

**AN ANALYSIS OF OFFICIALLY
SUPPORTED EXPORT CREDITS
IN AGRICULTURE**

OECD
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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Box 1. Preamble to all agriculture-trade related projects

Agriculture Ministers adopted a set of shared goals in March 1998, stressing that these goals should be seen as an integrated and complementary whole. Among the shared goals is the further integration of the agro-food sector into the multilateral trading system. In pursuit of that goal, Ministers mandated the OECD to examine ongoing and new agricultural trade and trans-boundary policy issues and their impacts, and to provide analytical support, as appropriate, to the process of agricultural trade liberalisation.

In response, the Committee for Agriculture adopted (and the Trade Committee endorsed) a comprehensive programme of work on agricultural trade policy issues, to be carried out throughout the period 1999-2000 and continuing during the period 2001-2002. The programme of work was carefully designed to incorporate specific agricultural trade policy issues that are of major interest to Member countries of the OECD, but which may also concern non-OECD countries. A wide range of issues arising at the interface of trade and domestic policy is also covered, such as the trade implications of different kinds of agricultural support measures, food safety, food security, rural development and environmental protection policies.

On-going core activities of the Committee for Agriculture such as the annual monitoring of agricultural policies and medium term outlook exercises provide an essential backdrop to the specific trade programme of work, which is being implemented on two broad fronts.

One **major element**, characterised as evaluating and strengthening trade liberalisation, aims to assist policy makers and negotiators as they enter the next round of multilateral trade negotiations on agriculture by:

- assessing in-depth the effects of the URAA on trade, on agricultural policy and on protection levels
- identifying possible impacts on trade and markets of different scenarios for further trade liberalisation
- analysing the effect of trade policy instruments such as export credits or export taxes and restrictions that have not, to date, been disciplined and the trade impacts of food aid and STEs.

The **second major** element of the agricultural trade policy work programme deals with a wide range of issues that arise increasingly at the interface of trade and domestic policy. The following issues will be examined:

- Production and trade impacts of different agricultural policy measures ranging from market price support to different kinds of direct payments and including agri-environmental measures.
- The concept of multifunctionality and in particular relationships between policies intended to ensure an adequate supply of agriculture's non-food outputs (such as possible contributions to environmental benefits and rural development) and existing or future international commitments with respect to trade.
- Policies that contribute to improving environmental performance in ways that are consistent with agricultural trade liberalisation.
- The implications of trade liberalisation for food security in OECD and selected non-OECD countries.
- Trade aspects of domestic policies in the area of food safety and quality with respect to topical issues such as biotechnology and animal welfare.
- Trade or trans-boundary aspects of competition policy with respect to geographical labels and state trading.

Reflecting the wide range of issues, different methodologies are employed in the implementation of the agricultural trade work programme -- analytical, model-based tools are used alongside statistical and descriptive approaches while some issues receive a conceptual treatment. Choice of methodology is determined by data availability and by the nature and complexity of the issues being examined, leading to either quantitative or qualitative results. In a later phase, work will be undertaken to synthesise the main conclusions and policy implications for each of the main elements of the programme.

The present study focuses on one export competition policy which appears under the first major element of the programme of work. This report is an analysis of the market effects of officially supported export credits by means of present value calculations. A brief forward-looking assessment highlights their role in world markets.

Glossary

Arrangement	The Arrangement on Guidelines for Officially Supported Export Credits (sometimes referred to in this text as the Export Credit Arrangement) is a “Gentlemen’s Agreement” among participating countries to discipline export credits. Although the OECD Secretariat provides administrative support, it is not an OECD Act. The Arrangement provides an institutional framework which helps to limit the extent to which officially supported export credits distort trade, by encouraging competition based on price and quality rather than based on government support. An Arrangement exists which covers most sectors, although agriculture has yet to be included (as of October 2000).
Credit rating	An evaluation of a borrower in terms of its credit-worthiness, which is a measure of the probability that the entity will repay its debts, with interest, on schedule.
Down payment	A portion of the total value of the transaction which must be paid before or on the starting point of the export credit.
Export credit	A guarantee, insurance, financing, refinancing or interest rate support arrangement provided by a government which allows a foreign buyer of exported goods and/or services to defer payments over a period of time. The present study deals exclusively with officially supported export credits for agricultural commodities and generally refers to these simply as export credits.
Fee	A cost which must be paid for the export credit. The fee must be paid in addition to value of the export credit, not a portion of the total value as in the case of the down payment.
Grace period	The delay before the first payment, less the normal interval between payments.
Length	The length of time before the final payment of the export credit. Also called the duration, maturity or term in the text, although the latter is sometimes used more broadly to describe the conditions (as regards fees and repayment) of the export credit in general.
Negotiations	The process through which participating countries are attempting to agree to a set of disciplines governing the use of officially supported export credits in agriculture. The Uruguay Round required such negotiations towards an agreement. These negotiations are facilitated by the OECD.
Net defaults	The amount of loans and interest due which remains unpaid. There is no required distinction in the survey based on whether the importer has paid or some other agent.
Participants	The Participants to the Arrangement on Guidelines for Officially Supported Export Credits are the countries which have chosen to attempt to abide by the existing Arrangement and which are negotiating an Arrangement which disciplines officially supported export credits in agriculture. The Participants are Australia, Canada, the European Community (which includes 15 member states), Japan, Korea, Norway, New Zealand and the United States. Delegations from these countries to meetings of the Participants are sometimes referred to in the text as the negotiators.
Survey	The Participants re-issued a confidential survey in 1999, co-ordinated by the OECD, to collect information on officially supported export credit use from 1995 to 1998. In April 1999, the Participants agreed to allow OECD Directorate for Food, Agriculture and Fisheries to use these confidential data for the present study, provided bilateral trade flows are not reported.

EXECUTIVE SUMMARY

1. This study focuses on one policy that may distort export competition: officially supported export credits in agriculture. Officially supported export credits can take a variety of forms and may offer an importer financial terms such that the total cost of acquiring the commodity is reduced below alternative, private market costs. As these policies may serve to effectively subsidise exports, they were at issue in the negotiations leading up to the conclusion of the URAA, but signatory countries undertook to continue negotiations towards an Agreement which would govern their use. Such an Agreement has not been reached as of October 2000.

2. In this context, the present study undertakes an evaluation of the degree to which officially supported export credits distort world markets. This analysis benefits from a unique data source: Participants to the Export Credit Arrangement at the OECD provided access to survey data in order to complete this analysis, under certain conditions to protect the confidentiality of bilateral trade data. Review of past research and consideration of the data available suggests that present value calculations are most appropriate from an economic perspective for examining how officially supported export credits may influence importers' decision-making when buying agricultural commodities. The method chosen incorporates important characteristics of the programme, such as the length, the level of guarantee and the fees. Thus, the potential for an officially supported export credit to distort trade depends on variation in these parameters. For instance, trade distortion will increase with the length of the officially supported export credit, all else equal. The issue of length is explored in section 3 of the main text, while section 3 of the Annex provides information on programme characteristics. The Annex reports the details of the method. Experiments to test the sensitivity of the results to certain supporting data validate the conclusions under alternative assumptions.

3. This empirical study finds that some countries' officially supported export credits do offer benefits to importers beyond what private arrangements can provide based on present value calculations using 1998 data (more recent data are not available). While the estimated subsidy equivalents overall are found to be relatively low, certain countries' programmes are nevertheless trade distorting. The USA export credits are calculated to be the almost twice as distorting on a per unit basis as any other countries' and, given the USA's relatively large programme, account for the majority of the distortions in world markets caused by officially supported export credits.

4. Use of officially supported export credits by the Participants to the Export Credit Arrangement as a group increased over the survey period, both in absolute terms and relative to trade. Yet, as of 1998, the level of export credits relative to world trade as well as the per unit subsidy element estimated in this report are small. Thus, while individual transactions targeted under certain export credit programmes are distorted, the estimated impact on aggregate world markets is small. For example, a preliminary analysis of officially supported export credits in the context of the world wheat market is explored based on beginning 1998 officially supported export credit data. The wheat market is selected as the subsidy element of officially supported export credits applied in world cereal markets are estimated to be account for almost half of the total subsidy element and also are large relative to the total market for cereals. According to the preliminary analysis, USA domestic wheat prices are slightly higher and wheat prices in Canada and the European Union (in aggregate) are little changed, while those of Australia and world wheat prices are slightly lower than would be the case without these countries' export credits. However, in the absence of

an Agreement governing the use of officially supported export credits, countries can increase the degree to which their programmes reduce importer costs or the amount of export credits, with the resulting distortions on export competition.

5. A frequent justification for officially supported export credit programmes is that they may help developing countries overcome liquidity constraints in order to purchase necessary food where otherwise they would not be able to import. Indeed, to the extent that the credit conditions eliminate liquidity constraints in importing countries and in effect generate additional trade, the distortions of other countries' trade would be less, provided there was no displacement of privately financed trade. But this is unlikely to be of great importance as the bulk of officially supported export credits is provided for trade between OECD countries, where binding liquidity constraints are unlikely. The very small share of officially supported export credits given to developing countries is one of two facts which calls into question the very purpose of these programmes. The second fact which undermines the justification that officially supported export credits may help developing importers is that the benefits to importers, as estimated in this study, are very small -- perhaps only sufficient to gain a competitive advantage for the exporter -- and unlikely to be of much help to countries which are truly in need of financial assistance and food. These two facts are empirical in nature and cannot be considered to be conclusive evidence that these programmes never help importers in need of food to overcome liquidity constraints. However, they make it more difficult to support this justification for officially supported export credits.

6. There are many mechanisms that governments can use to affect the competitiveness of their agricultural commodities in world markets. Export competition policies, such as export subsidies, certain behaviour by state-trading organisations or food aid used to raise domestic prices rather than exclusively to benefit the recipient, influence importers' decisions by artificially lowering the price or cost of the exporting country's goods as compared to what the private market would offer. The OECD is currently engaged in a broad ranging analysis of such measures. While the present study focuses on officially supported export credits, these programmes do not operate in isolation of other competition distorting policies. Limits on one policy option can be offset through increased use by governments of some other policy instrument within Uruguay Round constraints. An Arrangement which limits or eliminates officially supported export credits in agriculture would represent an important step towards reducing distortions in export competition. However, such an agreement alone would be insufficient. Other export competition policies that may serve to perpetuate market distortions and inefficiencies would also need to be disciplined.

AN ANALYSIS OF OFFICIALLY SUPPORTED EXPORT CREDITS IN AGRICULTURE

1. Introduction

7. Officially supported export credits may span direct credits or financing, guarantees or insurance for loans, or interest rate support by governments. The consequence may be that an importer receives a loan at an interest rate below the normal market rate, for a length of time which exceeds what the market would offer or a repayment schedule which is abnormal in timing, yet not face a fee which is adequate to offset these special conditions. In this case, the total costs for financing the purchase of that exporter's goods would be lower than would otherwise occur, so the programme would effectively subsidise the importer. In addition, officially supported export credits may incur losses over time, if operators do not repay their debts (referred to as defaults).

8. In view of this potential to distort trade, officially supported export credits for agricultural products were at issue during the URAA. Under the WTO Agreement on Agriculture, signatory countries undertook to "work towards the development of internationally agreed disciplines to govern the provision of export credits, export credit guarantees or insurance programmes." An Arrangement on Guidelines for Officially Supported Export Credits has existed in the context of the OECD for over 20 years. This Arrangement is generally considered very successful in its aim to eliminate subsidies and trade distortions so that exporters compete on the price and quality of their goods and services rather than on which of these goods and services receives the most favourable officially supported terms. However, agricultural products are specifically excluded from the scope of the Export Credit Arrangement. In a meeting in July 1994, negotiators agreed to begin to consider a sector Understanding for agriculture products, taking into account earlier work including a survey on practices in this sector ([TD/CONSENSUS(94)38]). Negotiations in the OECD on an export credit Understanding covering agricultural products are continuing, yet there remain differences between the negotiating parties. Indeed, the OECD Ministerial Meeting Communiqué of 2000 expressed that the Ministers "regretted the failure of the Participants to the Export Credit Arrangement to reach an agreement on an Understanding covering agriculture as mandated in the Uruguay Round" and went on to state a need "for negotiations to be resumed and successfully completed by the end of July 2000 if possible and by the end of 2000 at the latest" (paragraph 21), yet no agreement has been reached as of October 2000. Hence, governments are currently free to provide credits to importers at any terms, no matter the degree to which they effectively subsidise the importer, as long as there is no protocol governing or limiting their use in agriculture.

9. This study considers only officially supported export credits. Henceforth, this study will refer to these as export credits, without specifying that they are officially supported. Thus, the evaluations in this report are not intended to include private export credits. Export credits arranged among exporters, importers and financial institutions without government influence (e.g. guarantees or insurance) or direct support are not a subject of the present study of export credits. Such private export credits entirely on commercial terms without direct or indirect government involvement are part of normal transactions and do not distort markets, but on the contrary facilitate trade.

10. This study is structured as follows. Following this introduction, the next section describes the use of export credits in absolute terms and relative to trade of exporting countries. The third section provides

estimates of subsidy rates for export credits by exporter and by commodity. The fourth section discusses the effects of defaults. The next section shows different aggregations of these results to reflect whether there is a potential for export credits to create demand by overcoming liquidity constraints, or whether they simply distort markets. The sixth section of the paper introduces other export credit uses which are excluded from the present study, such as organisations with legislative authority to engage in export credits on behalf of the government and food aid. The seventh portion of the main text places export credits in the context of world markets as projected by the OECD Agricultural Outlook, using a single example. The final section suggests some policy conclusions. The Annex provides details on the method and data employed to calculate the subsidy rates.

2. Use of export credits

11. A survey of export credit use from 1995 to 1998 by the Participants to the Export Credit Arrangement (hereafter, the Participants), the negotiators at the OECD, shows that the amount of export credits given has increased during this period. The use of export credits by exporting country and by year are shown in Table 1 and include the values of loans guaranteed, direct financing given or other forms of export credit provided. In practice, the survey data shows that export credits given by the Participants generally take the form of pure cover (e.g. guarantees or insurance), rather than direct financing or subsidised interest rates. Export credits and trade data concerning transactions among EU members (intra-EU trade) are excluded from Table 1¹. These data are converted into US dollars for all countries to facilitate comparisons across countries and in view of the common use of US dollars for agricultural commodity prices.

Total export credit use rose over the survey period (1995 to 1998), in absolute terms . . .

12. Export credits by these fifteen OECD countries increased from 1995 to 1998 by USD 2.4 billion, or 44 per cent. The largest increases in absolute terms are those of the USA, Canada, Australia and France. France and Hungary gave no export credits in 1995, but do provide export credits by the end of the survey period. Other countries report substantial increases in the absolute level of export credits from 1995 to 1998 in relative terms, such as Korea, Greece, Canada, Finland and Belgium. On the other hand, the increases from 1997 to 1998 may have been motivated in part by the financial crisis, which may have made existing export credit programmes more appealing and may also have encouraged exporters to provide more resources to export credit programmes. Three countries, Germany, Portugal and Spain, report a decrease in the level of export credits from 1995 to 1998. Germany and Portugal state that their programmes are still offered, but there is no demand by exporters.

1. Export credits between European Union members are excluded where possible from this report. Internal rules of the European Union are assumed to prevent distortions from export credits on the common market. See section 3 of the Annex for details regarding the survey data.

