GIEK.
\(^74\) Outstanding guarantee liabilities are guarantees which are still valid.
\(^75\) Personal communication with T. Stugu, NHD, 2 April 2008.
dominating credit within the general scheme. Table 2 shows the overview considering outstanding GIEK-guarantees per 06.09.07. The amounts are in NOK.

Table 2: Outstanding GIEK-guarantee liabilities per 06.09.2007

<table>
<thead>
<tr>
<th>Continent</th>
<th>Outstanding guarantee liability</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>707 904 245</td>
<td>3 %</td>
</tr>
<tr>
<td>Asia</td>
<td>6 951 071 262</td>
<td>29 %</td>
</tr>
<tr>
<td>North America</td>
<td>3 690 717 234</td>
<td>15 %</td>
</tr>
<tr>
<td>East Europe</td>
<td>2 294 096 025</td>
<td>10 %</td>
</tr>
<tr>
<td>South America</td>
<td>2 338 851 518</td>
<td>10 %</td>
</tr>
<tr>
<td>West Europe</td>
<td>8 142 493 363</td>
<td>34 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>24 125 133 646</td>
<td>100 %</td>
</tr>
</tbody>
</table>

Source: Personal communication with T. Stugu, NHD, 2 April 2008

Table 2 shows that Western Europe has the highest outstanding guarantees with more than 1/3 of the total. 26% of these outstanding guarantees were to Norwegian exporters and banks. Western European exporters, and especially Norwegian exporters, are therefore likely to benefit the most from the Norwegian state guarantees per 06.09.2007. Africa represents the continent with the lowest share of outstanding GIEK-guarantees. The reasons for this are likely to be the high risk involved.

The five countries with most outstanding guarantee liabilities within the general scheme were in 2007 Norway (5,5 billion NOK), the U.S. (2,3 billion NOK), Bermuda (2,2 billion NOK), Qatar (1,9 billion NOK) and Mexico (1,8 billion NOK). Norway, with 3 billion NOK, was also the country with most new guarantee liabilities considering the general scheme last year. The U.S. and Qatar were the second and the third largest countries with 2,2 billion NOK and 1,9 billion NOK, respectively.

As shown in Figure 4, the oil and gas sector was the sector having most outstanding liabilities in 2007. The maritime sector was the second largest (24%). The oil, gas and maritime sectors are therefore the sectors benefiting the most from the officially supported export credits offered on behalf of the Norwegian government.
According to Econ (2008), the oil/gas and maritime sectors have increased their share from 60% in 2004 to 73% in 2007. The energy sector also increased its share over the same years, from 4% to 14%. More than half (53%) of the cases GIEK guaranteed in 2007 were small cases, which means contracts worth less than 15 million NOK. This small cases amount to ca 2% of the total volume guaranteed.\textsuperscript{76}

\textbf{2.2.2 Eksportfinans}

Even if Eksportfinans always uses the minimum interest rate on CIRR-loans, only a small part of the CIRR-loans applications result in CIRR-loans. But even if a CIRR-loan is not used, it can help Norwegian exporters to win contracts abroad. As long as the importers know that they have a CIRR-loan offer, the conditions are favourable (Econ, 2007).

\textsuperscript{76} Personal communication with T. Stugu, NHD, 2 April 2008.
**CIRR-loan applications**

Figure 5 shows the application volume considering CIRR-loans in billion NOK from 2001 to 2006.

**Figure 5: Applications for CIRR-loans**

![Bar chart showing applications for CIRR-loans from 2001 to 2006.](image)

Source: Eksportfinans, reported in ECON, 2007, p. 52

The figure shows that the applications exploded in 2005 and 2006 compared to the other years. Buyers applied for CIRR-loans worth ca 120 billion NOK each year in 2005 and 2006. The reasons for the extreme increase in application for CIRR-loans are probably increased commercial interest rate the last years and/or higher demand for Norwegian (export) goods, especially from the ship, oil and gas sectors. But only a small part of the applications ended up as actual CIRR-loans. The reason is probably that most of the commercial loans were evaluated as more attractive. Figure 6 documents that just a small part of the applications ended up as CIRR-loans. The CIRR-loans are in million NOK.
This historical overview in Figure 6 shows that the frequency of CIRR-loans was high initially, and decreased after a few years. This decrease probably reflects lower commercial interest rates compared to CIRR and/or decreased demand after Norwegian export goods. In 2006 new CIRR-loans increased again. The total outstanding CIRR-loans increased also in 2006 as a result of the new disbursements (ibid.).\(^\text{77}\) This increase is explained further in Figure 7.

**Outstanding CIRR-loans**

According to the Norwegian government, Eksportfinans’ new CIRR-loan disbursements were 758 million NOK in 2004 and 259 million NOK in 2005 (NHD, 2007). These increased enormously to 5 billion NOK in 2006. New disbursement of CIRR-loans was 8 billion NOK in 2007.\(^\text{78}\) The total outstanding CIRR-loan disbursement was 8 billion NOK in 2006. This was an increase in the total outstanding CIRR-loan disbursement from 4 billion NOK in 2005 (ibid.). The 8 million NOK outstanding CIRR-loans in 2006 amounted 19% of Eksportfinans’

\(^{77}\) Outstanding CIRR-loans are CIRR-loans which are not repaid. These loans/amounts must be repaid to Eksportfinans as agreed.

\(^{78}\) Personal communication with J. Djupvik, Eksportfinans, 25 March 2008.
The sectors which had most outstanding CIRR-loans in 2006 are shown in Figure 7. The CIRR-loans are in million NOK.

Figure 7: Outstanding CIRR-loans in 2006

Source: Eksportfinans, reported in ECON, 2007, p. 27

Figure 7 shows that the ship building industry with ca 3,3 billion NOK was the sector with most outstanding CIRR-loans in 2006. The oil and gas sector followed with outstanding CIRR-loans worth more than 1, 5 billion NOK. The maritime (especially the ship building industry), oil and gas sectors are the (foreign) sectors importing the most of the Norwegian exported goods.79

Statistics show that Eksportfinans’ outstanding CIRR-loans counted 17,6 billion NOK at the end of 2007.80 Some of the loans were under disbursement, while some were going to be disbursed. Ship, oil and gas were also this year the sectors financed the most with CIRR-loans. This is shown in Figure 8. The CIRR-loans are in million NOK.

79 As mentioned can also Norwegian buyers, which are buying Norwegian ships, equipment and drilling vessels, be financed through CIRR-loans.
80 Personal communication with J. Djupvik, Eksportfinans, 25 March 2008.
Figure 8 shows that the ship building industry had the most outstanding CIRR-loans in 2007 (9 billion NOK). This counts for more than half of the total outstanding CIRR-loans. The oil and gas sector is the other large sector with outstanding CIRR-loans (5.8 billion NOK) to Eksportfinans, while ship equipment is the third largest sector (1 billion NOK).

Figure 7 and Figure 8 show that the sectors making most use of the Norwegian officially supported loans are the ship building industry and the oil and gas sector. Since these are most likely to import goods from the same Norwegian sectors, this reflects that the Norwegian maritime, oil and gas sectors are the sectors benefiting the most from the CIRR-loans offered. The maritime, oil and gas sectors need long-term credits and therefore find CIRR-loans, with its free option, very attractive.

Increase in the use of CIRR
As a result of economic growth internationally the last year Norwegian firms have got a lot of contracts, especially the shipyards and exporters of equipment to the oil and gas industries (ibid.). High demand from these sectors is one reason for the tremendous increase the last

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81 The export to the ship building industry abroad normally comes from the ship building industry in Norway etc.
couple of years in the use of officially supported export credits. The long free option period on CIRR-loans offered by Eksportfinans may also be a reason why these sectors, especially the ship building industry, find officially supported loans attractive. Since the length of the option period depends on the delivery time, it is likely that ships and large equipment to the maritime, oil and gas sectors have long option periods. Since the subsidy element is stronger the longer the option period, CIRR-loans are particularly attractive when ships and other capital goods with long life length are traded.\textsuperscript{82}

Another reason for the high use of officially supported export credits the last years is the increased commercial interest rates. This made the CIRR-loans very attractive because they had lower rates (Econ, 2007). Aker Drilling ASA expressed in 2006 that with the 2006-valid commercial interest rate, the CIRR could give them a positive effect of 60-80 billion NOK (Aker Drilling, 2006).

From 2003 to 2006 Eksportfinans registered 898 CIRR-loan cases, where 274 cases (30,5\%) considered small- and medium-sized firms. Only 108 (1/3) of 324 exporters were small- and medium-sized exporters, which mean that large exporters mainly applies for CIRR-loans. But not every case in this period ended up under the terms of a CIRR-loan. 60\% of these cases were no longer active per September 2006, and 70\% of these were cases with small-and medium-sized firms (ibid.). The reason may be that small- and medium-sized exporters do not produce capital goods which need long credit time. Because of this, they may not find CIRR-loans as attractive as large firms.

\textit{Exporters, counties and countries connected to the 108-arrangement}

When it comes to Norwegian exporters which have importers with most outstanding CIRR-loan cases per 31.12.2007, it is clear that almost all of these exporters are large and connected to the maritime, oil and gas sectors. The exceptions from the maritime, oil and gas sectors are Nera (information and communication technology, telecom), Eltel Networks (telecom and electricity supply), Goodtech (technologic products and projects) and Norway Registers Development (infrastructure supporting right and economic development rules by law). This is shown in Table 3.

\textsuperscript{82} If the capital goods have long useful lives, the maximum loan periods are longer.
Table 3: Exporters connected to importers with most outstanding CIRR-cases

<table>
<thead>
<tr>
<th>Exporter</th>
<th>Cases</th>
<th>Importer</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aker Yards</td>
<td>19</td>
<td>Eltel Networks</td>
<td>4</td>
</tr>
<tr>
<td>Akvasmart</td>
<td>11</td>
<td>Goodtech</td>
<td>4</td>
</tr>
<tr>
<td>National Oilwell</td>
<td>8</td>
<td>Havila/Havyard</td>
<td>4</td>
</tr>
<tr>
<td>&quot;Old&quot; Kværner</td>
<td>7</td>
<td>Norway Registers Development</td>
<td>4</td>
</tr>
<tr>
<td>Nera</td>
<td>6</td>
<td>Simek</td>
<td>4</td>
</tr>
<tr>
<td>ABB</td>
<td>5</td>
<td>Frank Mohn AS</td>
<td>3</td>
</tr>
<tr>
<td>Kleven</td>
<td>5</td>
<td>Rolls Royce Marine</td>
<td>3</td>
</tr>
<tr>
<td>Prosafe</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ulstein</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Personal communication with J. Djupvik, Eksportfinans, 25 March 2008

Table 3 shows that Aker Yards, which is one of the world’s largest shipbuilders, has importers with 19 outstanding CIRR-loan cases. Because Aker Yards has almost twice as many cases as number two in the table, Akvasmart, and four/five times more cases than most of the other exporters in the table, it is very likely that Aker Yards is the exporter benefiting the most from the officially supported export loans offered by Eksportfinans on behalf of the Norwegian government.

Aker Yards Flora (Norway) has among other ships built M/T “Stolt Sagaland” together with the Damen Shipyards Okean (Ukraine). The fore section was built in the Ukraine and the rest of the ship in Flora, Norway. Delivery was February 2008. Eksportfinans provided long-term financing worth 412,8 million NOK (80% of the contract) with guarantees from DnB NOR Bank in London (1/3) and GIEK (2/3). The financing was through CIRR-loans.

Ulstein Verft AS is another Norwegian shipbuilder. Ulstein built “Normand Seven” which was elected to “Ship of the year 2007”. The contract price was 663 million NOK. Eksportfinans granted long term credit (12 years) for 80% of the contract price at CIRR-rate (4,13%, NOK).

Figure 9 shows to which Norwegian counties the importers’ outstanding CIRR loans are connected. Exporters in Møre and Romsdal have importers with most outstanding CIRR-loans in both number of cases and loan volume at the end of 2007. The exporters in Møre and
Romsdal are the exporters benefiting the most from the officially supported export loans in Norway. These exporters registered in Møre and Romsdal are connected to ca 45 CIRR-loan cases with a total CIRR-loan volume of ca 6.5 billion NOK. The exporters registered in Rogaland are connected to the second most CIRR-cases (ca 23) and outstanding CIRR-loans (ca 4 billion NOK).

Figure 9: Outstanding volume and cases per county in Norway, balance 31.12.2007

![Graph showing outstanding volume and cases per county in Norway]

Source: Personal communication with J. Djupvik, Eksportfinans, 25 March 2008

The reason why Møre and Romsdal definitely is the county connected to most CIRR-activity (volume and cases) is probably Aker Yards. Most of Aker Yards’ activity in Norway is located in Møre and Romsdal.

The 12 countries which borrowed most Norwegian officially supported loans at the end of 2007 are shown in Figure 10. These countries are benefiting the most from the officially supported export loans.
Figure 10 shows that Norway was the largest borrower of CIRR-loans offered by Eksportfinans per 31.12.2007. Norway had at the end of 2007 more than 30 outstanding CIRR-loan cases and a total outstanding CIRR-loan volume of more than 6 billion NOK. Puerto Rico had the second largest sum of outstanding CIRR-loan volume connected to Norwegian export, while China had the second largest number of outstanding CIRR-loan cases. The reason for the huge number of outstanding CIRR-loan cases and outstanding CIRR-loan volume to Norway is that CIRR-loans can be offered to some Norwegian buyers, mainly ship owners.\textsuperscript{83} The buyers have to purchase Norwegian ships, equipment and/or drilling vessels. In addition, the buyers must have their earnings from offshore and foreign trade.\textsuperscript{84}

\textit{Government expenses}

The 108-arrangement helps Norwegian exporters to sign contracts, but there are costs related to the CIRR-loans and these are borne by the government. Figure 11 shows the government’s results from the 108-arrangement from 1991 to 2005. The amounts are in million NOK and are a result of CIRR-rate income, interest rate costs (commercial funding costs and loss on

\textsuperscript{83} The firm must be registered in Norway.

\textsuperscript{84} Personal communication with J. Djupvik, 18 April 2008.
option) and Eksportfinans’ managing fee, which in these years was fixed at 0.95% of the outstanding CIRR-loans (Econ, 2007).\textsuperscript{85}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure11.png}
\caption{Government’s losses on the 108-arrangement}
\end{figure}

Source: NHD & Eksportfinans, reported in Econ, 2007, p. 53

The figure shows that the Norwegian government has lost money on the 108-arrangement every year since 1991. The losses were larger in the beginning of the 1990s than in the 2000s. Among the reasons for heavy losses in the beginning of the period are high margins charged by Eksportfinans for the management of the 108-arrangement, high commercial funding expenses and the propensities to finance too risky projects.

The losses due to the 108-arrangement are presented in Table 4. The losses are in million NOK. These losses are the sum of Eksportfinans’ margin for the management, and the difference between the funding rate and the lending rate (CIRR).\textsuperscript{86}

\textsuperscript{85} Non-performing loans are not included in the result. Since Eksportfinans does not carry any risk when lending to firms and projects, and only some risk when lending to governments and banks, it is reasonable to assume that the Norwegian government’s losses in the sense of non-performing loans are not heavy.

\textsuperscript{86} The government’s losses have changed relative to the amount of total outstanding CIRR-loans with exception of year 2002 – the total outstanding CIRR-loans reduced but the losses increased, see Figure 6. The reason is probably larger negative difference between the funding rate and the lending rate (CIRR).
Table 4: Deficit on the 108-arrangement

<table>
<thead>
<tr>
<th>Year</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deficit on the statement of accounts</td>
<td>27</td>
<td>43,6</td>
<td>40,1</td>
<td>34,9</td>
<td>28,8</td>
<td>42,2</td>
</tr>
</tbody>
</table>

Source: NHD, 2007

The loss due to the 108-arrangement has increased from 2001 until 2006. In 2006 the deficit was 42.2 million NOK. Since the deficit is charged to the government budget two years later, the Norwegian government lost 42.2 million NOK in 2008 because of the 108-arrangement. In 2007 the statement of account showed a deficit of 152 million NOK. In addition to this amount there will be an interest rate of 7% per year.\(^{87}\) The deficit connected to the 108-arrangement in 2009 is therefore much more than 152 million NOK.\(^{88}\) The deficits the next years are expected to increase even more than this. The reason is that Norwegian exporters’ recently signed huge contracts which involve CIRR-loans.\(^{89}\) In addition to the actual deficits on the 108-arrangement there are costs involved in the financing of the deficits. According to Econ (2007) the financing costs increase the deficit on the statement of account with 20%.

To reduce the deficits connected to the 108-arrangement Eksportfinans’ margin on outstanding CIRR-loans has decreased.\(^{90}\) The Norwegian government has also decided that mobile offshore units shall not be included in the definition of ship. The Arrangement has better repayment terms for ship than other capital goods. This decision reduces therefore the deficit (NHD, 2007).

**Summary**

In Norway the government subsidizes Norwegian exports through the ownership of GIEK and the 108-arrangement (CIRR-loans with free options) managed by Eksportfinans. These credits have become important for Norwegian industry, mainly because of competition with other countries. Without the offers from GIEK and Eksportfinans, Norwegian exporters would be at a disadvantage compared to exporters abroad. This is the case whether the offer is used or not. Most countries offer some kind of officially supported export credits (Econ, 2008). But

---

\(^{87}\) The interest rate is charged from the end of the month in which an amount is credited or charged the statement of accounts.

\(^{88}\) Personal communication with T. Stugu, NHD, 2 April 2008.

\(^{89}\) Personal communication with H. Gabrielsen & T. Stugu, NHD, 14 March 2008.

\(^{90}\) See Table 1.
Norwegian CIRR-loans have longer option period (especially loans connected to export of ships) compared with other countries. If officially supported export credits are offered only to avoid disadvantages in competition with exporters abroad, this extra subsidy is not necessary.

The maritime, oil and gas sectors are the sectors, both domestically and abroad, that benefit the most from officially supported export credits offered by the Norwegian government. Norwegian “importers” are also the importers that benefit the most from the officially supported export credits which cost the Norwegian government much more than 152 million NOK last year. The officially supported export credits are in fact export subsidies, and thus up for debate as a trade policy issue.
3 Trade theory

The WTO “Agreement on Subsidies and Countervailing Measures” and OECD’s Arrangement restrict the use of export subsidies and officially supported export credits because they are assumed to do more harm than good. This chapter describes these effects theoretically, and hence explains why these restrictions from WTO and OECD exist.

The chapter has three parts. The first part explains trade theory considering export subsidies and perfect competition. How the export subsidy affects the welfare in a small versus a large economy is here analyzed. Effects on terms of trade are also explained. The second part explains the trade theory on export subsidies and imperfect competition. Two companies in two different countries are competing for export to a third market, but only one of the firms’ exports is subsidized. Both Bertrand and Cournot duopolies are analyzed. The third part illustrates a two-country model, where both governments are subsidizing their firms’ exports. The welfare effects are shown when price (Bertrand competition) and quantity (Cournot competition) are strategic variables. In the light of these theories the existence of international regulation on officially supported export credits are discussed. Chapter 4 discusses the question if officially supported export credits are a result of government failure.

3.1 Perfect competition

Under perfect competition there are many producers which supply homogenous goods. There is perfect information about all relevant circumstances and there exist no entry or exit costs. The single market player has no individual influence on the market price. The price is set externally and each firm chooses the quantity they want to buy and sell.

3.1.1 Small country

Feenstra (2004) presents a model with two goods, an exported good and another non-exported good. Prices of other goods in the economy are fixed. Figures 12 and 13 explain export subsidy in a small country, where $D$ is domestic demand, $S$ is domestic supply and the constant world price is $p^*$. The vertical axis is price ($p$) in both figures. The horizontal axis is domestic demand ($c$) and supply ($y$) in Figure 12, and exports ($x$) in Figure 13.
The domestic demand and supply are at respectively $c_0$ and $y_0$ under free trade, see Figure 12. The export, $x$, is the difference between these two: $x_0 = y_0 - c_0$ and is shown in Figure 13.
where $X$ is domestic export supply curve ($X = S - D$). In the same figure, $p^*$ is import demand from the rest of the world, which intersects $X$ at the equilibrium exports $x_0$.

If the firms in the Home industry are given a subsidy of $s$ dollars per exported unit, the Home industry would be able to earn $(p^* + s)$ on all quantities exported. Naturally they will be unwilling to sell their products at home for anything less than $(p^* + s)$. If they do not get the price $(p^* + s)$ at home, they will rather export the products. The export subsidy gives the producers in the Home country incentive to export. The producers will shift from domestic to export market. The export subsidy raises the price of the exported goods in the Home country.

With a higher domestic price the consumers are not willing to buy as much of the products as before, and domestic demand falls to $c_1$.\(^{91}\) The suppliers face higher prices: They want to produce more and domestic supply rises to $y_1$. With more supply and less demand, and with the same international price $p^*$, the exported amount rise from $x_0$ to $x_1$ ($x_1 = y_1 - c_1$). This corresponds to a rightward shift, by the amount of the subsidy, of the $X$ curve in Figure 13, from $X$ to $X^*$.

Figure 12 shows the welfare effect of the subsidy from the government. As mentioned before the subsidy causes a price increase in the domestic market. The consumers will thus suffer from the subsidy and experience a loss of consumer surplus equal to the area $(a + b)$. The Home producers will increase their producer surplus with the area $(a + b + c)$ due to the price rise. The government pays a subsidy cost of $(b + c + d)$.\(^{92}\) Figure 13 shows the deadweight loss of the subsidy, which is the area $(b + d)$. The traditional trade theory with perfect competition in a small economy shows that the country is worse off if export is subsidized.

### 3.1.2 Large country

If a large country is considered, there will still be a rightward shift of the $X$ curve as in the case of the small country (from $X$ to $X^*$). The difference is that the country now faces a downward-sloping demand curve $D^*$ from the rest of the world, see Figure 15. The reason is that this country is a large producer in the world market. This means that it has an influence

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\(^{91}\) If there is free import and the products are homogenous, it is reasonable to think that Home consumers are importing the good at price $p^*$, and not buying the good at home at price $(p^* + s)$. Domestic demand is in such cases zero.

\(^{92}\) Subsidy costs are shown as negative on the government’s budget. Due to this the area $(b+c+d)$ must be subtracted in this arithmetical problem: $-(a+b) + (a+b+c) - (b+c+d) = -(b+d)$.
on prices and quantities. The more the country exports, the less it can charge for the product. Figure 14 and Figure 15 show the welfare effects of an export subsidy when the country is large. The vertical axis is price (p) in both figures. The horizontal axis is domestic demand (c) and supply (y) in Figure 14, and exports (x) in Figure 15.

**Figure 14: Large country, domestic market**

![Diagram of domestic market](image)

Source: Feenstra, 2004

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93 The elasticity of demand is important when estimating the consequences of higher export. If the elasticity is high, the prices will not fall as much as the outside world absorbs the greater quantity of exports (Ray, 1998). But if the elasticity is low, there will be a large drop in prices.
As Figure 15 shows, export subsidies induce a rightward shift of the \( X \) curve, which leads to a fall in the price of exports, from \( p^* \) to \( p' \). This price fall causes a further loss: A decline in the terms of trade represented by area \( e \).\(^{94}\) The deadweight loss of the export subsidy is still the area \( (b + d) \), see Figure 15 (Feenstra, 2004). As in the case of the small country, the price in the exporting country rises from \( p^* \) to \( (p' + s) \), and the domestic demands falls to \( c_1 \).\(^{95}\) Because the price in the importing country falls from \( p^* \) to \( p' \), the increased price in the exporting country is less than the subsidy \( (s = (p' + s) - p') \). The consumer loss is still the area \( (a + b) \), the producer gain is still the area \( (a + b + c) \), and the government subsidy is the area \( (b + c + d + e) \). The total net welfare loss in the case of a large country is therefore \( (b + d + e) \). This is shown in Figure 14.