Table 1: Export Credits and the Value of Exports

	1995	1996	1997	1998	Total
Export credits	<i>(million USD)</i>				
Australia	1106	2014	2130	1553	6803
Canada	570	697	1239	1108	3613
European Union	985	989	1151	1254	4379
Austria	10	9	11	11	40
Belgium	83	121	133	153	491
Finland	6	5	11	11	32
France	0	153	293	330	776
Germany	21	2	1	0	25
Greece	1	1	3	4	8
Netherlands	392	341	361	411	1506
Portugal	6	4	0	0	10
Spain	467	353	338	334	1491
Hungary	0	38	12	19	68
Korea	0	33	46	46	126
Norway	0	0	0	0	0
United States	2843	3188	2845	3929	12806
Total	5504	6959	7423	7910	27796
Total exports	<i>(million USD)</i>				
Australia	10526	11325	12583	10501	44936
Canada	14866	16664	18153	17555	67237
European Union	57272	58348	59934	57028	232582
Hungary	2922	2768	2881	2788	11359
Korea	3198	3268	3179	2875	12519
Norway	3544	3875	3857	4086	15361
United States	60996	65531	61413	57395	245334
Total	153323	161778	161999	152228	629329
Share with credits	<i>(per cent)</i>				
Australia	10.5	17.8	16.9	14.8	15.1
Canada	3.8	4.2	6.8	6.3	5.4
European Union	1.7	1.7	1.9	2.2	1.9
Hungary	0.0	1.4	0.4	0.7	0.6
Korea	0.0	1.0	1.5	1.6	1.0
Norway	0.0	0.0	0.0	0.0	0.0
United States	4.7	4.9	4.6	6.8	5.2
Total	3.6	4.3	4.6	5.2	4.4

Sources: Export credit data are from confidential survey by the Participants to the Arrangement.

Total export values are from Foreign Trade Statistics. Intra-European Union export credits and trade are excluded for all EU members.

13. Many OECD members replied in the Participants' survey that they provided no export credits (at least as regards agriculture) in the 1995 to 1998 survey which fall under the definition of "officially supported." These countries are Denmark, Ireland, Italy, Japan, Luxembourg, New Zealand, Sweden, Switzerland, and United Kingdom. Several responses specify that there is no programme, such as Japan or New Zealand, or that they have such programmes, but withdrew from providing such export credits (e.g. that they are not used). The latter case applies to Ireland, Italy, Sweden and the UK. Some countries, including Denmark from the list above but also some countries which reported some amount of officially supported export credits, indicate that certain of their export credit programmes are exempt as these programmes or portions of the programmes operate on commercial terms. Poland indicated the presence of an insurance programme, but did not provide data on the amounts. The survey response of the Czech Republic indicate that a small per cent of total trade was covered by export credits, but does not provide information on absolute levels.

14. The largest users of export credits among the Participants in the survey period are the USA, averaging 46 per cent of the total, followed by Australia at 25 per cent. The European Union accounts for 16 per cent and Canada for 13 per cent of the total export credit use. These four together account for 99 per cent of the total. This does vary by year, of course. However, even as the USA share ranges from 38 per cent in 1997 to a high of 52 per cent in 1995, the total of the USA, Australia, Canada and the European Union continue to account for almost all export credit use among the Participants. Within the European Union, still excluding intra-EU trade, shares are more volatile. On average, the largest users are the Netherlands and Spain, each accounting for over a third of the total EU export credits to third countries over the entire period. Spain's share has decreased from almost half of the EU total in 1995 to only a quarter in 1998, whereas France's share has risen to 26 per cent in 1998.

. . . and also rose relative to trade

15. A measure of the relative importance of export credits in trade can be obtained by comparing the amount of export credit to the amount of trade, as shown in the lower half of Table 1. The export credit data is from the survey, while the export trade data are from OECD statistics (Foreign Trade Statistics, HS1 chapters 1-24, 41.01-41.03 and 51.01-51.05). This comparison is not precise. First, the definitions of the two sources may not be entirely comparable. For example, cotton is not stated as a commodity in the survey and is therefore not included in the value of agricultural trade, but some survey respondents include cotton export credit data. Also, the basis of export credit data (e.g. CIF or FOB) is not specified in the survey, although it should be clear that these data do refer to the size of the transaction. Another problem is that much of the survey data are on a basis other than calendar year, and so may not precisely overlap trade data drawn from other sources (such as FTS) or other countries' survey data.

16. Nevertheless, Table 1 indicates that, while total export credits have risen by almost one half from 1995 to 1998, the total value of these countries' agricultural exports has been stagnant. Hence, a growing portion of trade falls under export credits. In 1995, 3.6 per cent of trade was facilitated by export credits. This share rose to 5.2 per cent in 1998. Even if the financial crisis of 1997-1998 is taken to be sufficient justification for considering these as atypical years, the role of export credits relative to trade shows its largest increase in 1996. The relative importance varies across countries. The largest share of trade covered by export credits is that of Australia, at 15 per cent on average. On the other hand, Australia and Canada are the only countries which report a decreasing share, at least in the final year of the survey. Other countries shown report an increase in the share of exports which receive export credits. The shares of trade facilitated by export credits from Hungary and Korea remain relatively low in 1998, but began from zero. The share of USA trade facilitated by export credits has risen from 4.7 per cent in 1995 to 6.8 per cent in 1998, but held relatively constant at about 4.7-4.9 per cent in the two years of the survey preceding the financial crisis of 1997-1998. In the case of the European Union, the magnitude of export credits relative to

trade (both to third countries) has risen from 1.7 per cent to 2.2 per cent. This still remains lower than the average of these countries, which increased from 3.6 per cent to 5.2 per cent.

17. Table 1 demonstrates the relative and growing importance of export credits in agriculture commodity trade, at least among the Participants to the Arrangement on Export Credits which provide export credits. It is clear that even though several countries have unilaterally suspended export subsidy activities, few have withdrawn export credit programmes and many report growing use. Again, the final years of the survey may be questioned as the financial crisis may have caused a response in export credits which does not represent the trend. Regardless of their magnitude, these credits may or may not serve to subsidise exports, depending upon how the programmes operate. Hence, the next step in the present study is to evaluate whether or not export credit programmes do in fact offer a subsidy element and, if so, how large a subsidy is provided.

3. Subsidy rate of export credits

18. Evidence of the existence and even size of export credits is not sufficient to draw conclusions about their impacts on trade. What determines the impact on markets is not only the existence, but their effects on decision-making. If the government export credit programmes offer the same terms as the private sector, then these officially supported export credits would have no distorting effects on world markets at all. In this case, the importer's decision-making would not be altered by the export credit, because the effective total cost of the transaction would be the same. The subsidy rate², as calculated in this report, is an indicator of the effects on decision-making based on present value calculations (as described in the Annex).

19. To determine the effect of export credits on commodity markets, the present study estimates the implications for each importers' total costs. The terms and fees of each exporter's programme are evaluated for each importer receiving an export credits. These terms and fees determine the future payment stream which the importer perceives in using the particular export credit, which is then converted into present value using that importer's discount rate.

20. The results of these calculations are the subsidy rates of the export credits. This is the per cent by which the export credit reduces the present value cost of the traded commodity. For example, an export credit programme which guarantees 80 per cent of a 6 month commercial loan for a high fee -- for even a fairly safe importer -- might not lower the present value cost at all and, thus, offer a subsidy rate of zero. On the other hand, if an export credit programme would guarantee almost 100 per cent of a longer loan at almost no fees regardless of risk, it would probably decrease the present value of the importer's total costs and have a correspondingly larger subsidy rate. In the Annex, we discuss the factors of the loan which are relevant and the parameter values.

2. To calculate the present value effect on the importer's cost of receiving a loan at a rate below the market rate, present value computations are made to compare the reduced interest rate the importer receives because of the export credit with the importer's market rate (see Annex). The variables or parameters of these calculations are reproduced here:

Subsidy rate	Annual subsidised or guaranteed interest rate with the export credit
Term of loan	Annual discount rate (market rate without the export credit)
Grace period	Payments per year
Down payment	Fee, expressed a per cent of value

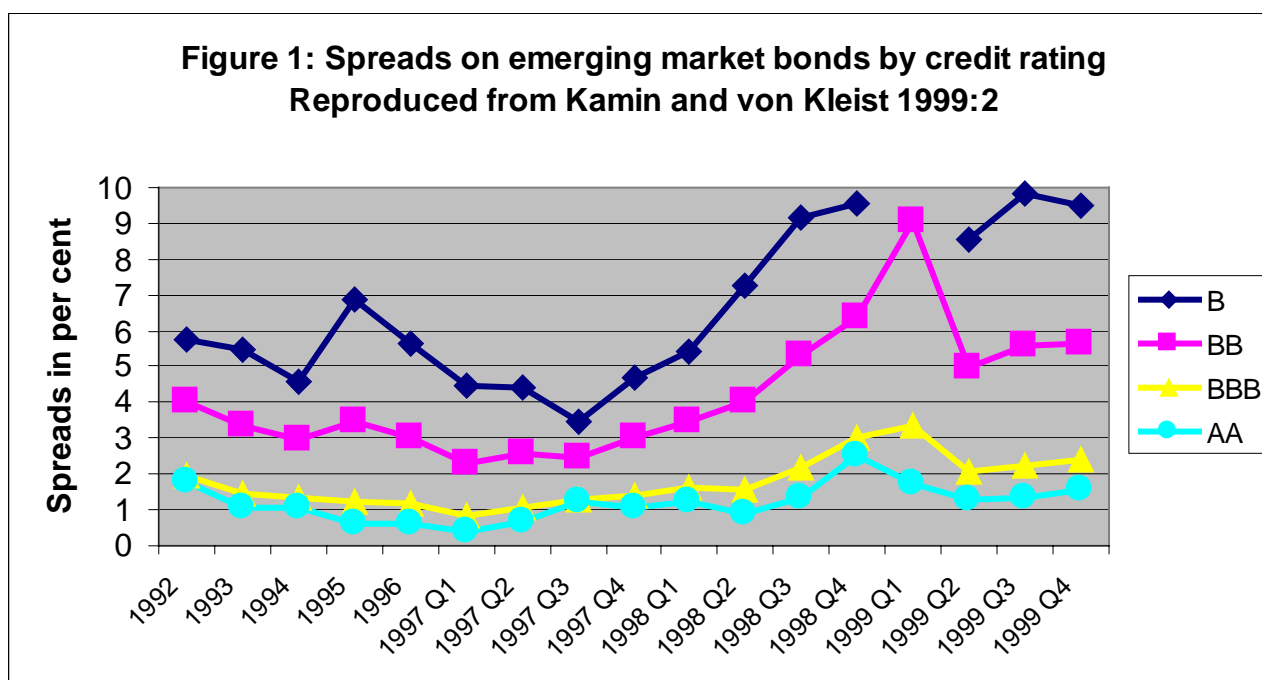
21. Assumptions behind these computations are given in the Annex. One which bears attention is the assumption regarding observations for which data would otherwise be insufficient to conduct the analysis. In total, 11 per cent of export credits in 1998, or USD 930 million, could not be analysed without the assumption that the importers receiving these credits have a certain credit rating. The data may be insufficient in one of four ways: first, the survey does not provide information regarding the importer (80 per cent of the missing observations at the end of 1998); second, the survey data might not provide the length of the export credit (0.5 per cent); third, the importer is specified, but no credit rating for the importer is available (18 per cent); or, fourth, there is insufficient information regarding the programme (1.5 per cent). Where possible, such omissions are overcome by assuming that the importer has a fairly low credit rating (Caa2 by Moody's scale). This assumption allows the estimates to include all export credits which would otherwise be omitted from the study, save Hungary's export credits of USD 18.6 million. However, it should be recognised that the assumption is arbitrary and the actual interest rates of these importers is unknown and, moreover, is impossible to know in the majority of these cases because the importer is not specified.

22. Another important set of assumptions underlying subsidy rate estimates relate to the development of the interest rate data required for the present value calculations. For example, the sovereign credit ratings and corresponding interest rates, as estimated by a separate study, are used to represent interest rates particularly in the case of high-risk importers. Although there are no data in the survey to indicate how frequently the actual importer may be a private agent without ties to the government, the sovereign credit rating is assumed to be representative and is used in the present value calculations underlying the subsidy rate estimates. The study does not assume that there are any additional transaction costs above normal costs, apart from the fee of the programme itself which is an element of the analysis. Moreover, the study assumes that all net benefits of the export credits are passed on to the importers. However, evidence suggests that financial institutions in at least one country do charge a higher interest rate on export credits than the present study would indicate. Thus, some part of the benefits may be lost to additional costs of the transaction or to financial institutions. No such loss is assumed in the results reported in the main text of the paper. Instead, importers receiving an export credit are assumed to gain access to the risk-free rate, which is the USA treasury rate in the present study in order to be consistent with the method underlying the other interest rate data. Tests of the effects of different assumptions on the results are presented in the Annex.

23. This study focuses on subsidy rate estimates for 1998, the final year of the Participants' survey data. The estimation will be made twice for this one year: once for the beginning and once for the end of the year. The interest rates are an important input in determining how importers perceive export credits. The interest rate database (whose derivation is described in the Annex) gives interest rate estimates at the start and the end of 1998.

24. It must be emphasised that there is no representative year. Each year represents a different constellation of credit and commodity markets. Thus, due care should be exercised before generalising the results of 1998 to other periods. During the 1995-1998 survey period, there were a series of local and global disruptions in credit markets. The Mexican peso devaluation in 1995 and the so-called Tequila effect on other Latin American economies affected credit markets. The devaluation in mid-1997 of Thailand signalled the start of the Asian financial crisis. As the effects of the Asian financial crisis spread through the global economy in late 1997 and 1998, interest rate spreads between medium and low-risk debt widened. The instability in credit markets was extended by the Russian government default in September 1998. A highly-leveraged hedge fund became insolvent due to ensuing relative asset price changes. The result was a strong substitution away from high-risk investments and towards low-risk investments, causing the interest rates of the former assets to rise and those of the latter assets to fall. The evolution of interest rate spreads over the period are shown in Figure 1, which is reproduced from Kamin and von Kleist (1999:2), whose work also provides the basis of the interest rate estimates used in the present study.

Figure 1: Spreads on emerging market bonds by credit rating
 Reproduced from Kamin and von Kleist 1999:2



25. The financial market situation in 1998 was atypical, which has some impact on export credits. Without addressing the characteristics of the demand for or the supply of export credit programmes, which may be related to commodity markets as well as financial markets, subsequent text presents the subsidy rate estimates based on 1998 data. The computations are performed twice: once using interest rates prevailing at the start of 1998 and the second time using interest rates prevailing at the end of 1998. Subsequent text focuses on the beginning 1998 estimates, as these appear to be less affected by financial crisis than the ending 1998 rates. Using an example from Figure 1, the spread on rating “B” remained comparable to levels of 1992-96 in the first quarter of 1998 before rising to almost 10 per cent by the last quarter of 1998. However, it should be noted that the fees of some export credit programmes may also have been adjusted to reflect the changing risk of importers, so the actual subsidy rates for 1998 may be higher than the beginning 1998 rate estimates. For example, if fees were increased during 1998 to offset increasing risk, then the beginning 1998 subsidy rate estimates would be biased downward. The bias would result from combining the survey data, which provide only the total fees for the year, with alternative estimates of interest rate spreads for the year, even though the fee of any single transaction may correspond specifically to the interest rate spreads at the time of that transaction. Again, it must be stressed that no single year can be called typical, so caution must be exercised when extrapolating the results to other years. As a last point, while the subsidy rate estimates change under different interest rate assumptions, the general conclusions remain valid in sensitivity tests of the subsidy rate estimates with respect to the interest rate data (reported in the Annex).

Subsidy rate estimates for 1998 show that some export credits distort trade

26. The subsidy rates for 1998 are reported in Table 2. It should be noted that intra-EU trade is included for most EU member countries in these estimates because subsidy rate calculations are based on parameters which are relevant for the entire programme, rather than only a portion. For example, a key parameter is the fee rate, for which the survey provides an average across all export credit recipients. If subsidy rate calculations did not also cover the complete list of recipients, then the results may be inaccurate. In fact, excluding low-risk importers while using the average fee would tend to create a bias for

higher subsidy rate estimates. In the case of Hungary, insufficient data are available to calculate the subsidy rate of programmes of either of the two organisations responsible for export credits.

27. The first two columns of Table 2 show the beginning 1998 subsidy element estimates of export credits expressed as both an amount in millions of US dollars and as a per cent of the export credits. Calculations based on estimates of the interest rates at the end of 1998 are also shown. The last two columns of Table 2 show the simple averages of beginning and ending 1998 subsidy elements, again as an amount (in millions of US dollars) and as a rate (a per cent of the export credit value). The provision of estimates for both the start and end of 1998 reflects data limitations, as discussed above.

Table 2: Subsidy Element Estimates in 1998

	Subsidy Element Estimates					
	Start 1998		End 1998		Average 1998	
	Amount	Rate	Amount	Rate	Amount	Rate
	<i>(mil USD)</i>	<i>(per cent)</i>	<i>(mil USD)</i>	<i>(per cent)</i>	<i>(mil USD)</i>	<i>(per cent)</i>
Australia	1.6	0.1	8.7	0.6	5.1	0.3
Austria *	0.0	0.0	0.1	1.2	0.1	0.6
Belgium *	0.2	0.1	1.5	1.0	0.9	0.6
Canada	8.3	0.7	19.0	1.7	13.6	1.2
Finland * †	0.1	0.3	0.2	0.9	0.2	0.6
France	8.2	2.5	16.7	5.1	12.4	3.8
Germany *	0.0	0.7	0.0	1.3	0.0	1.0
Greece *	0.0	-0.4	0.0	0.4	0.0	0.0
Korea	0.1	0.1	0.2	0.3	0.1	0.2
Netherlands	2.2	0.5	4.8	1.2	3.5	0.8
Norway †	0.0	2.8	0.0	4.7	0.0	3.8
Spain *	4.6	0.6	8.8	1.1	6.7	0.8
USA	191.2	4.9	324.9	8.3	258.0	6.6
Total	216.3	2.6	384.8	4.6	300.5	3.6

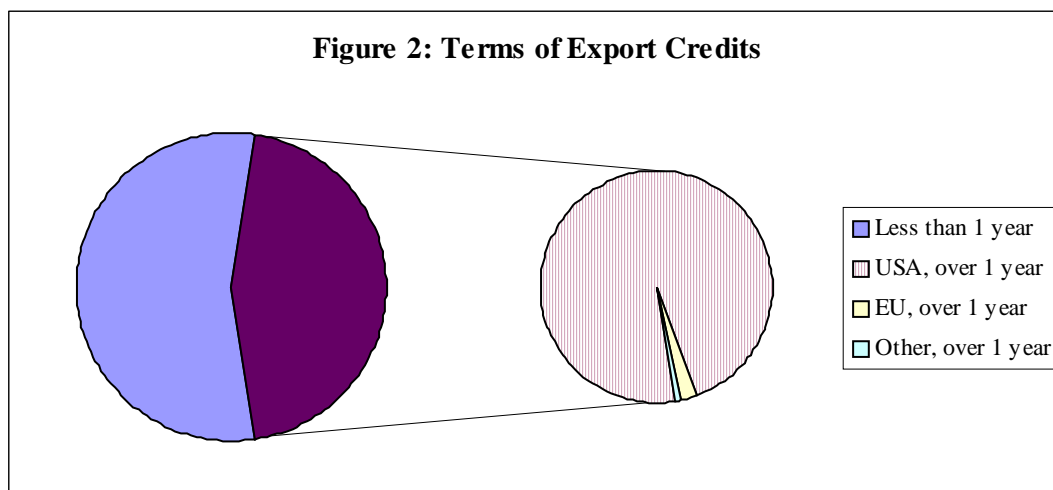
* To prevent a likely upward bias, calculations of certain EU members include intra-EU export credits.

† Fee data missing. Thus, the estimates should be interpreted as a maximum, before subtracting the fees.

Sources: Subsidy amounts and rates are calculated, as described in the report. Calculations for Hungary are not possible due to insufficient information.

28. Where the evaluation of export credits results in a positive subsidy rate, the export credit programme is lowering the effective purchase price paid by importers and will consequently distort trade in favour of the particular exporting country. In Table 2, therefore, the countries can be ranked from highest to lowest subsidy rate as an indication of the degree to which their export credit programme subsidises importers per unit of expenditure. Such a ranking would put the USA first, with a 4.9 per cent subsidy rate based on interest rates at the beginning of 1998 -- recognising that this provides only a single observation. Subsidy rates of Norway and France are 2.8 and 2.5 per cent, respectively. In the case of Norway, as well as that of Finland, fees were not provided or were not comparable to other data (see description of survey data in the Annex). Thus, for these two countries the subsidy rate estimates should be viewed as a maximum, since there are likely to be fees which would decrease the benefits to importers. Most of the other countries have much lower subsidy rate estimates. The finding that the USA export credit programme is the most distorting follows from Table 3, which shows that the USA offers a large share of long-term export credits, and the summary statistics of the survey reported in the Annex: The USA does not require a sufficiently high fee or reduce the level of guarantee to offset its relatively long-term export credits. In

other words, it is the long-term export credits which are most valuable to importers, particularly those facing high interest rates. From an analytical perspective, higher fees would offset this result and limit market distortion.



29. One result of the present value calculations is that the longer the export credit, the greater the likelihood of an increasing subsidy element, all other things equal (see Table A.1). Thus, the subsidy element increases unless offset by other conditions, such as greater fees or a lower level of guarantee. Table 3 shows the use of total export credits over the survey period by length. Data from the Participants' survey allows examination of data which are less than one year as compared to those which are on terms of one year or more. In reality, a span of even less than one year may be more appropriate when dividing export credits by length of the term due to the short life of many agricultural products, but the survey data increments do not allow such disaggregation. Based on the total export credits of the sample period, as shown in Figure 2, 55 per cent of export credits are on terms of less than one year and the remaining 45 per cent are on terms of on year or more. Again, referring to Figure 2, the USA accounts for 97 per cent of export credits with a term of one year or more, with the EU, Canada and Hungary also supplying small amounts of export credits on such long terms. It should be noted that some of these long term export credit arrangements may be due to matching (e.g. offering matching terms to compete against the financing terms offered by other exporters). This is provided for in the wider Arrangement, which is a "gentleman's agreement" governing export credits, in the context of matching both member or non-member export credits with repayment terms of 2 years or more with the exception of agriculture and military aircraft. In the subsidy rate calculations, the amount of each exporter's credits on longer terms relative to that exporter's total credits is important. Portugal reports that all of its export credits during the survey period had a length of at least one year and the USA reports the second largest share of export credits at one year or more in length, at 94 per cent. The implication of the present value calculations is that these longer lengths do not create market distortions if the greater length is offset by higher fees or a lower level of guarantee, for example. The subsidy estimates reported in Table 2 imply to what extent that has been the case in different countries.

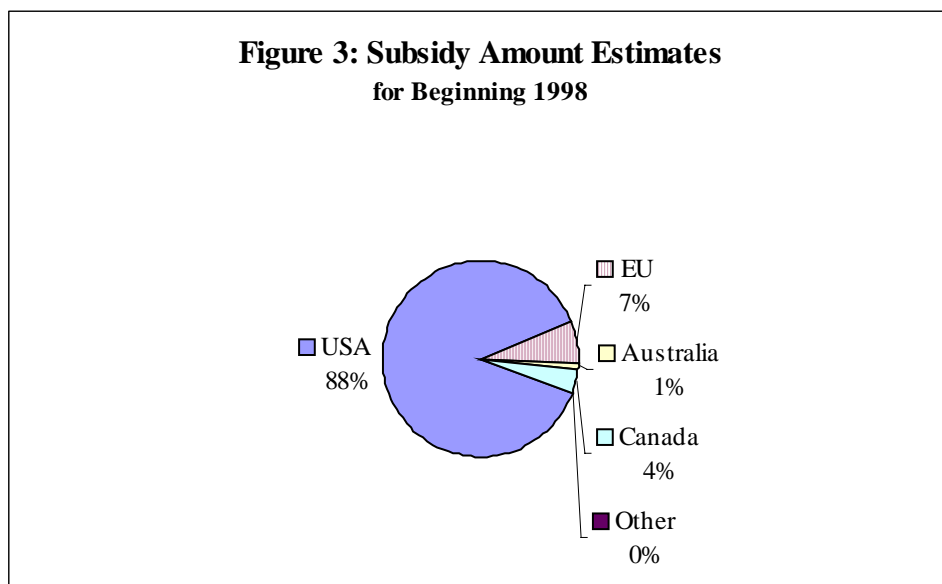
Table 3: Export Credits by Length

	1995	1996	1997	1998	Total
	<i>(million USD)</i>				
Less than one year					
Australia	1106	2014	2130	1553	6803
Canada	546	697	1199	1071	3513
European Union	946	974	1033	1142	4094
Austria	9	7	10	11	37
Belgium	83	121	133	153	491
Finland	6	5	11	11	32
France	0	153	189	226	568
Germany	2	2	1	0	5
Greece	1	1	3	4	8
Netherlands	392	341	361	411	1506
Spain	453	344	325	325	1447
Hungary	0	0	7	6	12
Korea	0	33	46	46	126
Norway	0	0	0	0	0
USA	356	123	87	144	710
Total	2954	3840	4503	3961	15257
One year or more					
Canada	23	0	39	37	100
European Union	40	15	118	113	285
Austria	0	2	2	0	4
France	0	0	104	104	208
Germany	19	1	0	0	19
Portugal	6	4	0	0	10
Spain	14	9	13	9	44
Hungary	0	0	3	8	11
USA	2487	3066	2758	3785	12097
Total	2550	3081	2919	3944	12494
Duration not provided					
Hungary	0	38	2	5	45
Total	0	38	2	5	45

Source: Export credit data are from a confidential survey by the Participants to the Arrangement.

30. The negative values for some subsidy rate estimates at the beginning of 1998, may be from any of several factors, but should not be interpreted as a type of tax or a programme which increases total costs. Obviously, this could simply reflect the effects of calculating subsidy rates for export credits given at the end of 1998, when interest rates were rising and any risk-based fees for export credits would have been rising as well, but using the lower interest rates of the beginning of 1998. Again, the survey data do not indicate when during the year the export credits were given, so the two sets of calculations should be interpreted as bounds on the actual subsidy rate of 1998. In addition, as reported in the Annex, subsidy rate estimates are based on data which is imperfect, implying some margin of error in the estimate for each exporter. For example, Participants' survey data are sometimes on a fiscal year basis rather than calendar year, whereas this report assumes the latter basis. Moreover, the interest rate database is a construction of estimates, as actual data are not available. Indeed, there are no data indicating when during the year the

export credits may occur, nor what interest rates may have prevailed at that time. Thus, one cannot safely conclude from this study that programmes distort markets for subsidy rate estimates which are positive, but very close to zero.



31. The amount of subsidy element could be ranked to take into account the varying levels of magnitudes of export credits across exporters as well as the rate of subsidy per unit of export credit given. Thus, Table 2 offers two measures of the subsidy element, a rate which shows the level of distortion per unit of export credit and an amount which is the product of this rate and the total export credits to estimate an absolute level of distortion.

32. Focusing again on the beginning 1998 estimates at the left of Table 2, yet recognising that these are not necessarily representative of other years, the total subsidy element of these countries' export credit programmes is USD 216 million. By this measure, as shown in Figure 3, the USA is responsible for 88 per cent of the estimated subsidy element resulting from export credits as reported by the Participants. Canada and France each account for 3.8 per cent of the total, whereas Spain accounts for 2.1 per cent. However, none of the other Participants give as large a volume of export credits at terms so favourable for the importers as the USA.

Over a third of the export credits of the survey target bulk cereals, yet these account for almost half of the subsidy element of export credits

33. The export credits and subsidy equivalent amounts are reported by commodity grouping to show the incidence of export credits both in absolute terms and relative to trade in Table 4. The column listing the commodity groups, at left, provides only terse descriptions of what each group includes. The seven commodity groupings of the survey are described more thoroughly in the Annex (section 3). The first four columns of data at the top of Table 4 show the survey data on export credits disaggregated across these groupings. The largest share of export credits cover bulk cereal products, which includes wheat, rice and other grains. This category alone accounts for just over a third of export credits over the four years of the survey. Vegetable products, which includes oilseeds, barley malt and wheat flour, is second largest followed closely by the growing share given to facilitate trade in livestock products such as cattle, meat and dairy products. The final line of data before the total in Table 4 shows the amount of export credits for which no commodity group is specified in the survey data, either because the response did not state the

commodity or else was related to a commodity which is not covered by any of these groups. These average 14 per cent of the total export credits.

Table 4: Export Credits and Subsidy Element by Commodity Group

Commodity Group	Year of the Survey				1998 Subsidy Amount	
	1995	1996	1997	1998	Beginning	Ending
Export credits	<i>(million US\$)</i>					
Group 1-livestock	728	778	1057	1260	14.0	27.4
Group 2-vegetable	867	962	944	1299	28.1	57.6
Group 3-cereal	2063	2838	2753	2222	98.4	169.7
Group 4-oils & fats	186	139	197	253	10.0	18.5
Group 5-processed	528	638	734	793	13.0	23.1
Group 6-skins & hides	213	313	300	241	4.6	6.1
Group 7-wool & hair	47	552	477	538	0.6	3.0
Unknown/Other	872	739	961	1305	47.6	79.4
Total	5504	6959	7423	7910	216.3	384.8
Total exports	<i>(million US\$)</i>					
Group 1-livestock	37553	38330	38918	36682		
Group 2-vegetable	26569	29057	29572	27974		
Group 3-cereal	21407	24312	18984	16094		
Group 4-oils & fats	7013	6184	7216	8150		
Group 5-processed	54782	58122	61346	59217		
Group 6-skins & hides	2694	2607	2599	1932		
Group 7-wool & hair	3306	3167	3364	2181		
Unknown/Other	n.a.	n.a.	n.a.	n.a.		
Total	153323	161778	161999	152228		
Relative to total exports	<i>(per cent)</i>					
Group 1-livestock	1.9	2.0	2.7	3.4	0.0	0.1
Group 2-vegetable	3.3	3.3	3.2	4.6	0.1	0.2
Group 3-cereal	9.6	11.7	14.5	13.8	0.6	1.1
Group 4-oils & fats	2.6	2.2	2.7	3.1	0.1	0.2
Group 5-processed	1.0	1.1	1.2	1.3	0.0	0.0
Group 6-skins & hides	7.9	12.0	11.5	12.5	0.2	0.3
Group 7-wool & hair	1.4	17.4	14.2	24.7	0.0	0.1
Unknown/Other	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	3.6	4.3	4.6	5.2	0.1	0.3

Sources: Export credit data are from confidential survey by the Participants to the Arrangement. The two columns at far right reproduce the subsidy amount estimates of the present study, both in absolute terms and relative to total exports. Total export values are from Foreign Trade Statistics. Intra-European Union export credits and trade are excluded for all EU members.