---

\(^{94}\) The terms of trade measures the ratio at which countries exchange goods (Krugman & Obstfeld, 2006). Terms of trade is the price of the exported good relative to the price of the imported good.

\(^{95}\) If there is free import and the products are homogenous, it is reasonable to think that Home consumers are importing the good at price \( p' \), and not buying the good at home at price \( (p'+s) \). Domestic demand is in such cases zero.
3.1.3 Terms of trade
The export subsidy creates a difference between the prices at which goods are traded on the world market and their prices within a country (Krugman & Obstfeld, 2006). This causes a change in the relative supply and demand. As a result the terms of trade in the subsidizing country and in the rest of the world change (ibid.).

As mentioned above, an export subsidy shifts the $X$ curve rightwards to $X^*$ in the case of perfect competition and large country (see Figure 15). This leads to a fall in the price of the large country’s export. The relative domestic price of the exported goods increases, and consumers now have a lower demand for the exported goods. Given that the Home country has a net export of these goods, the Home export subsidy worsens Home’s terms of trade and improves foreign countries terms of trade (ibid.). If a Home financial institution gives officially supported export credits to a good, which the Home country has a net import of, the Home country will benefit from it (Eaton “Credit Policy and International Competition” in Krugman, 1986). Officially supported export credits can change the country’s position from net importer to net exporter. This worsens Home’s terms of trade. The terms of trade analysis shows, as the perfect competition case, that officially supported export credits do not serve the national interest and do not make sense (ibid.).96

3.2 Imperfect competition
According to trade theory, export subsidies will not improve welfare under perfect competition. Producer surplus increases, but consumer surplus and net government revenue fall more. The overall welfare is reduced. But what about the cases when the competition is not perfect? Can these models explain why the government is subsidizing export? With imperfect competition the producers are more likely to have influence on the market price. Each firm faces residual demand and decides price or quantity produced. The economies are therefore per definition big enough to affect the market through their (export) policy which affects the behaviour of the firms (Norman, 1993).

96 A lower price on the large country’s export hits also the producers of the same good in the importing country. Their production decreases as a result of the export subsidy, and they will easily consider it a form of unfair competition – which is reasonable. Hence, the Foreign economy’s competing industry loses as a result of the subsidy.
The imperfect competition models assume two firms from two different countries, Home and Foreign. Both firms sell differentiated products to a third market. I first study the case where only the Home country firm receives an export subsidy. In the next section I extend the model and look at the case when both countries provide export subsidies. Subsidy is only in the national interest if the profits for the exporter rise by more than the amount of the subsidy itself (Feenstra, 2004). Both firms have full information, they meet each other only once and are not co-operating (Norman, 1983). Both Cournot and Bertrand duopolies are considered.

### 3.2.1 Bertrand Duopoly

Price is the strategic variable in a Bertrand Duopoly. Home profits are in the case of Bertrand Duopoly

$$\pi = (p + s) x (p, p^*) - C[x (p, p^*)]$$  \hspace{1cm} (1)

$x(p, p^*)$ is the export of the Home firm as a function of the prices paid by the buyers in Home and Foreign, respectively. Since $s$ is the subsidy given by the Home government to the Home firm, $(p + s)$ is the subsidized price received by the Home firm (Feenstra, 2004). Maximizing profits, (1), gives the first-order condition

$$\pi_p = x (p, p^*) + (p + s)x_p - C'(x)x_p = 0$$  \hspace{1cm} (2)

Solving expression (2), the reaction curve becomes $p = r (p^*, s)$. The reaction curve for the Foreign firm is solved in the same way and is denoted $p^* = r^* (p)$. Both reaction curves ($RR$ for Home and $R*R*$ for Foreign) are upward sloping. Without any subsidy the Bertrand equilibrium is point $B$. This is shown in Figure 16. The vertical axis is the domestic price ($p$) and the horizontal axis is the Foreign price ($p^*$), in both figures. The Home firm obtains

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97 Since the firms are operating in a third country, the social welfare effects do not influence the Home consumers (Feenstra, 2004). Because of this the export subsidies’ impact on Home consumers is not taken into account. Since officially supported export credits are also offered to some Norwegian buyers, this is likely to have an effect on Home consumers. Since the Norwegian buyers “only” represent 26% (balance 06.09.2007) of the outstanding guarantees to GIEK and ca 37% (balance 31.12.2007) of the outstanding CIRR-loans, which must be repaid to Eksportfinans, these consumer effects do not dominate the results in the models.

98 Reaction curves in Bertrand competition explain how the optimal price for one firm depends on the other firm’s price.

99 The reaction curves in Bertrand competition are upward sloping: If one firm increases its price, the optimal reaction from the other firm is to increase its price too.
higher profit ($\pi$) the further to the right the iso-profit curves go, whereas the Foreign firm obtains higher profit ($\pi^*$) the further upwards the curves go.\footnote{Iso-profit curves show combinations of factors which give the same profit for the enterprise.}

**Figure 16: Bertrand Duopoly**

An application of an export subsidy shifts the Home reaction curve from $RR$-curve to $R'R'$, see Figure 17. The reason is that the export subsidy unambiguously lowers the price charged by the Home firm for its exports given the Foreign price. The curves in Figure 17 are iso-welfare curves. In the new Bertrand equilibrium, $D$, the firms’ profits net of the subsidy are reduced. In other words, the Home firm can after all benefit from export subsidies in Bertrand competition.
If the costs of the subsidy are subtracted from the Home profit function, the welfare in Home is

\[ W = (p + s) x (p, p^*) - C[x (p, p^*)] - sx (p, p^*) = px (p, p^*) - C[x (p, p^*)] \]  

(3)

From Figure 17 it is shown that an export subsidy leads to a reduction in Home’s welfare. The reason is that the revenue cost of the subsidy is higher than any increase in Home’s profits (inclusive subsidy). Home’s profits measured without subsidy, which equals welfare, has declined as a result (ibid.). If the firms have price as their structural variable, the government should not use export subsidy as a political instrument. To increase a country’s welfare, an export tax should be used in Bertrand competition.\textsuperscript{101}

\textsuperscript{101} If welfare equalled consumer surplus export subsidies would still not improve the welfare in the Home country in Bertrand competition. The prices are only reduced in the importing country, not in the Home country that gives the subsidies. Therefore, consumer surplus would increase in the importing country only.
3.2.2 Cournot Duopoly
In a Cournot Duopoly quantity is the strategic variable. Denoting \( x \) and \( x^* \) the sales of the Home and the Foreign firm, respectively, and treating \( x \) and \( x^* \) as differentiated products, the Home firm earns the price \( p(x, x^*) \) and the Foreign firm earns \( p^*(x, x^*) \) (Feenstra, 2004).

If \( C(x) \) is denoted as the costs depending on the Home firm’s sales, profit from export are

\[
\pi = p(x, x^*) x - C(x) \tag{4}
\]

If maximizing \( x \) in (4), the first-order condition is

\[
\pi_x = p(x, x^*) + x p_x - C'(x) = 0 \tag{5}
\]

and the second-order condition is

\[
\pi_{xx} = 2 p_x + x p_{xx} - C'' < 0 \tag{6}
\]

Solving the latter, (6), for \( x \) as a function of \( x^* \), and \( x^* \) for \( x \), the two reaction curves are \( x = r(x^*) \) and \( x^* = r^*(x) \).\(^{102}\) They both have negative slopes: If one firm reduces its quantity, the other firm has incentive to increase its quantity. \( RR \) is the Home firm’s reaction curve, and \( R^*R^* \) is the Foreign firm’s reaction curve. This is shown in Figure 18. Point \( C \) in the figure is the Cournot equilibrium, which is a Nash equilibrium. Nash equilibrium entails in this context that none of the firms want to change its quantity as long as the other firm has not changed its quantity. The curves in the figure are iso-profit curves. The Home firm obtains higher profit (\( \pi \)) in the downwards direction. The Foreign firm obtains higher profit (\( \pi^* \)) in the leftwards direction. The vertical axis in Figures 18 and 19 is the sales of the Home firm (\( x \)), and the horizontal axis is the sales of the Foreign firm (\( x^* \)).

\(^{102}\) A reaction curve in Cournot competition explains how the optimal sale for one firm depends of the quantity sold by the other firm (Norman, 1993).
If the Home firm gets an export subsidy of \( s \), the price received by the Home firm is \( (p(x, x^*) + s) \). The new profit-function for the Home firm is

\[
\pi = [p(x, x^*) + s] x - C(x)
\]  
\[ (7) \]

The profit maximization first-order condition is

\[
\pi_x = p(x, x^*) + s + xp_x - C'(x) = 0
\]  
\[ (8) \]

The new reaction curve for the Home firm defines \( x = r(x^*, s) \). This shifts the \( RR \)-curve to the right, \( R' R' \): For any given export from the Foreign country \( (x^*) \), the Home country will export and sell more (Norman, 1993). An export subsidy increases the Home firm’s export. An export subsidy to the Home firm gives the Foreign firm incentive to act less aggressively. The Foreign firm reduces its export which gives the Home firm incentive to increase its export \( x \). This shows that a subsidy from the Home government can make the Foreign firm act less
aggressively in the market (ibid.). The equilibrium shifts down along the Foreign firm’s reaction curve, from $C$ to $D$ in Figure 19.

**Figure 19: Cournot Duopoly with an export subsidy**

When the Foreign firm’s production decreases, and Home export increases as a reaction, it increases Home firm’s profit. The impact on welfare is less obvious, however. Social welfare is defined as the profits earned by the Home firm in the third market minus the subsidy cost

$$W = [p(x, x*) + s]x - C(x) - sx = p(x, x*) - C(x)$$

The social welfare function $W$ is exactly the same as the first profit function without any subsidy. But the functions show different equilibrium quantities, $C$ and $D$, where $D$ represents the higher profit because of the lower iso-profit curve. This illustrates that an export subsidy can increase the social welfare in the case of Cournot Duopoly (Feenstra, 2004).

Can the Home firm manage to export and sell more on its own, without the export subsidy? No, because without the export subsidy the Home firm will not export more than it already
does. The Home firm is already at its optimum, Nash equilibrium, and it is not profitable to export more if nothing changes. Export subsidies change this, because the government has the advantage that it can change the conditions before the Home and the Foreign firm decide how much to export. Through the export policy the government can change the conditions for the market to the Home country’s benefit (Norman, 1993).

3.3 Two-country models

Since the models in section 3.2 only assume export subsidies to one country, these results may change when both governments are subsidizing their firms. A two-country model illustrates two firms from two different countries (Home and Foreign), where both firms receive export subsidies from their governments. Both firms are exporting to the same third country. Such situations are very realistic in the case of officially supported export credits.

This section has three parts. The first part explains the nation’s and the exporter’s welfare of an export subsidy in a two-country model when price is the strategic variable. The second part shows the nation’s and the exporter’s welfare of an export subsidy in a two-country model when quantity is the strategic variable. The third part explains why restrictions of officially supported export credits are necessary.

3.3.1 Two-country Bertrand model

As shown in section 3.2.1, the welfare effects of an export subsidy on a nation are negative when price is the strategic variable. If both countries are subsidizing their export, both reaction curves shift inwards in Figure 17. The result is lower welfare for both countries. Still, the exporter may benefit from the export subsidy.

That export subsidies lower the nations’ welfare also when two countries subsidizes their firms can be shown with an example. When two countries subsidize their firms and the exported goods are homogenous, all consumers want to buy from the country with the lowest price. If the exported goods are not homogenous, the demand for the goods depends on relative prices. The linear demand function $x_1 (p_1, p_2) = a - bp_1 + dp_2$ can here be used. The variable $a$

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103 The Home firm is denoted 1 in the expressions. The Foreign firm is denoted 2 in the expressions.
104 Expressions in section 3.3.1 are derived from the computer program Scientific Workplace. Too see how the expressions (10), (11), (12) and (13) exactly are derived, see Appendix.
measures the size of the market. The higher $a$, the higher the demand for the exported goods at the given price. The variable $b$ measures how changes in the price affect the quantity sold: If $p_1$ increases, $x_1$ decreases. The variable $d$ measures how changes in the competitor’s price change the quantity sold of $x_1$: If $p_2$ increases, $x_1$ increases too. It is assumed that $0 < d < b$.

**Firm**

The Home country’s welfare is the profit, which arise due to the subsidized export, minus the subsidy costs, $W = \pi - sx$. The firms achieve export subsidies depending on their amount exported, $x_is_i$ and $x_is_2$. If $c$ is marginal costs, their profit functions are respectively

$$\pi_1 = (p_1 + s_1)x_1 - cx_1 \text{ and } \pi_2 = (p_2 + s_2)x_2 - cx_2$$

If marginal costs are assumed to be zero\(^{105}\) their profits are receptively

$$\pi_1 = (p_1 + s_1)(a - bp_1 + dp_2) \text{ and } \pi_2 = (p_2 + s_2)(a - bp_2 + dp_1)$$

Nash equilibrium prices for Home and Foreign firm are expression 10 and 11, respectively

$$p_1 = \frac{2ba + da - dbs_2 - 2s_1b^2}{4b^2 - d^2} \quad (10)$$

$$p_2 = \frac{2ba + da - dbs_1 - 2s_2b^2}{4b^2 - d^2} \quad (11)$$

(10) shows that $p_1$ decreases if $s_1$ or $s_2$ increases.\(^{106}\) The same happens to $p_2$ in (11). Since Bertrand competition creates strategic complementary goods, the Home firm will reduce its price if the Foreign firm reduces price. As a result both firms reduce prices on exported goods if one government subsidizes its export.

\(^{105}\) That the marginal costs, $c$, are assumed to be zero is a simplification and should not change the main results.

\(^{106}\) Because of the assumption $0 < d < b$, the denominator is always negative.
When goods are exported to Nash equilibrium prices, quantity exported of Home and Foreign are respectively

\[ x_1 = \frac{2b^2a + dab - db^2s_2 + 2b^3s_1 - d^2bs_1}{4b^2 - d^2} \]  

(12)

\[ x_2 = \frac{2b^2a + dab - db^2s_1 + 2b^3s_2 - d^2bs_2}{4b^2 - d^2} \]  

(13)

(12) shows that Home export increases when the Home government subsidizes its firm’s export. The Home firm can now charge a lower price than before and therefore export more. But the export declines when the Foreign firm is subsidized too. Because of the export subsidy, the Foreign firm lowers its prices and sells more. Home reacts by lowering its prices too. The production for the Home firm decreases, even though \( p_1 \) decreases.

**Government**

Since the profit to the Home firm is \( \pi_1 = (p_1 + s_1)x_1 \), the Home government’s welfare function is \( W = (p_1 + s_1)x_1 - s_1. \) This is the same as \( W = p_1(a - bp_1 + dp_2) \). If welfare is maximized over \( s_1 \) the solution is

\[
\frac{b - 4s_1b^2(2b^2 - d^2) - d^3(a - bs_2) - 2bad^2}{(d + 2b)^2(d - 2b)^2} = 0
\]  

(14)

If (14) is solved for \( s_1 \) the solution (the Home government’s reaction function) is

\[
s_1 = \frac{1}{4b^2}d^2 \frac{ds_2b - ad - 2ba}{-d^2 + 2b^2}
\]  

(15)

Assumed that every variable is equal for the Foreign government, the Foreign government’s reaction function is

\[
s_2 = \frac{1}{4b^2}d^2 \frac{ds_1b - ad - 2ba}{-d^2 + 2b^2}
\]  

(16)
The reaction functions (15) and (16) show that the governments’ subsidies depend on the market size \(a\), how changes in price affect the quantity sold \(b\), how changes in the competitor’s price change the quantity sold \(d\) and the other country’s subsidy \(s_1/s_2\) – \(s_1\) is an increasing function of \(s_2\), and \(s_2\) is an increasing function of \(s_1\). The curves are as shown in Figure 20. The vertical axis shows the Home government’s offer of export subsidies. The horizontal axis shows the Foreign government’s offer of export subsidies. RR is the Home government’s reactions function, \(R^*\) is the Foreign government’s reaction function.

**Figure 20: Bertrand, governments’ subsidies**

Figure 20 shows that the governments’ reaction functions intersect where both \(s_1\) and \(s_2\) are negative. If the Home government offers extra export subsidies to its export firm there is a movement along the RR-curve rightwards. The Home country’s welfare reduces.
If the Home government’s and Foreign government’s reaction functions are solved, the Nash subsidy is found to be exactly

\[ s^* = -a \frac{d^2}{(4b^2 - 2bd - d^2)b} \]  

Expression (17) shows that it is never optimal for the governments (the nations’ welfare) to offer their firms export subsidies when price is the strategic variable. An export tax is optimal for both countries.

That it is never welfare improving for a country to offer export subsidies to its firm in Bertrand competition, even if other countries do, can also be shown through expression (14). To keep expression (14) equal zero, the Foreign government must give subsidies to its firm measured

\[ s_2 = -1 - 8s_1b^4 + 4s_1b^2d^2 - ad^3 - 2bad^2 \]  

If Home welfare should increase in subsidies offered by the Home government, (18) must be positive. The reason is that (14), which shows how subsidies affect welfare, is positive when (18) is positive. However, when (18) is positive, (12), the export from the Home firm, becomes negative, see expression (19) and its simplification (20)

\[ x_i = b \left( \frac{2ba + ad + 2s_1b^2 - d(-1 - 8s_1b^4 + 4s_1b^2d^2 - ad^3 - 2bad^2) + bad^2}{4b^2 - d^2} \right) - b - d^2s_1 \]  

\[ (-2b^2 + d^2)b - d^2 < 0 \]
Expressions (19) and (20) show that as long as the Home firm is producing, it will never be welfare improving for the Home government to give export subsidies to the producer, no matter what the government in the other country does. Hence, subsidizing the export when price is the strategic variable means in both Bertrand models decreased welfare for the nation.

Even if export subsidies reduce the nation’s welfare when price is the strategic variable, the export subsidies may still increase a firm’s profit. Section 4.2 shows that it is likely that some of the prices of exported goods are results of Bertrand competition. Since no rational exporter would accept an export subsidy if the subsidy reduced the exporter’s profit, there must be benefits for the exporters connected to export subsidies in Bertrand models.

The benefits connected to export subsidies in Bertrand models can be shown through an example based on the two-country Bertrand model. The variable $a$ is 10, $d$ is 2, $b$ is 3 and $s_1$ and $s_2$ is 2. These numbers give us Table 5.

<table>
<thead>
<tr>
<th>Table 5: Home firm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home firm</td>
</tr>
<tr>
<td>Without subsidy</td>
</tr>
<tr>
<td>Home subsidy only</td>
</tr>
<tr>
<td>Foreign subsidy only</td>
</tr>
<tr>
<td>Home and Foreign subsidy</td>
</tr>
</tbody>
</table>

Table 5 shows that the exporter increases his profit when the Home government subsidizes his export. The highest profit is reached when only the Home government gives export subsidies to the Home producer. Even if both firms are subsidized the Home firm’s profit increases compared to no subsidizing. Table 5 shows also that even though the Foreign firm is subsidized only, the Home firm’s reduces the price compared to when no firm is subsidized. In addition, even though the Home firm now decreases its price for the exported goods, the Home firm exports less than before and achieves the lowest possible profit in this example.

However, the export subsidies positive effect on the Home exporters is not shown in the Home nation’s welfare, see Table 6.
Table 6: Home country

<table>
<thead>
<tr>
<th>Home (country)</th>
<th>Welfare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without subsidy</td>
<td>18.75</td>
</tr>
<tr>
<td>Home subsidy only</td>
<td>13.871</td>
</tr>
<tr>
<td>Foreign subsidy only</td>
<td>13.54</td>
</tr>
<tr>
<td>Home and Foreign subsidy</td>
<td>9</td>
</tr>
</tbody>
</table>

Table 6 shows that the Home country’s welfare reduces when export subsidies are provided to the exporter. The Home nation would be better off without any offer of export subsidies in Bertrand competition. Assumed that the nation’s welfare is in focus, export subsidies must not be provided when price is the strategic variable. This is the result even if other countries provide export subsidies to exporters within these sectors.

3.3.2 Two-country Cournot model

As shown in section 3.2.2, the welfare of an export subsidy is positive for the country that subsidizes export under Cournot competition. If both countries are subsidizing their export, both reaction curves shift outwards in Figure 19.\textsuperscript{107} The result is higher welfare for both nations. This can be shown in a two-country Cournot model where the demand for the export product is \( P(X) = a - bX \) in the third country. The variable \( a \) measure the size of the market and the variable \( b \) is the price elasticity.\textsuperscript{108} \( X \) is defined as the export from the Home firm and the Foreign firm, \( X = x + x* \). The marginal costs, \( c \), are the same in both firms. It is assumed that \( a > b \) and \( a > c \).

\textit{Firm}

The profit functions for the Home and Foreign firms are respectively

\[
\pi = [a - b(x + x*)]x + sx - cx \quad \text{and} \quad \pi^* = [a - b(x + x*)]x^* + s^* x^* - cx^*
\]

\textsuperscript{107} The exported goods are differentiated.

\textsuperscript{108} Price elasticity > 1: A price increase of 1% decreases the demand for this product with more than 1%.

Price elasticity = 1: A price increase of 1% decreases the demand for this product with 1%.

Price elasticity < 1: A price increase of 1% decreases the demand for this product with less than 1%.
The firm maximize the profit in a standard Cournot game and takes the subsidy from their governments, \( s \) and \( s^* \), as fixed. The reaction function for the Home firm is

\[
x = \frac{a - bx^* + s - c}{2b}
\]  \hspace{1cm} (21)

The reaction function for the Foreign firm is

\[
x^* = \frac{a - bx + s^* - c}{2b}
\]  \hspace{1cm} (22)

Expressions (21) and (22) show that one firm’s export depends on the other firm’s export. When \( x \) increases \( x^* \) decreases, and when \( x^* \) increases \( x \) decreases. The export depends also on the subsidies given by the governments. The export from the Home firm increases when the Home government increases the Home firm’s subsidy. Similarly for the other country. If both firms receive higher export subsidies than before, the export volume increases for both compared to the export with no subsidies. How much a firm exports, depends also on the size of the market, the price elasticity and the marginal costs. If the size of the market increases, both firms export more than before. If the demand for the exported goods are inelastic (\( b<1 \)), each firm increases their export. With less costs, the firms export more than with higher marginal costs.

The optimal export volume (Nash Cournot solution) is for the Home and the Foreign firm respectively

\[
x^c = \frac{a - s^* - c + 2s}{3b} \quad \text{and} \quad x^{*c} = \frac{a - s - c + 2s^*}{3b}
\]

The optimal export volume depends on the other government’s subsidy level, but also on its own. In addition, the optimal export volume depends on the size of the market, the marginal costs and the price elasticity. If the marginal costs or the subsidy to the competitor increase, the export decreases. If the market size or its own subsidy increases, the firm will respond with increased export volume. If the price elasticity increases, the export volume decreases.
**Government**

The governments’ welfare depends on the profit earned by the national firm minus its subsidy costs. The welfare functions for the Home and Foreign firms are defined as respectively

\[ W = \pi - sx \] and \[ W^* = \pi - s^* x^* \]

These give the following reaction functions for the Home government and the Foreign government

\[ s = \frac{a - s^* - c}{4} \] and \[ s^* = \frac{a - s - c}{4} \]

The governments’ reaction curves show that the subsidies depend on the other government’s subsidy. The reaction functions are shown in Figure 21. The vertical axis shows the Foreign government’s offer of export subsidies. The horizontal axis shows the Home government’s offer of export subsidies. RR is the Home government’s reaction curve and R*R* is the Foreign government’s reaction curve. The Nash Cournot subsidy (where RR and R*R* intersect) depends on the size of the market and the marginal cost, but not on the price elasticity

\[ s^c = \frac{a - c}{5} \]

---

109 The size of the subsidies depends also on the size of the market \((a)\) and the marginal costs \((c)\). If the market size increases, the subsidy to each firm will increase. If the marginal costs decreases, the subsidy to each firm increases too.
Figure 21: Cournot, governments’ subsidies

Figure 21 shows that an increase in the export subsidy from the Home government to the Home firm gives a movement downwards along the RR-curve. The nation’s welfare increases. The reason to this welfare increase is that the Nash Cournot equilibrium gives lower volume exported than if the competition was free. An export subsidy increases the export volume - the result is closer to a free competition result.\(^{110}\)

### 3.3.3 International agreements

As shown, the Bertrand Nash equilibriums in section 3.2.1 and 3.3.1 do not give the optimal welfare for a country. Even though export subsidies in a Cournot game increase the welfare in both countries, Spencer & Brander (1983, 1985, referred in Durlauf & Blume 2008) argues that the welfare can increase even more with regulations of officially supported export credits. The Cournot Nash equilibrium, which is a result of the game between the governments, gives not the optimal welfare. There exist an area in the figure which can be reached through negotiations and increase both countries welfare - the welfare can be improved for both

---

\(^{110}\) Policy pushes prices toward their competitive levels.
countries through an agreement. International agreements through OECD and WTO are here a solution.