34. Disaggregating the subsidy amount estimates across commodity groups shows different weightings, although difficulties applying the survey data may bias the results for any single commodity. Subsidy equivalent amounts reported in Table 4 indicate that even though bulk cereals represents only a third of export credits, these commodities absorb the highest share of the beginning 1998 subsidy

equivalent estimates with almost half of the total. The share of distorting export credits facilitating trade in other or unknown commodities (the final line of data before the total) is a distant second with about 22 per cent of the total. Commodity groups covering oils, fats, skins, hides, wool and hair receive both the least export credits and the smallest share of the subsidy equivalents estimated in the present study. The difference between the incidence of export credits and the incidence of the subsidy element is related to the use of export credits by different exporters across commodity groups. The largest share of the more distortionary programmes was provided to facilitate trade in bulk cereals, perhaps to importers with high interest rates and/or on long terms without offsetting fees, whereas livestock product export credits are generally offered by countries with less distorting or non-distorting programmes.

35. The use and subsidy amount estimates of export credits by commodity are compared to the total exports of these countries by the same commodity groups in Table 4. The caveats of Table 1 continue to apply: The Participants' survey data and FTS data may not match on the commodities included, basis (FOB or CIF) or year (calendar or other). Nevertheless, Table 4 gives some indication of the incidence of export credits in terms of totals and subsidy amounts by commodity relative to total exports by these countries. Over the survey period, on average, trade from these countries in the wool and hair group products was most often facilitated by export credits (14 per cent of exports), followed by the cereal group (12 per cent) and the hides and skins group (11 per cent). Again, the comparison of the total value of export credits (as opposed to the subsidy element of export credits) to trade is not meaningful, in the sense that these transactions may or may not be distorted depending on the conditions of the export credits by way of the length, the level of guarantee, fees and other characteristics. That is to say, the level of trade facilitated by export credits alone does not indicate the relative level of the subsidy amount these programmes cause. Instead, the level of the subsidy element from export credits is compared to the total world trade at bottom right of Table 4 to represent the importance of export credits in a global context. In terms of the actual subsidy element caused by export credits in comparison to total trade, the greatest incidence falls on exports of the cereal group, with the subsidy amount relative to total exports estimated to be 0.6 per cent (using beginning 1998 estimates). This is almost three times greater than in the market which is second most affected by subsidising export credits in relative terms, that of the skins and hides group, in which the subsidy element of export credits accounts for about 0.2 per cent of these countries' total exports. Using the beginning 1998 estimates, although these represent only a single observation, these results as regards the cereal markets can be interpreted thus: the estimated reduction in costs for importers of cereals due to export credits of these countries was equal to 0.6 per cent of the total value of the exports.

36. In summary, where the estimated subsidy rate is positive, export credits distort importer's decision-making in favour of the export credit granting country. For both estimates, covering the start and end of 1998, the largest subsidy rate is estimated for the USA, which also reports the highest level of export credit use. The financial crisis of 1998 does not limit this result, because the beginning 1998 interest rates reflect more normal interest rate spreads and the corresponding estimates are very similar to the results of previous research where comparable. Results for other countries are smaller, but subsidy rates are positive in several cases, albeit at lower levels than that of the USA. In testing the sensitivity of these results with respect to the interest rate data, the specific magnitudes of the estimates change but the general conclusions remain valid (see Annex). The USA export credit programme is estimated to be the most distorting, whether measured using the rate or the amount, for all variations of the interest rate data explored. In terms of subsidy rates, estimates for the programmes of France and Norway are also consistently and significantly positive. (Norway's subsidy rate is overestimated in that the fee cannot be subtracted from the estimate.) Export credits of France and Canada are estimated to have the highest subsidy amounts after the USA in the sensitivity analysis experiments. The consequences impact world cereal markets more than those of other commodities. Moreover, export credits are shown to be available for a small, albeit growing, share of agricultural commodity trade. The effects of export credits on world markets in aggregate, as shown later, depends upon the degree to which these programmes distort trade and the magnitude of export credits relative to world markets.

4. How defaults can affect the subsidy rate

37. There is a possibility that export credit programmes might be operated in such a way that defaults on payments contribute to the subsidy element. In the context of present value calculations, however, this possibility is restricted. For example, whether or not net defaults associated with export credit programmes are offset by the fee income of the programme are not relevant to present value calculations. The calculations represent the importer's evaluation of the export credit, taking into account the lower guaranteed rate over the lifetime of the financing converted into present value at that importer's discount rate and adjusted for fees paid. In considering the value of a stream of future payments there is no room for *ex post* defaults.

38. In the context of the importer's evaluation of future payments, the only way a default will have an effect is if it is planned in advance. Of course, there is no way to know from the survey data if this situation ever occurs. If the importer enters into the transaction planning to default on payments, then the perceived cost to the importer of buying the commodity is limited to the fees and down payment paid, if any. On the other hand, because unintended defaults do not affect the importer's purchasing decision, they are appropriately evaluated in the standard method applied in the previous section (e.g. the present value calculations are not changed). Thus, if the importer does not plan to repay and the export credit programme is operated knowing that importers enter into transactions without intention to repay, then, in those cases only, the subsidy rate calculations should be substantially modified to incorporate such defaults.

39. Exporters' defaults net of recoveries for export credits are reported in the survey. The default net of recoveries is the share of obligations which come due to the government and which reflect loans which are not repaid. For a guarantee, for example, it is the portion of the total export credits for which the government had to pay the loan, less the portion which was repaid. As shown in the Annex (see Table A.6), the relative appearance of defaults net recoveries appears to be quite low, with a simple average magnitude in 1998 of 0.3 per cent of the export credit value. Of course, comparing defaults which are based upon past transactions with contemporaneous export credits is not entirely accurate, but this does indicate the relatively small size of defaults in 1998 as reported in the survey.

40. The relatively low default rates reported for 1998 limit the magnitude of the increase in subsidy rate even if an implausibly large share of the defaults were assumed to be planned. However, the default rates reported in the survey may be misleading. There is no way to know what portion of those loans repaid were actually repaid by the importer. For example, if the exporting country's government decides to forgive, refinance and delay or repay (e.g. by other agencies) some importer's debt, does this exporting country count the credit in the survey as a default or as a repayment?

5. Importers and liquidity constraints

41. A justification given for government involvement in export credits has been the ability of the export credit to overcome liquidity constraints of certain importers. In effect, rather than compete with private market trade, the export credit is believed to enable a transaction which would not otherwise occur. This justification, if true, has the additional implications that export credits could help countries which cannot afford to purchase food sufficient to feed their populations, albeit at very low levels of concessionality, if any. The validity of this argument is examined in light of the survey data in the following paragraphs.

Can export credits create demand?

42. “Additionality” is defined as the ability of a policy to expand demand. Any attempt to use additionality as a justification for export credits in a multilateral context must limit the definition to only those cases where the expansion in demand is global, with no reallocation in favour of one country. This definition omits those programmes which benefit a particular exporter partly at the expense of other countries’ exports. Thus, programmes which simply lower the import price cause an increase in total world import quantities, but also cause a reallocation among exporters and has a negative impact on producers in the importing country. In considering additionality under this definition, it matters whether a country’s exports rise because it applies a policy which lowers its effective price (e.g. a move down along the world demand curve) or whether they grow because of stronger demand for imports (e.g. an outward shift in the world demand curve). In the former case, an increase in a countries’ exports may be due to an increase in world import quantities, as importers buy more at a lower price, but it may also be due to a displacement in the supplies from competing exporters. This study does not consider as additionality those increases in a country’s exports where the reasons for these increases remain ambiguous. The definition of additionality in a multilateral context should be restricted to only those cases where an export policy causes an increase in importer demand at any price and is therefore not at the expense of other exporters nor of producers in the importing country.

43. Export credits have the potential to create additional demand under this definition, although even this case can be ambiguous. Export credits may increase demand if, like an increase in income, they increase demand at any price. If there is additionality, then the effects of export credits on world markets would be indirect, as the export credit would not replace competitors’ exports. Instead, those export credits which provide additionality would create demand which would not otherwise exist, then remove from a specific country’s normal exports the quantity required to satisfy this new demand. However, additionality is unlikely in cases where export credits lower the effective price but offer only limited improvement in financing terms. While some part of this increase may be caused by a global, price-induced increase in imports, it also reflects displacement of exports by competitors. Export credit programmes may only create additionality in cases where they reduce or eliminate liquidity constraints in importing countries, thereby allowing these countries to make purchases which they otherwise would not have done at any price. For example, if an export credit allows a country to overcome systematic liquidity constraints and if food imports are a priority for the country, then additionality in a multilateral context is possible. However, ambiguity remains because such programmes might replace (i.e. crowding out) domestic production, private market loans or future imports. If liquidity constraints are not systematic, then assisting a particular firm in financial difficulty is unlikely to affect significantly total demand for the agricultural product. Alternatively, if food imports are not a priority, then the export credit is likely to replace commercial imports of food or domestic production, since additional food is not required. The fact that export credits are targeted at specific importers does not imply that these recipients are necessarily selected according to these criteria in order to expand global demand, as the import markets may be chosen instead to expand the country’s own exports by displacing competitors. Nor should the absence of commercial trade necessarily be taken as an indication that private financing cannot operate in a market, as private agents may instead be unable to compete with government financing (see Eaton). In short, these criteria for testing for additionality in a multilateral context are difficult to test in practice.

44. One approach to establish an upper bound on additionality, setting aside the caveats above, is to examine net-food importing developing countries (NFIDCs) or less developed countries (LLDCs) separately. These are groups of countries as defined at the United Nations and given special consideration due to their food needs and/or relatively lower level of economic activity. It is largely for these countries where liquidity constraints might be a universal factor for all of the countries’ importing agents and where food imports are a priority if financial constraints are alleviated.

Recipients of export credits are mostly OECD Members, not developing countries

45. Table 5 shows the shares of export credits by different groupings of countries. Export credits for which the importer is not specified in the survey are not assumed to be in any particular classification. The top half of Table 5 shows the amount of export credits of each country which is identified as going to a LLDC importer. The sum of export credits to these countries over the four years of the survey is indicated, then the sum of all export credits by the country in question. At the far right, in the top half of the table is the ratio of these two totals (e.g. the export credits going to LLDCs divided by the total export credits to all recipients). The lower half reports the same statistics for NFIDCs. It should be noted that intra-EU export credits are included in Table 5 for all EU countries except France (in which case no such data are provided). The reason is to show a complete accounting for export credit use, to test the argument that export credits can be justified on the grounds of either additionality or assisting relatively poorer countries to import food. In this light, it is relevant to note what share of export credits of EU states is applied to OECD countries, both within and external to the common market.

46. Table 5 highlights the relatively small role of net food importing and developing countries in export credits. The data show only 9 per cent of export credits are given to NFIDCs in the survey period (10 per cent if intra-EU transactions are excluded). NFIDC's share has fallen from 10 per cent in 1995 to 7 per cent in 1998. Similarly, LLDCs represent only 0.2 per cent of export credits during the survey (0.3 per cent if intra-EU transactions are excluded). Adding all data for which no importer is specified would add only 0.6 per cent in 1995, but a more sizeable 8.2 per cent in 1996 and 1997 and 9.4 per cent in 1998. This would assume that all export credits without corresponding information about the importer are received by importers who are both net food importing developing countries and less developed countries.

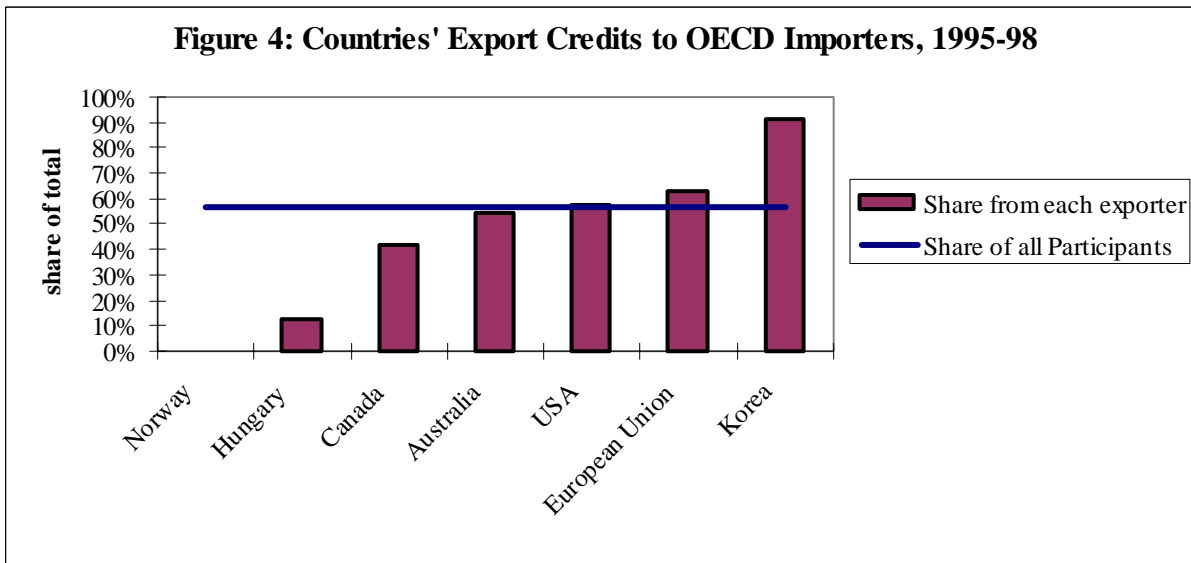
47. On the other hand, Figure 4 shows that most recipients of export credits in the 1995 to 1998 survey period were OECD countries. OECD importers received over half of the export credits in each year, ranging from 50 per cent in 1997 to 63 per cent of export credits in 1998. This decreases the likelihood of demand creation. OECD countries are less likely than the other groupings shown to face liquidity constraints and, hence, to increase demand when receiving export credits. The OECD countries which may have faced liquidity constraints are significant, however, as Mexico received USD 1 667 million export credits in 1996 and Korea received USD 1 441 million export credits in 1998. The potential for these two countries to have imported without export credits might be questioned due to the financial difficulties each suffered in these two years. In the case of Korea, at least, it should be recalled that its own export credit programme was maintained in 1997 and 1998 based on the annual data of the survey (see Table 1), implying that systematic liquidity constraints may not have been present at all times of these years.

Table 5: Recipients of Officially Supported Export Credits

	Export credits to Recipient Type					Total export credits	Share of Total (per cent)
	1995	1996	1997	1998	4-year Total		
	(millions of USD)						
To Developing Countries (LLDCs)							
European Union *	7.4	4.0	13.1	8.7	33.2	8740.5	0.4
Austria	3.0	0.0	0.1	0.1	3.2	42.5	7.5
Belgium	2.5	3.2	5.3	4.2	15.1	501.9	3.0
Finland	0.0	0.0	0.0	0.1	0.1	70.7	0.2
France *	0.0	0.0	0.0	0.0	0.0	776.0	0.0
Germany	0.0	0.0	0.4	0.0	0.4	25.1	1.7
Greece	0.0	0.0	0.0	0.0	0.0	22.1	0.0
Netherlands	1.6	0.5	7.0	4.0	13.2	4259.8	0.3
Portugal	0.0	0.0	0.0	0.0	0.0	9.9	0.0
Spain	0.3	0.3	0.3	0.3	1.2	3032.3	0.0
Australia	7.3	12.6	7.6	6.7	34.3	6802.6	0.5
Canada	0.0	0.0	0.0	2.8	2.8	3613.3	0.1
Hungary	0.0	0.0	0.0	0.0	0.0	68.5	0.0
Korea	0.0	0.0	0.0	0.0	0.0	125.8	0.0
Norway	0.0	0.0	0.0	0.0	0.0	0.1	0.0
USA	0.0	0.0	0.0	0.0	0.0	12806.4	0.0
Total *	14.7	16.6	20.7	18.2	70.2	32157.3	0.2
To Net Food Importing Developing Countries (NFIDCs)							
European Union *	41.0	35.8	137.1	165.5	379.3	8740.5	4.3
Austria	0.0	0.1	0.0	0.1	0.2	42.5	0.5
Belgium	7.5	9.5	8.9	12.1	38.0	501.9	7.6
Finland	0.0	0.0	0.0	0.0	0.0	70.7	0.0
France *	0.0	0.0	78.0	104.0	182.0	776.0	23.5
Germany	0.0	0.0	0.0	0.1	0.1	25.1	0.6
Greece	0.0	0.0	0.0	0.0	0.1	22.1	0.5
Netherlands	18.2	12.3	11.0	31.1	72.6	4259.8	1.7
Portugal	0.0	0.0	0.0	0.0	0.0	9.9	0.0
Spain	15.4	13.9	39.1	18.0	86.4	3032.3	2.8
Australia	23.8	33.9	52.7	46.2	156.6	6802.6	2.3
Canada	26.1	1.3	39.7	34.7	101.9	3613.3	2.8
Hungary	0.0	0.0	0.0	0.0	0.0	68.5	0.0
Korea	0.0	0.0	0.0	0.0	0.0	125.8	0.0
Norway	0.0	0.0	0.0	0.0	0.0	0.1	0.0
USA	633.1	666.0	560.7	361.1	2220.9	12806.4	17.3
Total *	724.0	736.9	790.2	607.5	2858.6	32157.3	8.9

*France does not report intra-EU trade. For other EU members, intra EU trade is included.

Source: Export credit data are from a confidential survey by the Participants to the Arrangement.



48. In conclusion, there is no clear evidence of whether or not export credits do provide any additionality in a multilateral context. Export credits may help importers which are liquidity constrained to buy commodities where they otherwise would not be able to do so at any price. To the extent that export credits do increase demand by overcoming liquidity constraint, they may increase world demand. Thus, while the benefit would accrue to a particular exporter, the additional trade would not be at the expense of competitors in terms of their existing sales. Of course, the competitors would not be able to compete for this new demand, unless the export credit were not tied to a specific country's exports. They could still indirectly benefit nonetheless as the new demand would remove from the competitive markets that portion of the sales under export credits which satisfy the new demand. However, it is possible for export credits to countries in need of food imports but facing financing constraints to replace or to prevent privately financed trade, past, present or future. Anyway, given the relatively small amount of export credits given to the countries most likely to suffer such financing constraints, the potential that they have increased demand during the survey period appears limited.

49. In fact, the very low shares of export credits which are given to developing countries or net food importers calls into question the justification for export credits that these assist countries facing liquidity constraints to purchase food where they otherwise could not. Even adding all data for which no importer is specified, the shares going to countries who might be most in need of financial assistance in the face of liquidity constraints is much smaller than the more than half of export credits which go to OECD countries, for whom the such arguments are not as plausible. As a consequence of these data, at least during the survey period, the primary motivation of export credit programmes is unlikely to be assisting developing countries to purchase food.

6. Other uses of export credits excluded from this study

50. Export credits offered by organisations acting under government authority, other than export credit agencies, and under certain food aid programmes were not included in this study. The survey data do not include export credits provided by such organisations nor do these data include food aid where it is provided using export credits. Nevertheless, just as is true of other export credit programmes, these may contribute to the distortion of commodity markets. Other researchers who study the effects of export

credits raise the questions about exchange rate guarantees or assistance with transportation costs, but these are not included in the survey and there is no reason from the survey to expect that they are used. These instances or issues regarding export credits are addressed, in part, below.

51. As a last point, the Participants represent only a certain number of countries, not even the entire OECD. The Participants (as of October 2000) are Australia, Canada, Hungary, Korea, Norway, the USA and the European Union and all its members. Argentina attends meetings related to export credits in agriculture and did respond to the Participants' survey, but these data are not included in the present paper.

Organisations with legislative authority

52. The existence of organisations operating under special government legislation is not in doubt. Several state trading enterprises have been subject to WTO notifications. State trading enterprises are addressed in a separate report by the OECD, which highlights the heterogeneity of such organisations, in terms of both goals and powers, and cautions against broad statements regarding state trading organisations (see [COM/AGR/TD/WP(2000)3/FINAL]). At issue in the present study on export credits is whether the government also provides an organisation with funding, directly or indirectly, which enables that organisation to operate an export credit programme on terms which are better than private market alternatives without offsetting fees. Irrespective of the question whether this would constitute official support, the result would be a distortion of trade in favour of that organisation's exports relative to competitors who have access only to private market financing.

53. The survey data do not extend to cover organisations with legislative authority to engage in export credits, other than export credit agencies, frequently on the grounds that no government support is provided to the organisation so they operate on commercial terms. There are several methods by which a government can supply funding to organisations with export credit programmes. The most obvious is direct budgetary support, of course. Less obvious would be tax breaks, a reduced regulatory burden or guaranteeing the organisation's debt (and, hence, allowing the organisation to borrow at the government's costs of capital). Perhaps the least transparent mechanism for funding such organisations is where legislative authority grants the organisation with special privileges or mechanisms for raising money which are not available to private firms. For example, revenues from government-enforced levies on producers or processors of agricultural commodities could be applied to export credit programmes such that they are offered on conditions more favourable than those of private firms without offsetting fees. Alternatively, the government could grant the organisation legislative control over certain markets so that it may behave as a monopolist or monopsonist, thereby raising non-competitive economic profits which might then be diverted into export credits. In these cases, some part of the levy or profits could be used to lower the total effective costs to importers. Thus, organisations with government authority to engage in export credits could employ these programmes as mechanisms of export distortion either with direct government funding or by way of cross-subsidisation.

The overlap between export credits and food aid

54. Similarly, food aid was recognised in the Uruguay Round Agreement on Agriculture (URAA), which refers to the Food Aid Convention (FAC) as regards the level of concessionality. The concessionality level is the degree to which the donor reduces the total costs of the assistance. For example, a grant corresponds to 100 per cent concessionality, as the donor nation provides the food aid without any repayment by the recipient. It can be argued that a greater level of concessionality makes food aid more effective in providing assistance to a developing country in need of food and also in limiting the

possibility that these be used as an export competition policy by increasing the cost of doing so to prohibitive levels.

55. The provisions of the URAA and the FAC do not preclude the possibility that some food aid is supplied on less favourable terms for the importer than grant terms. Immediately relevant to the present study, the Development Assistance Committee Statistical Reporting System does indicate that food aid loans occur. Such schemes would be uses of export credits to facilitate food aid which are not included in the present study, because they are not reported in the Participants' survey data. While the concessionality level may be high for such arrangements, they are not on fully grant terms as the importer is expected to repay the loan. The less than grant terms of export credits, where used as a mechanism of delivering food aid, may lead some observers to conclude that these are not sufficiently expensive to be self-limiting. In addition, if food aid delivered via export credits is not carefully targeted to prevent offsetting private trade, it may distort trade flows. In fact, the FAC does address the potential for food aid to replace the recipient's production or commercial trade. However, this requirement corresponds to the discussion of additionality in the previous section and is difficult to measure and to achieve. For example, the food aid delivered by export credits implies that it is going to a country with some ability to repay, yet should not offset any commercial sales in the present or future, nor the recipient's own production. Thus, while the present study does not address export credits where used to facilitate food aid, it is possible that these arrangements could distort trade.

Exchange rate guarantees and other possible programme benefits or effects

56. Previous research on export credits has included evaluations of the value of exchange rate guarantees or assistance with transportation costs (see Dahl, Wilson and Gustafson 1995). These are not included in the Participants' survey data and are not an element of the current report. If it is the case that an export credit programme pays some part of the transportation costs, the effect will be that each unit of expenditure results in a decrease in transportation costs. The importer's total costs for buying goods from that exporter will then likely decrease by the same amount, encouraging the importer to buy under the programme instead of under private arrangements from a competitor. Thus, if a programme offers assistance covering some part of the transportation costs, trade is likely to be distorted.

57. There are no data in the survey to indicate the currencies of the export credits and the study assumes that importers' interest rates for debt denominated in USD are appropriate in evaluating the present value of the total costs. This assumption would be appropriate if most trade in these commodities is conducted in USD and if, where exceptions do exist, these are transactions which are denominated in relatively stable currencies. Credit ratings should take account of the possibility that a sudden change in the importer's currency will make that importer default on its debt. For example, the possibility that a sudden devaluation would occur and force a given country into default should be captured by the credit ratings. Thus, this element of exchange rate risk is incorporated. On the other hand, if a country's export credit programme provides guarantees against exchange rate risk without offsetting fees, this could provide a subsidy element not included in the present study. The change in the expected payment of a loan in that currency is not captured in this study. As an example, if an importer's currency depreciates against the exporter's, this would decrease the value in the exporter's currency of any loan denominated in that importer's currency. Setting aside the question of possible default, which should be addressed by the credit ratings, there would be a loss in the expected payment if measured in the exporter's currency. This loss would be compensated by a payment to the bank or exporter in the case of an exchange rate guarantee. If a country offered an exchange rate guarantee without sufficient fees to offset the benefits, this would introduce a further subsidy element.

7. Export credits in world agricultural product markets

58. The purpose of this report is to identify the effects of export credits in world agricultural markets. To accomplish this, the survey data were presented in absolute terms and relative to trade. It was shown that, while export credit use is increasing, it is still small relative to total trade for most countries in the survey. The present value calculations show that some of these programmes do distort markets by decreasing importers' costs. The magnitude of the decrease using beginning 1998 estimates averages 2.6 per cent across the commodities of the survey, which is not large but is likely to be sufficient in competitive world markets for agricultural products to bias the decision-making of those importers receiving the distorting export credits. Of course, the survey data only extend to 1998 and the beginning 1998 estimates refer to only a single observation. Extrapolating past conditions into an evaluation of the effects of export credits on present or future world markets may introduce an error. Export credit use may have risen or fallen relative to trade since 1998 and some countries may have altered their programmes, which may increase or decrease the level of distortion, in the absence of any Arrangement governing their use.

59. The importance of export credits in total trade of agriculture products is not great, although certain export credit programmes do bias targeted importers' purchasing decisions and do distort markets. However, total export credits facilitated 5.2 per cent of world trade in 1998 (Table 1) and, of these, only a portion are estimated to have distortionary market effects in this study based on present value calculations which account for programme characteristics such as term, guarantee level and fees. Moreover, the subsidy rate estimates serve as an indication of the size of the discount which results from distorting export credits on each transaction. Thus, if the distorting element of a country's export credits were removed, a small rise in that country's export prices would result in the same level of exports as had occurred with the export credits (if nothing else changes). Altogether, export credits are not large relative to world markets either in comparison to the total value of world markets nor relative to the prices at which goods are transacted.

Preliminary analysis of the world market effects of distorting export credits

60. This result can be illustrated using Aglink, the partial equilibrium model of world markets for certain commodities which is maintained by the Secretariat and co-operators in certain OECD Members. This analysis is based on the assumption that perfect competition is a useful representation of the world wheat market. Survey data, as discussed above, suggest that transactions facilitated by export credits, although targeted, do enter into direct competition with other exports. The OECD Agricultural Outlook 2000-2005 (hereafter, Outlook) provides a projection of world markets in the near future under certain assumptions. The Outlook does not include export credits, but one example of export credits can be added to examine what impact export credits may have on world commodity markets. Wheat, which can be identified as Group 3A of the survey commodity groupings and adding Group 2A, wheat flour, is chosen for this example. The subsidy rate estimates of the beginning of 1998 are used here although, of course, these are not necessarily representative of rates at other times.

61. The USA is the country which accounts for the largest share of estimated distortions from export credits in the present study. The European Union export credits also distort wheat trade, with the subsidy amount estimated at USD 2.3 million. However, two-thirds of the distortion of agriculture trade caused by EU export credits reflects transactions for which no commodity group was supplied in the survey data. To incorporate some portion of this large amount, the same share of wheat in the subsidy amount related to export credits for which a commodity was designated is also assumed to be applied to wheat from the amount without a commodity group specified. Thus, 49 per cent of the USD 10 million subsidy amount without corresponding commodity given is assumed to apply to wheat, in addition to the USD 2.3 million subsidy amount which is known to go to wheat exports. The survey data of Canada do provide more details

on the commodity groups, so the subsidy amount calculations related to wheat export credits are used directly. Australia, however, only provides a totals for each group, as opposed to providing data specific to Group 3A, for example, so half of the Group 3 total subsidy amount estimate is assumed to apply to wheat. No assumption is made regarding Group 2 export credits from Australia. The scenario compares the results with and without wheat export credits (using Group 2A and Group 3A). This analysis will show a potentially atypical example rather than the average effects of export credits, because wheat receives a larger share of the subsidy element of export credit programmes (as shown in Table 4).

62. In order to perform this preliminary experiment, the beginning 1998 subsidy element of wheat is introduced as an export subsidy in each year of the Outlook from 2000 to 2005. The total subsidy amounts are USD 42.7 million or about USD 1.30 per tonne on average for the USA, USD 4.8 million or USD 0.30 per tonne on average for the European Union, USD 2.3 million or USD 0.12 per tonne on average for Canada and, finally, USD 0.04 million which is almost zero on a per tonne basis in the case of Australia. This method is appropriate in the context of world markets, as the subsidy element is the decrease in each importer's present value total costs, which should be equivalent to an export subsidy's effect on the purchase price. It should be noted that incorporating the subsidy element of export credits in this manner rules out any possibility of additionality (by the definition used above), even though the evidence against additionality is empirical and not conclusive. In other words, there will be no shift in world demand from these export credits by assumption, although a price effect is expected.

63. The consequence of introducing the estimated subsidy element of USA, European Union, Canada and Australia wheat export credits in the Outlook can be presented by comparing the results of the experiment with the Outlook in the final year of the projection period. By assuming the beginning 1998 subsidy element is constant in all years of the Outlook, a wedge or a gap is created between the exporters' domestic prices and the world prices which is equal to the average per unit subsidy element on a per tonne basis. When the preliminary analysis is viewed in comparison to the Outlook, USA wheat exports are almost 1 per cent higher and the USA wheat producer price is raised by half a per cent. (These per cent changes indicate the change caused by introducing the estimated subsidy element of the wheat export credits relative to the case if there were no subsidy element due to export credits.) Focusing first on the effects on world markets from USA export credits, competitors' wheat prices are lower in the case that USA wheat export credits are introduced in the Outlook, as they attempt to compete directly with artificially lower effective USA export prices (including financing) or as more costs are incurred by these exporters in finding alternative markets. It should be noted that, if additionality were present, then that portion of the total export credits which did create new demand which would not otherwise have been present at any price should be considered differently. Rather than restricting the effects of export credits to be analogous to an export subsidy, if additionality were present there would be some outward shift in world import demand.