That reduction of officially supported export credits can improve the countries’ welfare can be shown with a two-country Cournot model example. If $a$ is assumed to be 10, $b$ is 2 and $c$ is 5 we get the results shown in Table 7.

<table>
<thead>
<tr>
<th></th>
<th>Export Home firm</th>
<th>Export Foreign firm</th>
<th>Profit Home firm</th>
<th>Profit Foreign Firm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without subsidy</td>
<td>0.83</td>
<td>0.83</td>
<td>1.39</td>
<td>1.39</td>
</tr>
<tr>
<td>Home subsidy only</td>
<td>1.17</td>
<td>0.67</td>
<td>2.72</td>
<td>0.89</td>
</tr>
<tr>
<td>Home and Foreign subsidy</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

The table shows that exported quantities without subsidies are 0.83 for both Home and Foreign country. The firms’ profit is 1.39. If only the Home firm receives an export subsidy from its government, the Home firm’s export increases to 1.17. In this case, the best result for the Foreign firm is achieved by reducing its export. The Foreign firm’s export quantity is now 0.67. The Home firm’s profit increases to 2.72, while the Foreign firm’s profit reduces to 0.89. If both firms receive export subsidies from their governments, the quantity exported is 1 from each firm. Each firm will increase their profit compared to not being subsidized. They profit is now 2 compared to 1.39 without any subsidies. But this profit is still lower than 2.72, which is the profit received when only one firm is subsidized.

As seen earlier officially supported export credits are always welcomed by the firm receiving them. Subsidies increase the firm’s export and profit compared to not being subsidized at all. But the nations’ welfare does not have the same positive effects from the export subsidy, see Table 8.

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111 However, the area includes not zero subsidies. For further information, see Bagwell & Staiger (1999; Grossman and Helpman 1995, referred in Feenstra 2004).

112 The two-country Cournot model is described in section 3.3.2. The subsidies ($s_1$ and $s_2$) used in this example are calculated from the Cournot Nash subsidy ($s^*$).

113 The amounts listed are the Home and Foreign countries welfare. The first amount in each space belongs to the Home country.
Table 8: Prisoner’s Dilemma

<table>
<thead>
<tr>
<th>Home/Foreign</th>
<th>Subsidy</th>
<th>No subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsidy</td>
<td>1, 1</td>
<td>1,55, 0,89</td>
</tr>
<tr>
<td>No subsidy</td>
<td>0,89, 1,55</td>
<td>1,39, 1,39</td>
</tr>
</tbody>
</table>

Table 8 shows that without any subsidies the nations’ welfare is 1,39 each. This is the highest collective welfare achieved. If the Home firm receives subsidies only, the Home nation’s welfare increases to 1,55. The Foreign welfare decreases to 0,89. If both firms are subsidized the welfare is only 1. The nations’ welfare has decreased compared to the welfare achieved when none of the firms are subsidized. But yet, the nations’ welfare is higher than if one country is not subsidizing while the other is.

When two export firms, both with the possibility to receive export subsidies from their governments, compete in a third country, a Prisoner’s Dilemma arises. In this Prisoner’s Dilemma both nations’ welfare is made worse off than if the countries could agree to reduce export subsidies. Table 8 shows that the most profitable strategy from the governments is to subsidize their firms’ export. If a government refuses to react this way, the nation’s welfare decreases more than necessary. But if neither government subsidized their export firms, the welfare would be the collective highest. This welfare is also higher than the welfare achieved assumed that the other government subsidizes its firm only. This result will unfortunately never be achieved. Coordination between countries’ trade policies is difficult, and both countries have an incentive to capture profit and welfare effects. The dominant strategy is to subsidize its firm’s export, regardless of whether the rivals subsidize their export or not.

The results in Table 8 can also be shown in a figure. Figure 22 shows that Home has incentive to subsidize its export – subsidies increase the country’s welfare. But because both countries have subsidizing as dominant strategy Home and Foreign end up in a Prisoner’s Dilemma – the collective welfare would have been higher with no subsidies from both countries.

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114 The variables: \( a = 20, b = 0,5, c = 4 \) and \( s_1 = s_2 = 1 \).
Hence, when governments consider export subsidies an effective instrument, and they have the possibility to subsidize their firms’ export, they do. The result is lower collective welfare for the countries than if none of the governments subsidized their exports. Given these results, international agreements, which regulate the use of officially supported export credits, facilitate coordination to increase their welfare. International agreements can improve the welfare results of Cournot- and Bertrand Nash equilibriums. This explains why there are international agreements regulating the use of officially supported export credits. But still, the highest collective welfare can only be achieved through prohibition of officially supported export credits. Since higher profit and increased welfare are the results if non-subsidizing agreements are broken, and since violations seldom are sanctioned, both countries have incentive to break international agreements.

Summary
Export subsidies can divert resources away from the most efficient use and can therefore be significantly distorting. In perfect competition, both small and large countries, an export subsidy leads to costs that exceed the benefits in perfect competition. Countries would not use export subsidies in such cases, because they would simply benefit Foreign consumers. An export subsidy can also change the country’s position from net importer to net exporter of a good. Export subsidies worsen then the terms of trade in the Home country.
In Bertrand competition, when only one country subsidizes its exporting producer, the nation’s welfare decreases. An export subsidy can still increase the exporter’s profit. The negative effect on the nation’s welfare is also maintained when two countries subsidize their exporting firms. If higher national welfare is a goal from the government, export subsidies to producers who have price as a strategic variable, should not be offered even if other governments do. In Bertrand competition, export subsidies will not increase welfare. A tax on export goods, however, will. However, the exporters benefit from export subsidies in both Bertrand models.

In both Cournot models exporters benefit from export subsidies. Also the nation’s welfare increases when export subsidies are provided. Still, the two-country Cournot model shows that welfare actually reduces if both exporting firms competing in a third country receives export subsidies compared to no subsidies. The collective welfare would in fact be the highest without these export subsidies. And mind, this use of export subsidies is the dominant strategy. Since no national government is likely to forbid this system alone, international agreements through OECD and WTO must control the use of these. These agreements increase the countries’ welfare and are definitely necessary.
4 Do subsidized export credits improve the Norwegian welfare?

As seen, trade theory shows that export subsidies under most circumstances are not welfare improving. But officially supported export credits are still offered. According to Eaton (“Credit Policy and International Competition” in Krugman, 1986), it seems like export subsidies as a political tool usually has more to do with the peculiarities of trade politics than with economic logic. Since officially supported export credits are not prohibited, even though a prohibition collectively would be better for the nations, it is very interesting to analyse if the system is a government failure. It is also an interesting question why this legal system mainly benefits the dominating exporters’ within the maritime, oil and gas sectors in Norway, and firms that are already well established internationally.¹¹⁵ Is it likely that the system increases the general Norwegian welfare or only the exporters’ profit? Is the maintaining of this system a result of rent-seeking on behalf of these specific industries in Norway?

This chapter has two parts. The first part explains government failure and sources of government failure. Whether officially supported export credits are a result of government failure is discussed. The second part analyzes if the exporters within the maritime, oil and gas sectors are the only Norwegians benefiting from the subsidized export credits system offered by the Norwegian government, or if the system improves the general Norwegian welfare. In other words, this part analyzes if the offer of officially supported export credits is a failure of the Norwegian government.

4.1 The government failure

“After years of reading and writing about optimal policies, we could not help but wonder why observed trade policies are so different from the prescriptions of the normative literature” (Grossman & Helpman, 2001, p. viii). One possible explanation is governmental failure. According to Besley (2006) government failures refer to problems that arise when the state monopolizes the legitimate use of force. Besley describes three notions of government failure. The first one is connected to Pareto optimality. This says that a government fails when

¹¹⁵ It is very likely that the maritime, oil and gas sectors also are the sectors connected to officially supported export credits in the nearest future.
policies result in a society being inside its Pareto frontier. Inside a Pareto frontier it should be possible to choose a different set of policies which make every citizen better off.

The second notion of government failure is the distributional failures. Distributional failures arise for example when public projects are heavily subsidized, or when farmers in rich countries or particular regions receive transfers of public goods. These subsidies and transfers must be efficient, but if they are not maximized at a social welfare function they are defined as a distributional failure. Notion one and two are shown in Figure 23. According to these all points within the utility frontier are a government failure. If point A in Figure 23 was attained through choice of government policy, it would be the full optimum. Even if point B is Pareto efficient, it would still be a government failure based on distributional preferences. This is the case even though the political choice is Pareto efficient.

Figure 23: Pareto inefficiency and distributional failures

![Figure 23: Pareto inefficiency and distributional failures](source: Besley, 2006)

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116 A Pareto frontier is the set of choices that are Pareto efficient (Pareto efficiency, 2008). An individual can here not be made better off without another one being made worse off.

117 If these are Pareto inefficiency, they are defined as government failure as in notion one (Besley, 2006).
The third notion of government failure is the Wicksellian failures. Government failure is in this case policy outcomes and political decisions which lead to an outcome that is not Pareto dominating what would be achieved without the government. Wicksell’s idea is that any public expenditure intended for an activity should be useful to the whole society after first having been recognized by all classes without exception (Wicksell, 1896, referred in Besley, 2006, p. 52). This could be illustrated in Figure 24.

**Figure 24: Wicksellian failures and Pareto inefficiency**

![Figure 24: Wicksellian failures and Pareto inefficiency](source: Besley, 2006)

The figure assumes that with no government, the economy would operate at point A. This is not Pareto efficient, because it is inside the utility frontier. If a government exist and its decisions lead to outcome at point B, it is on the utility frontier. But this is not a Pareto improvement over point A. According to Wicksell this is therefore a government failure. An example of Pareto improvement is shown with point C. If point C was the outcome of the government decision, this would not be a government failure.

### 4.1.1 Sources of government failure

There are different sources of government failure. Besley (2006) argues that government failure may arise because of policy ignorance, *corruption* and *rent-seeking/lobbying*. Gehlbach (2006) describes in an incomplete contracts perspective that *taxability* of certain
sectors induces governments to favour them in welfare-hampering ways. According to the definitions of government failure these are all examples of possible causes of government failure.

- **Corruption**: To give or accept bribery to influence a policy outcome. Corruption is a threat to democracy, juridical system, human rights and social justice. Corruption can also hamper economic growth and distort competition (Justis- og politidepartementet).

- **Rent-seeking**: A situation where an individual, organization or a firm tries to influence the economical or/and the juridical environment in the purpose to earn money through non-trade and non-production (Rent-seeking, 2008).

- **Lobbying**: Meetings between representatives of for example interest group and policymaker. The representatives try to persuade the policymaker to change their policy to the representative’s preferred position (Grossman & Helpman, 2001),

- **Taxability**: The government may favour firms which are expected to obtain large income, because they are more taxable.