64. Other wheat exporters that apply export credits may or may not lose in import markets, as their own export credit programmes offset some portion of the distorting effect of the USA export credits. The wheat prices of Canada and the European Union are largely unchanged in the preliminary analysis. The Canadian wheat price benefits from its own export credits and from direct access to the higher priced USA internal market. The European Union is largely unaffected in aggregate as the world price remains below the intervention price for most years of the Outlook. However, some reallocation across EU members' exports would be expected in favour of those countries which use distorting export credit programmes. The net effects on Australia are of a slightly lower producer price (0.3 per cent lower) as Australia's own export credits are insufficiently distorting to offset the negative effects of its competitors' programmes. In preliminary analysis, the net effect on world prices as perceived by exporters who are not using export credits and by importers is a reduction of about 0.3 per cent as compared to the case in which no countries use wheat export credits. These results would be greater if the ending 1998 subsidy element estimates were used, but would remain relatively small. However, these results are not the full effects of export credits, as

no export credits were introduced for any other commodity save wheat in this scenario, even though cross-commodity effects are significant.

65. The subsidy element estimates of this study show that export credits are fairly small relative to world agricultural product markets in terms of both total trade and in terms of the per unit costs. Thus, the effects of export credits on world markets are not very large, in aggregate, according to these preliminary estimates. However, the small effects on the aggregate level should not be taken to mean that export credits are at all unimportant at the individual level. In other words, each individual transaction which receives an export credit on conditions which are better than those of the private market is distorted, yet these transactions in 1998 were few and the per unit level of distortion was small. Of course, since there is no Arrangement disciplining the use of export credits in agriculture, their use in total or the degree of distortion may have increased since 1998 or may be increased in the future.

Export credits and export subsidies on world markets

66. The subsidy element of export credits can facilitate comparison between these export competition policies and export subsidies. Of course, the two operate in different manners. Yet the subsidy elements presented in this study are estimates of the effect of export credits on current total costs of importers, which should set the two policies on a more comparable basis. Except in cases where the importer has no access to financial markets, which have been shown to be rare in the survey period, the consequence of export credits for importers is very similar to what would be the case if they received an export subsidy which reduced the import price by this amount, and then sought financing through private markets without any government intervention. The resulting private financing conditions may be different from the officially supported export credit as regards length, up-front fees, down payment and guaranteed versus market interest rates, for example, but the present value of either arrangement should be directly comparable.

67. Table 6 presents data regarding the use of export credits and export subsidies during the sample period. The export credits reported here represent the total amount provided, but exclude intra-EU export credits in order to be consistent with the previous statement that these are unlikely to affect world markets. On the other hand, the average 1998 subsidy element estimates include the portion resulting from intra-EU export credits in all cases except for France and the Netherlands, as is required in these calculations in order to use parameters which are consistent (as described in the Annex, omitting these data would bias EU subsidy rate estimates). These export credit data and subsidy rate estimates are reported in the first half of Table 6. The lower half of Table 6 reports export subsidies. These are drawn from the Secretariat's *Market Access, Domestic Support and Export Subsidy Aspects of the Uruguay Round Agreement on Agriculture: Implementation in OECD Countries* [COM/AGR/TD/WP(2000)/89/FINAL] and, thus, indirectly from WTO notifications. The original data on export subsidy use are usually in the reporting country's own currency and on a basis other than a calendar year, yet the conversion into USD rests on simple average calendar year exchange rates and these are added, without an adjustment to account for the varying yearly basis. It should be noted that in some cases recent WTO cases have clarified the interpretation of export subsidies. For example, Canada's dairy pricing scheme and the USA Foreign Sales Corporations have been found to provide export subsidies, yet Table 6 does not include any adjustment to notification data to reflect these clarifications. Thus, while these data are not exact, Table 6 provides an indication of the levels of export subsidies.

Table 6: Export Credits and Export Subsidies

	Export Credits: Total Amount Provided				Subsidy Amount Estimates Beg. 1998
	1995	1996	1997	1998	
	<i>(million USD)</i>				<i>(million USD)</i>
Australia	1106	2014	2130	1553	2
Canada	570	697	1239	1108	8
European Union *	985	989	1151	1254	15
Hungary	0	38	12	19	n.a.
Korea	0	33	46	46	0
Norway	0	0	0	0	0
United States	2843	3188	2845	3929	191
Total *	5504	6959	7423	7910	216

	Export Subsidies			
	1995	1996	1997	1998
	<i>(million USD)</i>			
Australia	0	0	0	1
Canada	37	4	0	0
European Union	6386	7064	4943	5968
Hungary	41	18	10	12
Korea	0	0	0	0
Norway	83	78	102	77
United States	26	121	112	147
Total	6573	7286	5167	6205

* Intra-EU trade excluded for data on export credits given, but only subsidy amount estimates for France and the Netherlands exclude intra-EU trade.

Sources: Export credit data from confidential survey by the Participants; subsidy amount estimates are from the Secretariat's calculations, as described in this report; and export subsidies are drawn from the Secretariat's *Market Access, Domestic Support and Export Subsidy Aspects of the Uruguay Round Agreement on Agriculture: Implementation in the OECD countries*, as derived from WTO notifications. Original data regarding export credits and export subsidies are on varying 12-month intervals. The conversions into US\$ and the aggregation ignore this by calendar year average exchange rates and adding across countries without any weighting or adjustment.

68. There are two comparisons which might be made in Table 6. The first comparison is between the absolute levels of export credits and export subsidies. However, this comparison is deceiving. The level of export credits in and of itself does not indicate the magnitude of market distortion they cause -- if any. For the second, more meaningful comparison, the subsidy amount estimates shown at the extreme right of the top half of Table 6 are to be compared to the export subsidies of 1998. It is only in the cases of the USA, Australia and Canada that the amount of subsidy element provided by export credits is estimated to exceed the amount of export subsidies given (as notified to the WTO). In the case of the USA, for example, export credits create a subsidy element about 30 per cent greater than the USA's export subsidies. However, in total for all the countries of Table 6, export subsidies are far more significant than export credits in terms of the degree to which they distort world markets

69. These results, of course, are derived from 1998 data provided by the survey of the Participants and WTO notification data, through the subsidy rate estimates of the present study. More recent use of export credits may differ from those of the survey period either in magnitude of use or conditions, which could either lower or, in the absence of any disciplines on export credits, raise the level of distortion caused by export credits.

8. Conclusions

70. Export credits (with official support) can take any of several forms. These can be direct credits or financing, guarantees or insurance for loans, or interest rate support to facilitate exports to targeted importers. The terms may or may not be better than alternatives available through private financing and, where they are favourable, may or may not be entirely offset by an up-front fee. The present study finds small, but generally positive subsidy rates for most of the Participants to the Arrangement on Export Credits who have export credit programmes. The results hold when using interest rate data restricted to the start of 1998, which mostly precedes the rapid increase in interest rate spreads caused by the financial crisis and may be more consistent with the rates prevailing in other years, although these interest rates may not be consistent with the fees from all of 1998. Caution should be exercised if the results of a single year are extended to other years. On the other hand, variations in supporting data (as presented in the Annex) do not undermine the validity of these general results. This finding, which is contingent upon the method and assumptions described in the Annex, indicates that these programmes often do serve as an effective subsidy on exports for some countries more so than others. Moreover, data show that export credits are being applied to a small but growing portion of agricultural trade, although 1997 and 1998 are atypical due to the financial crisis. Hence, this study concludes that the market distorting potential of export credits, though small in the survey period, is being realised and is becoming more important.

71. A justification given for the use of export credits is that these programmes may help countries with financial constraints purchase required food in world markets where otherwise they could not. This study questions this justification in two ways. First, the subsidy rate estimates are generally very low, implying that there are no great financial benefits from export credits even for those countries with very high interest rates. Thus, food aid is better delivered following the guidelines of the Food Aid Convention rather than on terms which may be sufficient to allow slightly more imports from a particular exporter, but do little if anything to help any country already in a poor financial situation. Second, the survey data provided by the Participants show that more than half of export credit recipients are OECD countries and only a very small share of export credits are given to those countries which might benefit from lower financing costs. Officially supported export credits in agriculture among OECD countries has no role if the justification for these programmes is to help relatively poor countries in financial difficulties to import necessary food. While these results as regards the targets of export credits and the subsidy rate estimates are not conclusive in that they are based on only four years of survey data and estimates of a single year, these empirical findings do raise questions about the role of export credits in agriculture commodity markets.

72. In the preliminary analysis of wheat exports, which are in the commodity group which suffers the greatest incidence of distortion due to export credits in absolute and relative levels, the likely effects if export credits continue to distort trade at beginning 1998 levels is to raise USA wheat prices slightly in comparison to the OECD Outlook, which projects world market conditions but does not assume any export credits are provided. The aggregate exports from the European Union are not substantially affected as the world prices remain below internal prices even taking the export credit into account, although some redistribution across EU members' exports could be expected as certain countries' export credits are more distorting and several members report no export credits (in the survey period). The net effects of the USA and Canadian wheat export credit programmes on Canada are very small, whereas the wheat exports and

prices in Australia are both reduced slightly as its own export credit programmes are less distorting than those of its competitors. According to the preliminary analysis, the consequence of continued wheat export credits under conditions such that the level of distortion is the same as estimated for the beginning 1998 is to reduce importers' and other competitors' wheat prices slightly. The relatively minor consequences of this example highlight the small size of export credits relative to aggregate world markets and to per unit prices. These results do not alter the conclusion that any individual transaction which receives an (officially supported) export credit offered by a government on terms better than private financing is distorted, forcing competitors to lower prices or find alternative markets.

73. Realising an Arrangement putting disciplines on the use of officially supported export credits would help to eliminate associated subsidies and restrict such programmes to market-based principles. For example, such an Arrangement could prevent greater use by exporters of distorting programmes which already exist or other countries adjusting their programmes to make them distorting. But this alone is insufficient if the goal is to end trade distorting policies. In the event of limits on their ability to use export credits to distort trade in their favour, countries can choose other policy options to artificially increase exports. For example, many countries retain substantial potential to directly subsidise exports within their URAA limits. Apart from export credits and export subsidies, there may be other policy options which are not inconsistent with the URAA. Pricing schemes, food aid programmes or special authorities that may be granted by governments to organisations, such as state-trading enterprises, have the potential to distort trade. An Arrangement governing export credits in agriculture would restrict one among the menu of export competition policies. However, further disciplines on all other export enhancing policies would be required to effectively eliminate trade distorting export support.

Annex

Method and Data used to Evaluate Export Credits

Annex 1. Methods of evaluating export credits

1. The effect of officially supported export credits (henceforth simply “export credits”) on world markets is difficult to estimate. Fortunately, this is not a new subject of research and published studies offer alternative methods to evaluate the effects. To circumvent difficulties accumulating data, existing studies on export credits generally provide a case study of a single exporter, a single importer, or a single commodity. Useful summaries are available (see Dahl, Johnson, Wilson and Gustafson or Dahl, Wilson and Gustafson). In broad terms, recent research has followed one of two methods for estimating the effect on markets: present value calculations or option-pricing. Between these two methods and an alternative method based on the budget of the export credit granting agency, the Secretariat has chosen to apply present value calculations.

The present value method discounts the future payment stream at a higher discount rate

2. Computing the present value of the future payment stream of an officially supported export credit programme offers intuitive appeal. Whether the programme provides a guarantee, insurance or a direct loan, the consequence may be a lower interest rate for the importer relative to the interest rate charged in the market. The difference, or the “spread,” between the lower rate of the credit programme and the full-risk alternative is calculated at the time of the purchase. A present value calculation using this spread over the life of the loan is computed and adjusted for any fees to provide a subsidy rate estimate, expressed as a per cent of the face value of the loan. Of course, the spread between guaranteed and market rates may be entirely offset by a large initial fee, in which case there would be no subsidy on the effective cost to the importer, so the calculation must take into account such up-front costs.

3. One formula to be used in the present study is a version of the Ohlin formula. The formula accounts for many of the potential policy parameters of an export credit program, such as the grace period and the payment schedule, by computing the payment stream of the guaranteed loan and discounting using the market interest rate as the discount rate. The formula simply approximates with a single equation the two step process of first expanding the loan schedule into a stream of future payments and then discounting each payment into the present value. The Ohlin formula used to produce the estimates reported in the main text as follows:

$$S = 100 * (1 - D) * \left(1 - \frac{g}{r}\right) * \left(1 - \frac{\frac{1}{(1+r/a)^{aG}} - \frac{1}{(1+r/a)^{aT}}}{r(T-G)}\right) - f \quad \text{where,}$$

S = subsidy rate g = annual subsidised or guaranteed interest rate with the export credit
 T = term of loan r = annual discount rate (market rate without the export credit)
 G = grace period a = payments per year
 D = down payment f = fee rate, expressed a per cent of value

This Annex makes a distinction between the gross subsidy rate and the net subsidy rate. The latter rate is the result of applying the above formula. The gross subsidy rate is also from the formula above, but the gross subsidy rate is the estimate before the fee rate (f) is subtracted. In the main text we only report the net subsidy rates.

4. Present value calculations based on the Ohlin formula are employed in assessing export credits for other than agricultural commodities. For example, the Ohlin formula is applied by the OECD Development Assistance Committee (DAC), albeit with greater consideration of the more complex repayment schedules which accompany long-term credits more common in official development assistance. Reynauld (1992) uses this formula to evaluate official financing across donors. FAO reviews of such assistance in relation to agriculture have applied this formula and, on at least one occasion, gave particular attention to how the formula determines the grant element based on the loan conditions, such as the loan's interest rate, grace period and maturity (1990). Although relying on different equations, other studies support the use of present value calculations to evaluate the effects of export credits outside of agriculture. For example, Baron applies such measures to the case of the USA Export-Import Bank. In his study of export credits by European Community members, Abraham recommends the present value approach as the "most appropriate when analysing the effects of export support on competitiveness" (p. 24). Present value calculations for agricultural commodities based on different calculations are published by Skully and Hyberg et. al. A summary of previous research as well as original calculations based on the Ohlin formula are provided in Dahl, Johnson et. al. (1995). Similarly the Ohlin formula is applied to the case of a specific commodity of a single exporter in Diersen et. al. These studies focus on either a single exporter or a few importers, likely due to data limitations.

5. While the logic behind the formula is clear, the formula itself is less intuitive. A more accessible present value calculation, however, is derived from Hyberg et. al. This is applied to short-term export credits in this study and can be represented as follows:

$$SubsidyRate = 100 * \left(1 - \frac{(1+g)^T}{(1+r)^T}\right) \text{ where,}$$

T = term of loan
 g = annual subsidised or guaranteed interest rate with export credit
 r = annual discount rate (market rate without the export credit)

Here, the intuition is clear as the numerator reflects the payment stream under the export credit while the denominator is the discount rate particular to that importer. For example, if the guaranteed rate were 5 per cent and the risk-bearing market rate were 10 per cent on a one year loan, then the subsidy rate would be 4.6 per cent. If the length of the loan were 3 years, the subsidy rate would be 13.0 per cent. Alternatively, if the importer's market rate were 12 per cent, then the subsidy rate would be calculated as

6.3 per cent for the 1 year loan and 17.6 per cent for the three year loan. This formula is calculated for a single unit of the loan and the result is interpreted as a rate which would then be multiplied by the actual loan amount to give the subsidy element in absolute terms.

6. The full Ohlin formula, although more complex, results in similar relationships between the conditions of the loan and the subsidy rate. The intuitively appealing formula of Hyberg et. al. places the full repayment at the end of the loan (at the maturity date), although the authors adjusted this formula in practice to represent a declining balance, while the Ohlin formula allows a repayment schedule. Consequently, the subsidy rates above are higher than those calculated using the Ohlin formula in the case where repayment does not occur in one time at the end of the loan. However, in principle, the same factors increase the subsidy rate: a longer repayment period, a lower guaranteed interest rate or a higher discount rate.

How do parameters of the Ohlin formula affect the subsidy rate estimates?

Each parameter of the Ohlin formula has its own effect on the subsidy rate estimate. The complexity of the formula can prevent quick interpretation of what these effects are. In Table A.1, examples of subsidy rate estimates are shown for different parameter combinations. The column at left lists the different parameters which are then varied across the seven examples of the table. At the bottom of each example are the gross (before fees) and net (after fees) subsidy rate estimates. Net subsidy rates only are reported in the main text.

Parameters	Example Number						
	1	2	3	4	5	6	7
g Guaranteed rate	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
r Market rate	5.0%	7.5%	15.0%	7.5%	7.5%	7.5%	7.5%
T Term of the loan	2	2	2	2	2	4	2
a Payments per year	2	2	2	2	2	2	2
G Grace period	0	0	0	1	0	0	0
D Down payment	0.0%	0.0%	0.0%	0.0%	10.0%	0.0%	0.0%
<i>Gross subsidy rate</i>	0.0%	2.9%	10.8%	4.0%	2.6%	5.0%	2.9%
F Fee rate	0.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.5%
<i>Net subsidy rate</i>	0.0%	0.9%	8.8%	2.0%	0.6%	3.0%	0.4%

The first example is a two-year export credit with guaranteed rate 5 per cent and a market rate of 5 per cent. Clearly, there is no benefit as the guaranteed rate is not lower than the market rate, so the gross subsidy rate is equal to zero. Moving to the second example, the market rate is raised to 7.5 per cent. Other characteristics of the export credit are a two years term, two payments per year and the fee equal to 2 per cent of the value. The net subsidy rate of the second example is 0.9 per cent. Using the second example as the basis of comparison, the reader can see the effects of a higher market rate relative to the guaranteed rate in the third example. The next example allows a grace period of one year, which raises the subsidy rate relative to that of the second example, whereas the fifth example introduces a down payment, reducing the subsidy rate as compared to the second example. The sixth example is identical to the second example except that the term is doubled, leading to a higher net subsidy rate estimate of 3.0 per cent. The final example shows the effects of a higher fee (expressed as a per cent of the export credit value) on the net subsidy rate in comparison to the second example. Raising the fee by 0.5 per cent lowers the net subsidy rate by 0.5 per cent, but does not affect the gross subsidy rate estimate by definition (e.g. gross is before fees).

7. Present value calculations provide a subsidy rate estimate specific to an importer, based on the operation of the government's programme and the credit rating of the particular importer. The guaranteed interest rate is actually the weighted average of the risk-free interest rate and the importer's market interest

rate. The relative weights are determined by the share of the loan which is covered by the export credit guarantee. (An example appears later in this Annex.) In the case where the export credit provides a loan to the importer at a subsidised interest rate, the interest rate charged can be used directly. The discount rate is the risk-bearing interest rate or market rate of the importer, reflecting the alternative cost of capital for that importer. This is the factor by which a present value is placed on the stream of payments under the guaranteed loan. The maturity or term of the loan is the length. Where the export credit covers a loan of some length, there may be a grace period or multiple payments per year. The grace period is the delay, if any, prior to the beginning of the repayments (less the normal period), although this is uncommon for export credits on agricultural commodity trade.

8. For short-term export credits, the formula recommended by Hyberg is sufficient (once adjusted for fees). These export credits are under less complex arrangements, and so the additional complexity of the Ohlin formula is not required. The Ohlin formula is used in this study for export credits over one year due to its ability to capture the different factors which affect the evaluation. The formula alone as it is usually cited is insufficient and must be adjusted by fees and down payments, as shown above. Clearly, the benefits of a lower interest rate will not be of any benefit for any part of the transaction which must be paid in advance as a down payment. The gross subsidy rate must be reduced by fees, relative to the total export credits, to give a net subsidy rate. The evaluation of export credits' effects on an importer's costs is undertaken by selecting values for these parameters which correspond to each exporting country's export credit programme and the market interest rate of the importer in question.

9. The present value method of estimating the subsidy rate need not result in a positive value and, in fact, should estimate a subsidy rate equal to or less than zero in the case where terms are equivalent to those provided by the market. If it is positive, the subsidy rate can be multiplied by the amount of export credits given to each importer for each commodity to give the subsidy element of export credits. The result is an estimate of the subsidy in relative or absolute terms, which can be aggregated for an exporter, an importer or an individual commodity.

10. The present value method has an intuitive appeal. Focusing on export credits in the form of guarantees and insurance, which account for the vast majority of export credits reported in the survey, the present value calculations indicate whether or not the importer's benefits from the favourable financing available with the guarantee is worth the fee. In other words, the fee is compared to the value of the financing conditions to determine if the guarantee is a "good buy" for the importer. The important elements of the financing are the spread in interest rates between the guaranteed rate and the importer's own, risk-bearing rate, as well as the length of the credit and other characteristics of the credit as shown in the formula above. An alternative method which is closely related to this method would be to compare the fee charged for the exporting government's guarantee with the fee charged for a commercial guarantee with the same financing conditions. In this approach, the commercial fee for the same guarantee could be directly compared to the fee charged by the government for its guarantee. This approach would replace the interest rate comparison, since the financing conditions must be identical to make the fees comparable. However, there are no data regarding commercial fees for a comparable guarantee. Moreover, since the commercial fee should be one that corresponds to a subsidy rate of zero, the alternative of using a comparison of commercial and government fees should produce the same results as a comparison of interest rates adjusted for fees (assuming that the data on interest rates and fees correspond). As a last point, to take into account both the spread between the guaranteed and risk-bearing interest rates and the commercial fee would not be appropriate. The importer's financing costs due to its riskiness should not be counted twice in the calculation, so the choice must be made to either focus on the interest rate spread or the commercial fee. In the present study, the guaranteed rate is compared to the importer's discount rate, rather than comparing the government fee to a commercial fee for a guarantee on the same terms, due to data availability.

11. While intuitively appealing, present value calculations require data on the export credits by commodity and importer and details of programme operation. Most of the studies using present value calculations focus on the USA's export credit programmes for which data on operation and allocation is readily available. For example, Hyberg et. al. find that the subsidy element of USA programmes for cereals, expressed in per cent of the loan value, averaged about 4 per cent for wheat, maize and sorghum, 6 per cent for barley and 7 per cent for flour over 1979 to 1992, with wheat and corn receiving the majority of credits. Calculations by Dahl, Johnson, et. al. (1995) give subsidy rates of USA programmes for six wheat importers during the late 1980s and early 1990s in a range from 0.9 per cent to 12.4 per cent.

Alternative methods of evaluating export credits are available, but not useful for this study

12. Estimating the subsidy element of officially supported export credits for agriculture by option pricing is more recent and these efforts are more focused case studies. The calculation is more complex and is used to study variations in programmes to identify the impacts of various alterations or amendments. The basic formula follows (Dahl, Wilson and Gustafson, p. 9, 1995:2 or p. 7, forthcoming):

$$G(T) = B * e^{-rT} * \phi(x_2) - V * \phi(x_1) \text{ where,}$$

G = market value of the guarantee

T = the term

ϕ = cumulative normal density function

V = current asset value

B = Strike or guarantee price

$x_1 = \{\log(B/V) - (r + \sigma^2/2) * T\} / \sigma(T^{1/2})$

$x_2 = x_1 + \sigma(T^{1/2})$

σ^2 is defined as the volatility of the asset

13. The authors describe this result as “the ‘actuarially fair’ premium an insured (importer/U.S. bank) would pay for the insurance/guarantee” (Dahl, Wilson and Gustafson, p. 9, 1995). In other words, this formula calculates the export credit as valued in the market, from a crediting agency's perspective. This is not a calculation of an importers' benefit, which the authors state would require a different valuation. To this formula is added a similar formula to reflect any exchange rate guarantee. Additional elements, such as freight or insurance grants, can be added in as well. In practice, some parameters are specific to the export credit programme and others are specific to the importer and data available, yet the authors lacked historic data from which to estimate some parameters, such as the volatility. The authors apply this formula to a single importer as a base study, selecting Pakistan. From the base case, they vary assumed market parameters and programme parameters to measure the sensitivity of the subsidy rate. More recent work extends this to examine the portfolio of USA export credits (Dierson and Sherrick). In general, such research has focused on the exporting country government's perspective and do not often extend across more than one or a few importers due to difficulties evaluating parameters.

14. A third method which can be used to estimate the effects of officially supported export credit programmes for agriculture commodities is oriented to budget planning, but this is not employed in previous research for estimating the market effects. The USA Office of Management and Budget (OMB) estimates a “subsidy rate” from the exporting organisation's perspective. The expected default rate, net recoveries, is combined with interest, fees and other characteristics to predict the costs of the programme to the government. For example, the fiscal year (FY) 1999 analysis of the budget reported a subsidy rate of 9.26 per cent for FY 1998. This rate reflects the USA government costs of operating the export credit programme, setting aside administrative costs.

15. This method cannot be used for estimating the market effects of export credits in the present study. The final OMB result published is an aggregate and may not be applicable for any given importer, as importers' particular credit-worthiness varies, nor for any particular commodity, as use across importers may differ from commodity to commodity. The budget based computation method rests in part on estimates of default likelihood for each importer, which should be related to the market risk spread. Hence

there is some similarity to the present value calculations above as the spread is the difference between the market rate and the cost of capital. However, the degree to which the two methods will produce similar results depends on the degree to which the spreads of this study are related to the default likelihood estimates of the USA government. In addition, differences may arise from the difference in perspective, in that the present study focuses on the importer whereas the USA government calculations reflect the exporter's perspective. In short, the importers' present value evaluations of a future payment streams at a reduced interest rates may not match the USA government's budgeted cost for the defaults on these credits based on its expectations of default discounted at the USA government discount rate. In this case, the OMB budget-based computations are predictive, reflecting expected costs at the time of the transaction. This is fundamentally different from a backward-looking calculation from actual defaults.

16. It might be expected that the degree to which an export credit programme subsidises trade could be estimated based on historic performance (e.g. covering costs). Yet, in the context of the present study, this method is not useful. The actual default rate of loans after the transaction has no bearing on exporters or importers at the time the goods are sold and purchased. Also, the computation using defaults focuses on the budgetary implications to the exporting government which may or may not reflect the effect on importers' costs of acquiring officially supported export credits rather than private market arrangements. Moreover, such a measurement would require a long-term examination of export credit programmes. Analysis based on covering costs over a four-year sample, such as is available at present, would not be appropriate as it would not offer enough samples (even private institutions may face losses over a short time period) and the defaults would not be matched with the credits. As a last point, such budget-based evaluation would require careful consideration of how organisations granting export credits define costs. For example, do these organisations report costs of capital at government costs or at an interest rate which reflects the particular organisation's portfolio and consequent risk? In summary, the budget based method of evaluating export credits is not appropriate for this analysis given the present goal of evaluating market effects, nor is it even likely to be successful given the survey data upon which this study rests.

The present value method is the best choice in this case, but there remain difficulties

17. The Secretariat uses the present value approach in this empirical work. This approach has been frequently applied before across importing countries, unlike either of the other two approaches. Hence, it is a tested means of estimating the effect on many importers' costs. The other two methods presented both focus more on the credit granting organisation's costs. However, this is not the agent which either buys or sells the commodity. In order to determine the effects on world agricultural commodity markets, the present value calculations offer a better method to calculate how export credits affect the effective price the importer pays for buying a given agricultural commodity from the specific exporter at the time of sale.

18. Present value calculations rely on certain assumptions or simplifications. For example, banks may capture some portion of the calculated subsidy amount where any exists. Strong competition among financial institutions would justify the Secretariat's use of the subsidy rate in full. In this case, the banks would continue acting as intermediaries to the transaction without expecting higher fees or interest rates than normal. Indeed, it is expected that organisations operating export credit programmes will attempt to ensure that none of the subsidy element (if any exists) is captured by banks -- the purpose of these programmes is to facilitate trade, not to subsidise banks. Also, the presumption underlying the method is that the importer plans to pay for the commodities at the time of import. For example, if the importer enters into the transaction with no intention of ever repaying the loan, then the effective price for that importer would be the up-front fees and down payment, if any. On the other hand, if an importer plans to repay but then defaults, then the importer's perceived cost at the time of the transaction is calculated by the present value method as described above. Whether such planned defaults occur and what proportion of total defaults are they represent is unknown. Still, if this is a real occurrence, then those export credits covering

loans on which importers plan to default affect the market far more than those loans which the importer plans to repay. It is important to stress the requirement that the defaults be planned or intentional to merit special consideration, as it is only the planned defaults which can affect the importer's perceived costs. The conclusion is that the only instances in which defaults are expected directly to affect the decisions of agents in the markets are when they are planned by the importer at the time of the transaction.

Annex 2. Interest rate data

Guaranteed interest rates -- what interest rate does the importer pay?

19. Present value calculations require a discount rate and a programme rate, the rate which results from having the credit, for every importer. The survey data report a large number of importing countries in each year. As described above, the discount rate is the market interest rate. In the case of export credits which operate as guarantees or insurance of private loans ("pure cover," which is the dominant case), the second rate required is the guaranteed rate. For this variable, past studies on USA export credits in agriculture have generally used the London Inter-bank Offered Rate (LIBOR) plus 0.25 per cent. The guaranteed rate in the present study is a weighted average of the risk-free interest rate and the market rate of the importer, with the weights determined by the level of guarantee offered by the specific exporter's programme (see box). Here, the risk-free rate used is the USA treasury rate in order to be consistent with the derivation of the interest rates (described below). Moreover, this choice is consistent with the usual assumption that the sovereign interest rates are used to represent the importers' interest rates. There is evidence that an additional mark-up above the risk-free rate for at least one export credit programme which implies that the guaranteed rate could better be represented by the costs of commercial financing from private banks. This may be due to mark-ups, perhaps to cover additional collection costs of the export credit programme, or due to financial institutions' ability to capture some part of the benefit, which cannot be observed in most cases and, therefore, cannot be represented in the data available at present. Rather than attempting to determine if it is appropriate to adjust the risk-free rate upward for all countries and then the amount of this mark-up, the assumption in the main calculations is that the guaranteed rate is best estimated as the weighted average of risk-free and importer rates. A later section of the Annex explores the implications of using banks' costs of capital as a best possible guaranteed rate.

20. The decision to use the risk-free interest rate in the weighted average should be emphasised. This highlights the arguments of the recent WTO case, "Brazil -- Export Financing Programme for Aircraft." One question raised therein is whether an exporter can offer pure cover (the form of export credits used by the Participants), such as guarantees, which competes against other countries with better credit ratings. The guarantee effectively moves a portion of the risk from the importer and onto the exporting country. Hence, if the exporting country has a low credit rating, then the guarantee may not reduce the interest costs of the importer by as much as if the exporting country had a very high credit rating. As argued by Brazil in the WTO case, not all countries have such low interest rates and an export credit in the form of a guarantee from a country with a lower interest rate will offer less benefits to the importer, all else equal. On the other hand, Mody and Patro suggest that, "mechanisms such as escrow accounts can be used to bolster the credibility of a guarantee, but they add to the cost of financing" (p. 121). There are no survey questions that would indicate whether or not such mechanisms are employed and the costs are not known. Nevertheless, the present study combines the risk-free interest rate with each importer's interest rate using weights determined by the level of the guarantee to estimate the guaranteed interest rate in the present value computations. Using the exporters' interest rates instead of the risk-free rate would result in higher guaranteed interest rates, particularly for those exporters with interest rates substantially higher than the risk-free rate, which would make export credits from these exporters less attractive to importers. The consequences for Korea and Hungary, in particular, are to decrease the subsidy rate estimates in 1998 if the exporter's interest rate (as estimated below) is used rather than the risk-free rate.