**Ignorance**

Too little information/data about a subject, or too little knowledge about economic and social consequences of a policy decision, can result in policy ignorance. If costs, benefits or citizens’ value of a project are ignored, policy mistakes can easily be made. Possible results are Pareto inefficient, Pareto non-improvement and social decisions that fail specific welfare criteria. These are characterized as government failures. Ignorance may cause too much or too little government intervention (Besley, 2006).

**Corruption**

Corruption can change a government outcome and result in government failures. As long as the officially institutions want to improve welfare through their decisions, corruption reduces welfare. Interest groups may try to obtain policy benefits through bribery or lobbyism.

**Rent-seeking and lobbying**

Citizens can influence the government’s decisions through rent-seeking and lobbying. Rent-seeking and lobbying can therefore be reasons for government failures. Lobbying has often effect, even if it is hard to measure this effect. The fact that also small groups get the policy

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118 Officially institutions normally have welfare improvement as a goal.
makers’ attention means that lobbying is an important way to influence the political decisions. Lobbying is part of our democratic system.

**Taxability**

According to Gehlbach (2006), firms, that are presumably more taxable, can get advantages from their governments. Political decisions may therefore be influenced by the ex post taxability of economic activity. The government failure occurs when the final taxes are lower than what was expected when favourable terms were introduced.

### 4.1.2 Subsidized export credits - a government failure?

In the case of Cournot competition, governments offer officially supported export credits to keep up with the conditions given to their export competitors and because these subsidies increase the nations’ welfare. However, export subsidies must theoretically never be offered when price is the strategic variable, Bertrand competition. Why export subsidies are offered to these exporters seems therefore to be a political question.119

Because of possible competitor disadvantages caused by not providing officially supported export credits, it is likely that members of OECD will maintain this export promoting system for a long time (Econ, 2008).120 Since no country solely is going to forbid this system, an improvement of this possible government failure considering the existence of officially supported export credits requires involvement by international organizations like OECD and WTO. OECD and WTO have attempted to influence the system and regulate subsidies to some degree already. Hence, the fact that the subsidized export credit system still exists may reflect that OECD and WTO represent governments which have no intentions of prohibiting these subsidies.

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119 Some may argue that export subsidies provided to sectors having price as strategic variable can be a part of the regional policy. Without these subsidies regional exporters would go bankrupt. Lobbying from for example these regional exporters may therefore have results. Economically seen this is still not the most efficient use of government resources. First, keeping non-efficient firms alive through export subsidy is not good for the economy. In addition, if these firms are Bertrand competitors they also worsen the nation’s welfare. Second, countries, for example Norway, may have a big need for labour.

120 The growths of new, strong export nations, which are offering their industries offensive export instruments, contribute to this.
Trade theory

According to the Bertrand models shown in chapter 3, the subsidized export credits system is a government failure. Officially supported export credits worsen the nation’s welfare. Economically seen it can not be explained why these export subsidies are provided when price is the strategic variable. The government resources are in such cases not allocated in the social welfare optimum, and contribute to unnecessary welfare reductions. This government failure may occur in the form of all three notions of government failure presented in section 4.1, namely Pareto inefficiency, distributional failures and Wicksellian failures.

Based on the Cournot models shown in chapter 3, the subsidized export credit system can not be stated to be a government failure. This is the case even if it is shown that prohibition leads to higher collective welfare for the nations than if both countries offer these subsidies. From an individual country’s point of view, officially supported export credits increases the nation’s welfare, no matter if the other government subsidizes its firm or not. This gives incentive to provide officially supported export credits, even if the result is likely to be a Prisoner’s Dilemma. Higher national welfare is achieved through mutual non-subsidizing. In addition, an individual country can not force other countries to change their policy. If an individual country could force other countries to change their policy, the offer of officially supported export credits would be a government failure.

As seen, from an individual country’s point of view, governments should not provide officially supported export credits to Bertrand competitors. These subsidies should be provided to Cournot competitors only. It can be very hard to decide if the competition form is Bertrand or Cournot. Because other countries provide officially supported export credits, and both competition forms exist in each country, governments can be forced, for example through lobbying, to provide these export subsidies even though most of them reduce the nation’s welfare.

Due to this, there exists a government failure if officially supported export credits all in all are reducing the nation’s welfare. This is the case when Bertrand competitors are offered most of the subsidies. If Cournot competitors receive most of the officially supported export credits, the nation’s welfare increases. There exists in such cases no government failure. However, the nation’s welfare is higher with zero subsidized export credits in Bertrand competition, and the collective welfare is higher without subsidies also in Cournot competition. To increase the
collective welfare this subsidized export credits system must be prohibited.\textsuperscript{121} Due to this a “global government failure” exists.\textsuperscript{122} Since no international agreements can force every government to forbid this system, a total improvement of this “global government failure” is unrealistic. This “global government failure” is therefore not discussed any further in this master’s thesis.

\textit{The framing of the system}

From the rationale for giving officially supported export credits it follows logically that the system is designed to benefit certain industries more than others. Officially supported export credits should be medium to long-term and last no longer than the goods are financed. Then it follows that the goods being financed are capital goods and other durables. Since most of these industries are large-scale-capital-intensive it follows that the subsidized export credits system is likely to benefit these industries the most.\textsuperscript{123} It is also logically that the dominating exporters within these sectors benefit the most from the officially supported export credits, because they are signing the most export contracts. This advantage which unfair benefits certain industries and their dominating exporters most represents a failure.

The most attractive Norwegian sectors for officially supported financing and guarantees over the last years have been the maritime, oil and gas sectors. These sectors, and the dominating exporters within these sectors, are therefore likely to benefit the most from this subsidized export credit system. These are likely to benefit most because of the high demand for these sectors’ exported goods, but also because of the framing of the system. According to GIEK and Eksportfinans it is not a “deliberate action” to offer officially supported export credits to these specific sectors.\textsuperscript{124} As long as the requirements, debtor and risk are approved, the offer of officially supported export credits is a fact, no matter export sectors/exporters connected to

\textsuperscript{121} Assumed that the world’s welfare is important, trade theory shows that governments should influence OECD and WTO to introduce even stricter regulations (read: prohibition) on officially supported export credits, not persuade these international bodies to maintain the system. However, all countries are not members of the OECD Agreement and the WTO. If OECD and WTO prohibit officially supported export credits, other countries will have advantages in the competition. A prohibition for the OECD and WTO members only are therefore not likely.

\textsuperscript{122} A “global government failure” represents a failure which all governments are responsible for. If all governments co-operated about increasing the collective welfare a prohibition of officially supported export credits was realistic.

\textsuperscript{123} The attractiveness of officially supported export credits depends on cyclical (strong economic expansion or decline in economic activity), the risk associated with export, the commercial- and the CIRR, and importer’s demand for export credits. The sectors benefiting from the system differ therefore from country to country.

\textsuperscript{124} Personal communication with E. Stang, GIEK, 2 June 2008 and J. Djupvik, Eksportfinans, 9 June 2008.

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the contract.\footnote{Because of this it can be said that the applicants of officially supported export credits decide which sectors in the exporting country are benefiting the most from these officially supported export credits.} The focus is on export of Norwegian goods and services, not on the sectors exporting (ibid.).

Since there is no deliberated actions from GIEK and Eksportfinans to benefit the Norwegian maritime, oil and gas sector the most, it must be the framing of the system that favour these large-scale-capital-intensive export sectors and their dominating exporters the most. Because large export sectors, and these sectors’ dominating exporters, probably have become large because of their competitiveness, it is likely that these could have signed contracts also without this extra advantage even if other countries subsidize their industries. In an economic welfare perspective, it can therefore be very difficult to defend this use of government resources. Still, even if there exist an unfair advantage to the maritime, oil and gas in Norway, it is according to trade theory not necessary a government failure to favour these industries. As mentioned, the government failure is stated when the competition form is Bertrand only.

\textit{Sources of government failure}

As mentioned, Besley (2006) explains different sources of government failure. Because of lacking evidence, it can not clearly be confirmed if these sources (ignorance, corruption, rent-seeking and lobbying) and/or Gehlbach’s taxability are reasons for the (possible) existence of this government failure. Since corruption is prohibited, the most reasonable source(s) to government failure in the case of officially supported export credits turn out to be lobbying and/or ignorance.\footnote{Assumed that the governments have welfare improvement for their countries as a goal, which should be and normally is the case, corruption should not be involved. In addition, because of decreased national welfare, it is not very likely that firms which are expected to obtain large income and therefore are more taxable is a reasonable source to this possible government failure. Officially supported export credits should then rather be offered to Cournot firms which are expected to obtain large income. An extra welfare effect is then achieved.} In general it can be said that as long as there are advantages with a system, it is likely that someone lobbies for the maintenance of it. If this is the reason for maintaining this export credit system is unknown.\footnote{Lobbyists can also have the intention to improve the regulations to their benefit, not only to maintain a system. In Norway Eksportfinans, GIEK and NHD are most likely to be affected by people/groups lobbying considering officially supported export credits. Eksportfinans does not have a limit when offering officially supported export credits, but GIEK can only guarantee export contracts worth totally 50 billion NOK. This limit has several times been increased. This could be because of lobbying and pressure from the Norwegian exporters benefiting from the system or their interest groups.}
Responsibility

Since theory shows that the subsidized export credit system is a government failure if export subsidies are offered to Bertrand competitors, the system may represent a government failure in some countries but not in others. The government in each country is responsible for this (possible) failure because they have the power to forbid this system in their countries. The government failure is likely to come from ignorance of the theoretical welfare effects shown in chapter 3 and/or lobbying. The lobbying comes most likely from the government’s export subsidized industries. As mentioned, these industries benefit from the officially supported export credits whether or not the nation’s welfare increases.

Since the members of the OECD and WTO are governments, it can be argued that these international bodies are also to some degree responsible for the (possible) failures from their members. Because the organizations have to agree on a system, and members may hamper possible enactments, the organizations do not have much power to enforce rules, however.

4.2 A failure of the Norwegian government?

As seen in section 2.2 the ship building industry and the oil and gas sector, and especially their dominating exporters, benefit the most from the Norwegian offer of officially supported export credit. 24% of GIEK’s outstanding guarantee liabilities went in 2007 to the maritime sector, in which ships are the main exported goods. 49% were connected to the oil and gas sector, which includes equipment and ships to the oil and gas sector. At the same time, 51% of the outstanding CIRR-loans, offered by Eksporfinsans, were connected to the Norwegian export of ships, 6% were connected to the export of ship equipment and 33% were connected to the export of goods within the oil and gas sector. Within these sectors different products are officially supported, for example supply ships, drilling vessels, offshore vessels, chemical tankers, boats, ferries and passenger ships. Different equipment to the oil, gas and maritime sectors, for example ship and drilling equipment, services and technology, are also officially supported to a high degree.

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128 Examples of ships connected to the oil and gas sector are supply ships, drilling vessels and offshore vessels.
129 In addition Norwegian officially supported export credits have also been used when exporting fish farming and fish processing equipment, transformers, generators, fish farming and environment technology.
Bertrand or Cournot competition?

In Norway there are many exporters within the shipbuilding industry and the oil and gas sector, but the competition is not perfect. The market players have most likely influence on the market price, and there is therefore imperfect competition. In imperfect competition, the price of a product can be a result of Bertrand or Cournot competition. If the firm sets the price, the market decides the demand for the product.\textsuperscript{130} If the firm decides the quantity the demand for the given quantity on the market determines the price.\textsuperscript{131} If the firm can not serve the whole market alone to a low price, there exist capacity limitations. With some assumptions, capacity limitations followed by price competition have the same results as in Cournot competition.\textsuperscript{132} The products exported are differentiated.

As mentioned, if the officially supported export credits offered by GIEK and Eksportfinans is a government failure and benefit only the Norwegian exporters, or if the subsidies are not a government failure and benefit the whole Norwegian nation depends on the strategic variable used in the competition. As seen, it is never to the benefit for domestic welfare to offer officially supported export credits in Bertrand competition.\textsuperscript{133} Only the exporters benefit from officially supported export credits in such cases. In a welfare perspective the subsidies are less damaging in Cournot competition. Officially supported export credits offered to Cournot competitors increases the welfare compared to not having this system: The exporter will always benefit from the subsidy and the Norwegian economy will also benefit from officially supported export credits.

If price or quantity is the strategic variable can be hard to decide. If price is the strategic variable, prices in the market are close to marginal costs, marginal costs are constant, the capacity is large and it does not cost much to expand the capacity. If quantity is the strategic variable, the prices are higher than the marginal costs, which are increasing. There are

\textsuperscript{130} Bertrand competition is explained in section 3.2.1 and section 3.3.1.
\textsuperscript{131} Cournot competition is explained in section 3.2.2 and section 3.3.2.
\textsuperscript{132} Assumptions: Consumers with the highest willingness to pay are buying the product from the firm with the lowest price; Prices are set at the same time and only once. In addition are the products homogenous.
\textsuperscript{133} Some may say that possible large tax income from exporters, who are exporting goods financed and/or guaranteed with officially supported export credits, may to some degree justify the use of export subsidies in Bertrand competition. Without the export subsidies these export contract might not have been signed. Norway could then have lost important tax income. But since it is unknown if export contracts could have been signed without this offer, this can not justify the offer of officially supported export credits to Bertrand competitors. In addition, it is unknown if the total net welfare effect would have been positive anyway.
capacity limits, and it is hard and expensive to enlarge the capacity. An enlargement takes long time and it is also very expensive to have too much capacity.

Ships

The construction of ships is long term production and regulated by contracts. Large parts of the officially supported export credits in Norway are allocated to the export of Norwegian ships. The market for ships can at first glance appear to have capacity limits, because it would be a huge challenge to deliver enough ships for all demanders.\textsuperscript{134} It will take a lot of time and cost a lot of money to enlarge this capacity. Enlarged capacity requires building of new shipbuilding yards etc., which in addition increases the marginal costs. Too much capacity, for example unsold ships or shipbuilding yards which are not used, is also expensive. Since there also are other factors than price affecting the signing of contracts, for example conditions concerning delivery, the prices of exported ships are likely to be results of Cournot competition. Ships exported with officially supported export credits are therefore very likely to increase the welfare for the whole nation, not only the exporter. The offer of officially supported export credits is in such cases not a government failure.

Even though Cournot competition seems to be the background for the price determined in the market for ships, it can also be argued that price is the strategic variable in this market. If capacity limits are not measured up to the world market but the export contracts, and the exporter has the capacity to build the ship(s) agreed in the contract, there exists no capacity limits.\textsuperscript{135} In addition it is likely that price is the main factor when competing about contracts.\textsuperscript{136} If price is the strategic variable, the Norwegian offer of officially supported export credits connected to the export of Norwegian ships is very hard to defend in a welfare perspective. The export subsidies benefit only the exporter - for the Norwegian nation it would be better not to subsidize this export at all. Officially supported export credits represent here a government failure.

\textsuperscript{134} There exist capacity limits if the world market is considered, but not if the capacity limits is connected to signed export contracts. Since ships are likely to be built with the same standards all over the world, and shipbuilders often are international, it is likely that capacity limits should be measured up to the world market.

\textsuperscript{135} The exporter can have the preferable capacity before the signing of the contract or the possibility to enlarge this capacity to the preferable size after the signing of the contract.

\textsuperscript{136} But as mentioned capacity limitations followed by price competition can have the same results as in Cournot competition.
Equipment

Officially supported export credits are also applied when different oil, gas and maritime equipment is exported from Norway.\(^{137}\) Production of some of the equipment may cause capacity limits for the exporter, while other do not cause capacity limits.\(^ {138}\) In addition, it is likely that equipment connected to the oil, gas and maritime sector, for example drilling vessels, are made for special functions within the actual sectors. Due to this, this equipment can not easily be sold to other importers. The prices for Norwegian officially supported equipment exported to the oil, gas and maritime sector, are therefore very likely to be a result of Cournot competition. As a result officially supported export credits connected to these exported goods increase the welfare for the whole country, and can not be stated to be a government failure.

As with the export of ships, the strategic variable considering export of equipment to the oil, gas and maritime sector can also be price. If there are no capacity limits, it is not expensive to have unsold equipment and the equipment can be made to costs close to marginal costs, Bertrand competition is reasonable. According to trade theory, these export subsidies can not be justified in a welfare perspective. These resources benefit only the exporter and should have been used elsewhere. The offer of officially supported export credits can be states as a government failure.

Services

Exporters offering services, for example consultancy services, are likely to have capacity limits because services can not be stored. It is therefore not likely that these exporters can satisfy all demand which arise, even though the market probably is smaller than in the case of ships exported.\(^ {139}\) An enlargement of capacity means new employees with the necessary knowledge. Enlargement is possible but expensive. Since services require human capacity it is likely that the price is higher than the marginal costs. Prices of services are therefore likely to be results of Cournot competition. Officially supported export credits increase the welfare for the whole nation, not only the exporter, and represent not a government failure. Exports of

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\(^{137}\) Maritime equipment is mostly ship equipment, but can also be fish framing/processing equipment.

\(^{138}\) Capacity limits can be caused by too little storage, too large market etc.

\(^{139}\) It is here assumed that services have international standard, which means they can be demanded from people all over the world.
services financed and/or guaranteed with officially supported export credits are therefore theoretically justified.

**Technology**

When technology is exported with assistance of officially supported export credits, it is likely that price is the strategic variable. When for example fish farming technology are invented, there exist most likely no capacity limits. Marginal costs are probably horizontal. These factors suggest Bertrand as competitive tool. Resources, which here are offered because of a government failure, should have been used somewhere else: It would be better for the nation if the export was not subsidized at all.

**Hydro power**

Before the maritime, oil and gas sector became the largest export sectors allocated to officially supported export credits, hydro power had the largest demand. Hydro power means all use of water to energy production and can be used mechanical or as electricity (Hydro power, 2008). Hydro power has large capacity. In addition it does not cost much and does not take long time to enlarge this capacity. History shows that electricity can be produced to prices almost equal marginal costs (Sørgård, 1997). As a result it is very likely that prices connected to export of hydro power are based on Bertrand competition. Exports of hydro power, where importer has accepted an offer of officially supported export credits, should not have been carried through. These subsidies reduce the nation’s welfare. The offer of these can be stated to be a government failure.

**A government failure?**

According to empirical evidence ships are the goods exported with the highest degree of officially supported export credits in Norway. The competition form is in such cases likely to be Cournot. Today, officially supported export credits are therefore increasing the Norwegian welfare. Due to this, the Norwegian government’s offer of officially supported export credits can not be stated to be a government failure. However, if the ship market should turn out to have price as strategic variable after all, officially supported export credits provided by the Norwegian government is a failure.

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140 Information says unfortunately not if hydro power was exported only or also hydro power equipment. If the latter is the case, it is likely that the equipment can have both price and quantity as strategic variables.
Even if the Norwegian government’s offer of officially supported export credits can not be stated to be a government failure today, it can not be guaranteed that these subsidies are going to increase the Norwegian nation’s welfare in the future. Products and sectors which today are very attractive for these subsidies may change.

**Summary**

Officially supported export credits are characterized as a government failure if the subsidies are offered to Bertrand competitors. Each government offering these subsidies to exporters having price as strategic variable is responsible for this failure. Sources of this government failure are likely to be ignorance and lobbying. Lobbying is likely to come from the governments subsidized export sectors.

Today ships are the goods exported with the highest degree of subsidized export credits in Norway. The ships’ prices are very likely to be results of Cournot competition. Since these subsidies increase the nation’s welfare and not the exporter’s profit only, the offer of officially supported export credits today can not be stated to represent a government failure in Norway. Earlier, when hydro power had the highest degree of subsidized export credits, this offer could be stated to be a government failure. These subsidies reduced the Norwegian welfare.
Appendix

The expressions in section 3.3.1, two-country Bertrand model, are derived from the computer program Scientific Workplace. How the expressions (10), (11), (12) and (13) are derived is exactly shown in this appendix.

Expression (10) and (11)
The Nash equilibrium prices for the Home and Foreign firm are found by maximizing the firms’ profits over the choice of \(p_1\) and \(p_2\) respectively.

The firms’ profits

\[
\pi_1 = (p_1 + s_1)(a - bp_1 + dp_2) \quad \text{and} \quad \pi_2 = (p_2 + s_2)(a - bp_2 + dp_1)
\]

Maximizing the Home firm’s profit over the choice of \(p_1\)

\[
\frac{\partial \pi_1}{\partial p_1} = a - 2bp_1 + dp_2 - s_1b = 0
\]
\[
2bp_1 = a + dp_2 - s_1b
\]
\[
R_1(p_2) = p_1 = \frac{a + dp_2 - s_1b}{2b}
\]

\(R_1(p_2)\), which is the Home firm’s reaction function, is exactly the same for the Foreign firm

\[
R_2(p_1) = p_2 = \frac{a + dp_1 - s_2b}{2b}
\]
If the Foreign firm’s reaction function is placed into the Home firm’s reaction function the Nash equilibrium prices are for the Home firm

\[
p_1 = \frac{a + d\left(\frac{a + dp_1 - s_2 b}{2b}\right) - s_1 b}{2b} = \frac{2ba + da + d^2 p_1 - ds_2 b - 2s_1 b^2}{4b^2}
\]
\[
p_1 = \frac{d^2 p_1}{4b^2} = \frac{2ba + da - ds_2 b - 2s_1 b^2}{4b^2}
\]
\[
p_1 = \left(\frac{2ba + da - db_{s_2} - 2s_1 b^2}{4b^2}\right)\left(\frac{4b^2}{4b^2 - d^2}\right)
\]
\[
p_1 = \frac{2ba + da - db_{s_2} - 2s_1 b^2}{4b^2 - d^2}
\]

The Foreign firm’s Nash equilibrium price is exactly the same

\[
p_2 = \frac{2ba + da - ds_1 b - 2s_2 b^2}{4b^2 - d^2}
\]

Expression (12) and (13)

How much the Home and the Foreign firm export when goods are exported to Nash equilibrium prices are found by setting in for \(p_1\) and \(p_2\) in the linear demand function

\[
x_1 = a - bp_1 + dp_2
\]
\[
x_1 = a - b\left(\frac{2ba + da - db_{s_2} - 2s_1 b^2}{4b^2 - d^2}\right) + d\left(\frac{2ba + da - ds_1 b - 2s_2 b^2}{4b^2 - d^2}\right)
\]
\[
x_1 = \frac{2b^2 a + dab - db_{s_2} s_2 + 2b^3 s_1 - d^2 bs_1}{4b^2 - d^2}
\]
\[
x_2 = \frac{2b^2 a + dab - db_{s_2} s_1 + 2b^3 s_2 - d^2 bs_2}{4b^2 - d^2}
\]
5 Conclusion

The background for this master’s thesis is economic theory which shows that export subsidies are under most circumstances not welfare improving. Still they are offered extensively. This master’s thesis has revealed and explained the deviations between predictions in economic theory and actual policy choices in the matter of officially supported export credits offered by the Norwegian government through GIEK and Eksportfinans.

Officially supported export credits

Officially supported export credits are export subsidies. These are either subsidized loans connected to export of goods and services and/or officially supported guarantees of exported capital goods and services. Eksportfinans offers the subsidized loans through CIRR-loans and its free option to (foreign) buyer(s). GIEK contributes through its owner, the Norwegian government, to more favourable guarantees (for example cover of higher risk, no need for arranging a buffer and cheaper funding) than at the commercial market. These subsidies are offered to Norwegian/foreign banks and financial institutions extending export credits. The Norwegian exporters are benefitting from the subsidies through increased exports. The goal is to promote Norwegian export which also can contribute to higher employment.

Trade theory

Trade theory shows that officially supported export credits are not welfare improving under perfect competition. Export subsidies lead to costs that exceed its benefits in both small and large countries. Officially supported export credit can also change the country’s position from net importer to net exporter – this worsens the terms of trade. Imperfect competition where only one country/firm is subsidized shows that officially supported export credits are not welfare improving for the nation when price is the strategic variable, Bertrand competition. If quantity is the strategic variable, Cournot competition, the nation’s welfare increases. All exporters benefit from officially supported export credits, no matter competition form.

Since only one country is subsidized, (two-country) models in which both countries are subsidized by their governments are more realistic considering officially supported export credits. A two-country Bertrand model shows that officially supported export credits do not increase the nation’s welfare. Export subsidies benefit only the exporters in such cases. If the nation’s welfare is in focus, export subsidies must not be offered. This is the case even if other
countries subsidies their export firms or not. The best economical tool considering Bertrand competition is an export tax. A two-country Cournot model shows that export subsidies are welfare improving from an individual country’s point of view. If the competitor country does not subsidize its export, the Home country’s best strategy is achieved if the Home government offers export subsidies. The result is higher welfare for the Home nation. If the Foreign country subsidizes its exports, the Home government’s best reaction is still to offer export subsidies.

The domestic strategy is to subsidize the export firms even though the collective highest welfare arises when export is not subsidized (Prisoner’s Dilemma). International agreements through OECD and WTO are therefore a good idea. These regulate the use of officially supported export credits and decrease the negative collective welfare of these subsidies. Without these regulations it is very likely that the use of subsidized export credits would have been higher. Norway should continue to play an active role in improving and keeping these agreements.

**Development in poorer countries**

Officially supported export credits may also be introduced to promote industrial development in poorer countries, see section 1.1. Officially supported export credits can therefore have welfare improving implications in the importing country, even if they do not increase the domestic welfare. To improve industrial development in poorer countries the subsidies must not threaten an existing industry. Co-operation and joint venture arrangement between exporter and importer may also be required. It is also necessary to analyze the market to identify possible threats for the local industry. The World Bank’s Multilateral Investment Guarantee Agency (MIGA) arrangement is here positive. MIGA is an export credit arrangement which promotes foreign direct investments (FDI) into developing countries through non-commercial guarantees. It only promotes domestic industry, not own industry abroad, and its mission is to help support economic growth, reduce poverty, and improve people’s lives.

**Government failure**

If the offer of officially supported export credits is stated to be a government failure depends on the strategic variable when the exported capital goods’ and the exported services’ prices are decided. Assumed that the nation’s welfare is in focus, trade theory shows that the offer of
officially supported export credits to Bertrand competitors is stated to be a government failure. The nation’s welfare would be higher without the offer of officially supported export credits when price is the strategic variable. Export subsidies benefit in such cases the exporter only and can not be justified from an economical view. When quantity is the strategic variable, Cournot competition, export subsidies improve the nation’s welfare from an individual country’s point of view. If the individual country can not force other countries to change their policy, the government’s offer of officially supported export credits can not be stated to be a government failure.

Because countries have both Bertrand and Cournot competitors, it can be said that if the highest degree of officially supported export credits is offered to Bertrand competitors there exists a government failure. The country’s government is responsible for this failure. This government failure may be a result of ignorance of the negative welfare consequences and/or lobbying from domestic export subsidized sectors which benefit from these subsidies. The framing of the system logically benefit certain industries and especially their dominating exporters more than other. In Norway these sectors are the maritime (mainly the ship building industry), oil and gas sectors. However, even it the framing of the system logically benefit certain industries/ exporters more, the offer to these subsidies is according to trade theory not necessary a government failure.

Government failure in Norway?
The Norwegian offer of officially supported export credits has the last years benefited the ship building industry the most. Because of capacity limits, ships have most likely quantity as strategic variable. Officially supported export credits offered when ships are exported are therefore benefiting the whole Norwegian nation, not only the exporters. The Norwegian government’s offer of officially supported export credits can therefore not be stated to be a government failure.

However, exports of hydro power which earlier was the dominating goods exported with officially supported export credits, did not benefit the nation, only the exporters. The offer of officially supported export credits was then a government failure.
**Changing factors?**

Today, the Norwegian government’s offer of officially supported export credits cannot be stated as a government failure. These subsidies are welfare improving for the whole nation, not the exporter only. But there are factors that can change this conclusion.

First, because officially supported export credits offered by GIEK and Eksportfinans also are offered to some Norwegian buyers, the result considering the trade theory can change. The export subsidies are no longer used in a third country only but also in the Home country, Norway. The trade theories used in chapter 3 take this not into account. Export subsidies may therefore decrease the domestic price and therefore increase the consumer surplus. Norwegian consumers may therefore to some degree benefit from the Norwegian offer of officially supported export credits also in the case of Bertrand competition. But since the Norwegian share of these export subsidies are less than the total Foreign share, I have assumed the results to have the same result as with other export subsidies even if Norwegian consumers now are affected. This assumption might be wrong. In addition, the two-county Bertrand model may be too simplified. The firms’ marginal costs are for example assumed to be zero. This could also affect the welfare results but most likely in the same negative direction.

Secondly, it may be wrong to assume that the ship market consist of the whole world. Due to this assumption capacity limits exist in the ship market. If the focus was on the contract only, capacity limits would be less likely. Wrong analyses of other exported goods may also have been made. But since ships are the main goods exported, the ships’ analysis can change the whole conclusion in this master’s thesis. If ships turn out to have price as strategic variable these subsidies reduce the Norwegian welfare. The already large and successful sectors and their dominating exporters benefit from these subsidies only. If this is the case today, the Norwegian offer of officially supported export credits would be a government failure.
References

Aker Drilling. (16 March 2006) *Aker Drill ASA* [Internet], Oslo, Aker Drilling. Accessible from: <http://www.akerdrill.com/download.cfm?file=65-FC490CA4SC00B1249BEE3554A4DFD6FB> [Downloaded 30 April 2008].


Berne Union. (2008) [Internet], the Berne Union. Accessible from: <http://www.berneunion.org.uk/bu_profiles.htm> [Downloaded 2 March 2008].


Credit News. *Kredittprofilen – Adm.direktør Wenche Nistad, GIEK* [Internet], Credit News. Accessible from: <http://www.creditnews.no/Kredittprofilen/GIEK.php> [Downloaded 6 February 2008].


Eaton, J. & Grossman, G. M. (1986) *Optimal Trade and Industrial Policy under Oligopoly* [Internet], JSTOR. Accessible from:  

ECA-Watch. (16 May 2006) *OECD Releases new Action Statement on Bribery and Officially Supported Export Credits* [Internet], Paris, ECA-Watch. Accessible from:  
<http://www.eca-watch.org/problems/corruption/ecaw_oecd_bribery_press_advisory_16may06.htm> [Downloaded 23 April 2008].

ECA-Watch. *Corruption. Did you know?* [Internet], ECA-Watch. Accessible from:  

ECA-Watch. *China Case Study: Three Gorges Dam* [Internet], ECA Watch. Accessible from:  
<http://www.eca-watch.org/problems/asia_pacific/china/racechina.html> [Downloaded 25 April 2008].

ECA-Watch. *The Problems with ECAs: An Overview* [Internet], ECA Watch. Accessible from:  

ECA-Watch. *Export Credit Agencies* [Internet], ECA Watch. Accessible from:  
<http://www.eca-watch.org/eca/heat.html> [Downloaded 8 January 2008].


Eggen, Ø. (October 1998) *Eksportkredit* [Internet], FIVAS. Accessible from:  


Eksportfinans. (2008) *Lån fra Eksportfinans* [Internet], Eksportfinans. Accessible from:  
<http://www.eksportfinans.no/Laan/Tema.aspx> [Downloaded 30 March 2008].

Eksportfinans. (2008) *CIRR – Commercial Interest Reference Rate* [Internet], Eksportfinans. Accessible from:  
<http://www.eksportfinans.no/Renter/CIRR.aspx> [Downloaded 30 March 2008].

Eksportfinans. (2008) *Renter* [Internet], Eksportfinans. Accessible from:  
<http://www.eksportfinans.no/Renter/Tema.aspx> [Downloaded 30 March 2008].

Eksportfinans. (2008) *Markedslån* [Internet], Eksportfinans. Accessible from:  
<http://www.eksportfinans.no/Renter/Markedslaan.aspx> [Downloaded 30 March 2008].

Eksportfinans. (2008) *Kombinasjonslån* [Internet], Eksportfinans. Accessible from:  
<http://www.eksportfinans.no/Renter/Kombinasjonslaan.aspx> [Downloaded 30 March 2008].

Eksportfinans. (2008) *Historie* [Internet], Eksportfinans. Accessible from:  
<http://www.eksportfinans.no/Om%20oss/Historikk.aspx> [Downloaded 30 March 2008].
Eksportfinans. Solstad Offshore ASA – Ulstein Verft AS [Internet], Eksportfinans. Accessible from:
<http://www.eksportfinans.no/ReferenceProjects/Skip/MV%20Normand%20Seven.asp>
[Downloaded 15 April 2008].
Eksportfinans. Stolt Sagaland [Internet], Eksportfinans. Accessible from:
[Downloaded 15 April 2008].
Eksportfinans. (2008) Korrupsjon [Internet], Eksportfinans. Accessible from:
<http://www.eksportfinans.no/Om%20oss/Korrupsjon.aspx> [Downloaded 26 May 2008].
Eksportfinans. (2008) Miljø [Internet], Eksportfinans. Accessible from:
<http://www.eksportfinans.no/Om%20oss/Miljo.aspx> [Downloaded 26 May 2008].
Eksportfinans. (2008) Kontakt oss [Internet], Eksportfinans. Accessible from:
<http://www.eksportfinans.no/Om%20oss/Kontakt%20Oss/Oslo.aspx> [Downloaded 22 July 2008].
Environmental defence fund. (23 August 2007) Export Credit Agencies [Internet]. Accessible from:
Export credit agency (29 November 2007). Wikipedia [Internet]. Accessible from:
<http://en.wikipedia.org/wiki/Export_credit_agency> [Downloaded 8 January 2008].
Export-Import Bank of the United States. (20 July 2005) Standard Repayment Terms [Internet]. Accessible from:
<http://www.dagbladet.no/kultur/2002/12/03/355372.html> [Downloaded 9 January 2008].
Foreningen for internasjonale vannstudier. (November 2002) Globaliseringens skitneste hemmelighet? [Internet], FIVAS. Accessible from:
[Downloaded 9 January 2008].
Gaarder, P.A. (2002) World Bank may black list Veidekke [Internet], Norwatch. Accessible from:
Gaarder, P.A. (2003) Mistenkelig fax skaper problemer [Internet], Norwatch. Accessible from:
GATT (7 May 2008). Wikipedia [Internet]. Accessible from:
Garanti-instituttet for eksportkreditt. Byggelånsgaranti [Internet], GIEK. Accessible from:
<http://www.giek.no/default.asp?menu=464&page=47&cells=0>
[Downloaded 12 February 2008].
Garanti-instituttet for eksportkreditt. Our products [Internet], GIEK. Accessible from:
<http://www.giek.no/giek_en/default.asp?menu=107&page=147&cells=0>
[Downloaded 12 February 2008].
Garanti-instituttet for eksportkreditt. *Board of directors* [Internet], GIEK. Accessible from: <http://www.giek.no/giek_en/default.asp?page=416> [Downloaded 22 July 2008].

Garanti-instituttet for eksportkreditt. *Contact GIEK* [Internet], GIEK. Accessible from: <http://www.giek.no/giek_en/default.asp?menu=109&page=416&cells=0> [Downloaded 22 July 2008].

Garanti-instituttet for eksportkreditt. *Board of Directors* [Internet], GIEK Kreditforsikring AS. Accessible from: <http://www.giek.no/gk_en/default.asp?page=419> [Downloaded 22 July 2008].

Garanti-instituttet for eksportkreditt. *Contact us* [Internet], GIEK Kreditforsikring AS. Accessible from: <http://www.giek.no/gk_en/default.asp?menu=341&page=279&cells=0> [Downloaded 22 July 2008].