An example of calculating the guaranteed rate

One of the parameters of the calculation, the guaranteed rate, is computed from the market interest rates. For export credits which offer pure cover (guarantee or insurance), this is accomplished by taking the weighted average of the risk-free and importer's interest rates. The computation reflects the fact that the loan is backed by the government to the level of the guarantee and, therefore, is charged a lower interest rate for that portion. While this will not reflect the precise rates banks charge to importers, it serves as an approximation in the absence of exact data on the interest rates charged on each transaction. To supplement the description in the text, examples are given in Table A.2.

Table A.2: Examples of the guaranteed rate calculation

	Example Number						
	1	2	3	4	5	6	7
Risk-free interest rate	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	7.5%
Importer's interest rate	10.0%	10.0%	10.0%	10.0%	15.0%	7.5%	10.0%
Guarantee level (as a per cent of the loan)	98.0%	95.0%	90.0%	85.0%	90.0%	90.0%	90.0%
Guaranteed interest rate	5.1%	5.3%	5.5%	5.8%	6.0%	5.3%	7.8%

The first example is a guarantee of an importer with a 10 per cent interest rate, where the level of guarantee is 98 per cent. Given a 5 per cent risk-free interest rate, this results in a guaranteed rate of 5.1 per cent (e.g.: 98 per cent*5 per cent +(100 per cent-98 per cent)*10 per cent). The second, third and fourth examples highlight the role of the guarantee level. As the exporter's government guarantees less of the total loan, the guaranteed interest rate increases, reflecting that a greater portion of the loan is priced at the importer's risk level rather than the exporter's. Examples five and six show the importance of the importer's market interest rate for a given guarantee level and should be compared to the third example. The final example shows the consequences of a higher risk-free interest rate. Note that the guaranteed rate is higher in this example as compared to example three.

Sources for market interest rates -- past studies

21. The DAC calculates the grant element of official development assistance using an assumed discount rate of 10 per cent or the concessionality level using a variable default rate based on a variable market rate. The 10 per cent discount rate is found to be appropriate for the long-term loans which are common in development assistance and for DAC calculations which focus on the exporting countries' perspective. The FAO reviews of assistance specific to agriculture use the same discount rate. For the present study which is from the importers' perspective and addresses export credits on agricultural commodities, which are on shorter terms, the assumption of 10 per cent is not deemed appropriate.

22. Studies more specific to agricultural commodities have generally focused on evaluating the USA export credit programmes due to the greater availability of export credit data. Where these studies have been inclusive of all recipients of USA export credits, the authors have faced the same difficulty of finding discount rates for loans of shorter length than those of official development assistance across many different countries. In general, these efforts can be separated into two parts: finding a credit rating of importers and mapping these ratings to market interest rates.

23. Different authors have met these data requirements differently. Skully uses two sources of ratings, Standard and Poor's Corporate Bond Yield Index and World Bank reports on the value of country debt in secondary markets. Skully directly applies unguaranteed credit ratings and extends these as ordinal measures to other countries. The mapping from credit ratings to interest rates is an amalgamation of three alternatives reported in *Euromoney Trade Finance Report: Jardine Insurance Brokers' Financial and*

Political Risk, United Kingdom's Export Credit Guarantee Department premiums and Export Credits Clearing House Ltd.

24. Hyberg et. al. use credit ratings for importers from *Institutional Investor* for most of the sample period, although Moody's, Standard and Poor's and Drexel Burnham Lambert ratings of sovereign debt in secondary markets are used for the final 1989-92 period. These are mapped to interest rates using relationships estimated from the USA corporate debt credit ratings and interest rates. The data for this step are from Moody's, Standard and Poor's and Drexel Burnham Lambert, as these provide listings of credit ratings and corresponding interest rate indices. From this data, a risk premium based on the credit rating is estimated and adjusted for the shorter length of USA export credits in agriculture, which are the subjects of the study.

25. Dahl, Johnson et al. (1995) use interest rates from International Monetary Fund reports available at the time. As these interest rate data are not as broad as the list of importers receiving USA export credits, they narrow their study down to only a select list of markets for USA wheat exports. Diersen et. al. consider using the same sources, but instead choose to use the data of Hyberg et. al. which offer a more complete list of importers.

26. Studies using option-pricing evaluations must overcome or circumvent a different set of data problems, and so are excluded from the preceding review. Among those present value studies which span a range of importers, it is clear that there is no generally applied source of market interest rate data in these studies regarding construction of a mapping from credit ratings to interest rates. Several studies do use credit ratings from Moody's, Standard and Poor's and *Institutional Investors*. The goals of these efforts to produce a database of prevailing interest rates should be obvious:

- Interest rate data which are as accurate as possible.
- Interest rate data covering the different terms of the export credits in question.
- Interest rate data for as many of the importers receiving export credits as possible.

No interest rate database listed above can claim to succeed in meeting all these points with perfection. Each study reports its methods, as described above. The present study benefits from access to studies and data to which none of the referenced studies had access. The result is a database which provides interest rate estimates for a long list of importers and terms, with the accuracy resting on the quality of the sources described below.

Similar credit rating information is used in the present study

27. The present study will use the same credit rating services as previous studies, drawn from *World Development Indicators*. That document provides credit ratings of several services, from which this study combines those of Standard and Poor's, Moody's, *Institutional Investor* and *Euromoney*. These credit ratings are first converted into an ordinal measure, then combined giving preference to Moody's and Standard and Poor's, then *Institutional Investor* and *Euromoney*. This method borrows from the method used by Kamin and von Kleist, extended to include the last two sources. The additional sources are required because the list of countries in the present study is greater than the list covered by Moody's and Standard and Poor's credit rating services. As *Institutional Investor* and *Euromoney* are set on a different scale than those of Moody's and Standard and Poor's, in each year a simple double-logarithm regression is estimated to build a link over those observations where they overlap, and this relationship is then applied to other observations. The preference given to *Institutional Investor* over *Euromoney* is arbitrary. The statistics of fit of the estimated linking equations are similar so there is no clear reason to favour one over the other.

28. There are several problems in this process to be noted. First, this relationship between credit ratings services may be imprecise because the observations reported do not quite match in dates, with the ratings of *Institutional Investor* and *Euromoney* reported preceding those of Standard and Poor's and Moody's by 2 to 4 months in the secondary source. A related difficulty is that there are only three printings of *World Development Indicators*, so this can supply data only at certain points in time. The three data points are the end of 1996 in the first report, the end of 1997 and start of 1998 in the second and the end of 1998 in the third. The survey data begins in 1995, before the first edition of *World Development Indicators*. No other source of 1995 credit rating information is readily available for this list of importers. Another point to be noted is the application of an estimated relationship when combining credit rating services. This method provides a reasonable link which is independent of scale, but is not tested against alternative specifications. A final difficulty regarding the credit ratings is the small number of importers for which no credit rating is available in *World Development Indicators*. In the study, this is addressed by imposing a rating of Caa2 by Moody's nomenclature (CCC by Standard and Poor's ranking) on these observations as well as on export credits where the recipient is ambiguous (e.g. not specified or reported only as a regional aggregate), which is a more frequent difficulty than the preceding case yet continues to account for a relatively small share of the total.

29. A table at the end of the annex reproduces the importer list given in *World Development Indicators* and gives the composite credit ratings for the beginning and ending of 1998. These data are in the column labelled "base." The next column in each year shows the consequences of imposing a "best" credit rating of A2. The reason for placing a limit is found in the purpose of this study, not in any characteristic of the source material. In reality, of course, some of these importing countries in the data set are not the actual importer at all. Instead, private companies within the country are importing under the export credit programme. However there is no distinction between country and private activity in the export credit data on a country-by-country basis. In other words, the total export credits to each importing country is listed without separately giving the amount going to private firms as opposed to organisations representing the country. For most importers, it is assumed that the country interest rate represents the average interest rate of importers in that country, including any imports on the country government's own account. Some countries possess a high credit rating, such as many OECD members. For these countries, it seems less likely that the credit rating of the country reflects the ratings of the importing agents, which are likely to be private firms. A limit on the credit rating of "average" (A2 by Moody's ranking or A by Standard and Poor's ranking) is assigned. In other words, rather than continuing to assume the importing country's credit rating is representative of the importing agents' credit ratings, a limit on the credit rating (or "best" rating) is imposed where the country's own ratings are extremely high. This is relevant due to the large share of export credits from one OECD country to another when most of these countries have extremely favourable credit ratings.

30. The table of composite credit ratings shows a third column for each of the two periods. This reflects the results of assuming a certain, relatively low credit rating (Caa2 in Moody's nomenclature) for countries for which no credit rating is found. This same assumption is applied to any country not found in *World Development Indicators* and also to any export credits for which no country is specified in exporters' survey data. The third column of this table is the input for the subsequent step of mapping credit ratings to interest rates, which are used in the subsidy rate estimates of the main text of this study.

An example of developing the composite credit ratings

World Development Indicators provides a list of countries which almost matches the list of export credit recipients. Thus, this source meets the requirement for this study that the interest rate database be complete in terms of the importers receiving export credits. However, none of the credit ratings services, as reproduced in the *World Development Indicators*, cover the full list of countries. As described in the text, this study combines the credit rating services giving preference to Moody's and Standard and Poor's rankings, then using *Institutional Investors* (II) and *Euromoney* (EM) rankings.

To combine the different credit rating services' evaluations, this study must overcome scaling problems. Moody's and Standard and Poor's are converted directly into a numeric scale on a one-to-one basis (e.g. AAA=1, A2=6, B2=15 ;AAA =1, A = 6, B = 15). This simple conversion is used in other work (Kamin and von Kleist; Cantor and Packer). The original scales of II and EM are on a scale with 100 being best. This scale is reversed (e.g. 100 - rating) so that zero is best. A double-logarithm equation linking these scales and Moody's are estimated for each year over those countries for which both gave a rating (see Diersen and Sherrick).

The equations are shown below:

Table A.3: Estimate link between credit rating services to increase coverage

Taxe		Credit Rating Source	
		Institutional Investors	Euromoney
Beginning 1998	Equation	$-3.62+1.473*\text{LN}(100-\text{II})$	$-0.92+0.893*\text{LN}(100-\text{EM})$
	R-Squared	0.94	0.92
Ending 1998	Equation	$-3.19+1.372*\text{LN}(100-\text{II})$	$-1.01+0.846*\text{LN}(100-\text{EM})$
	R-Squared	0.84	0.88

Thus, for example, the *World Development Indicators* reports credit ratings at the end of 1998 for Albania (12.0 II and 13.8 EM), Argentina (Ba3 Moody's, BB Standard and Poor's, 41.8 II and 45 EM) Armenia (15.9 EM). Of these, Argentina's composite credit rating for this study is most straightforward: Moody's is used (e.g.: Ba3). In the case of Albania, the II rating is used before the EM rating by assumption. The composite rating of Albania is computed by the following formula: $\text{EXP}(-3.19+1.372*\text{LN}(100-12.0))=19.16$. This rounds to 19 which is equivalent to a Caa3 on Moody's scale. For Armenia, the estimated equation relating Euromoney to Moody's is applied: $\text{EXP}(-1.01+0.846*\text{LN}(100-15.9))=15.48$. The rounded value is 15 which corresponds to B2 on Moody's scale. These results are reported along with the other countries listed in the *World Development Indicators* in a table at the end of the Annex.

A new source provides a mapping from credit ratings to market interest rates

31. Regarding the mapping from credit ratings to interest rates, a recent study (unavailable to the authors above) specifically estimates this relationship. Kamin and von Kleist (1999:1) begin their mapping with new bond and loan issues, arguing that these are more representative of a country's credit rating and interest rate than government bonds on secondary markets. The authors first convert credit ratings of Moody's and Standard and Poor's into ordinal rankings on a matching scale. These alternative sources are combined, giving preference to Moody's where there is overlap and the two services differ. The compiled ranking is used as one explanatory variable among several in then estimating the interest rate spread for each observation. The authors use annual dummies on both intercept and on the coefficient for the rating, the term and the term multiplied to the credit rating, currency dummies (e.g. yen, DM or other as opposed to USD), a bond versus loan dummy and a dummy if the credit rating is speculative (BB or lower in Standard and Poor's ranking). In short, the authors use the credit ratings and other available data to derive the relationship between credit ratings and contemporaneous interest rates.

32. Applying the regression results of Kamin and von Kleist poses difficulties, even though it provides precisely the mapping which is required. First is the difference in the dates of the data covered by each study. Kamin and von Kleist's sample ends in mid-1997, whereas the present study extends to 1998. In order to calculate the interest rates, the equation is extended to include all of 1997 and 1998. This is accomplished by means of updated parameters obtained by direct contact with the authors. The implications of these estimates, if not the values of the parameters, are reported in a second article (1999:2).

Applying the updated parameters to estimate the interest rate spreads

In order to estimate the 1998 interest rate spreads, the Kamin and von Kleist study estimates are updated through direct contact with the authors. The equations used to generate the mapping are best described in the original paper; this report cannot reproduce their description of the data and logic supporting their study. However, using the parameter definitions of the original work, the updated parameters are reproduced here with permission from the author. The equation to estimate the logarithm of the annual spreads, in basis points, takes the following form in the relevant periods:

$$1998Q1: +1.9228 +0.222*Rating +0.0419*Rating*D_{Spec} +0.7692*LN(Term) -0.2486*LN(Term)*LN(Rating) +1.3142*D_{98Q1} -0.075*D_{98Q1}*Rating$$

$$1998Q4: +1.9228 +0.222*Rating +0.0419*Rating*D_{Spec} +0.7692*LN(Term) -0.2486*LN(Term)*LN(Rating) +2.0485*D_{98Q4} -0.086*D_{98Q4}*Rating$$

As examples of applying these mappings, first consider an importing country with a rating of A2 in 1998Q1 over a 2.5 years term. Thus, the numeric rating (6) and the term (2.5) are substituted into the first equation. Note, that the speculative dummy takes a value of zero as a ranking of A2 is better than Ba1. The logarithm of the spread in basis points will be:

$$\text{Spread 1: } +1.9228 +0.222*6 +0.0419*6*0 +0.7692*LN(2.5) -0.2486*LN(2.5)*LN(6) +1.3142*1 -0.075*1*6 =4.416$$

Taking the exponent and converting into per cent terms gives a spread estimate of 0.83 per cent. This spread is added to the risk-free (USA treasury) rate for the same term to give an annual interest rate on USD-denominated debt of 6.28 per cent. The second example provided here is an importer with a credit rating of Caa2 (numeric rating 18), which is speculative, and a term of 1.5 years. Applying this to the second formula above gives the following value:

$$\text{Spread 2: } +1.9228+0.222*18+0.0419*18*1+0.7692*LN(1.5)-0.2486*LN(1.5)*LN(18)+2.0485*1-0.086*1*18=7.194$$

To find the value of the spread in per cent terms, the exponent of the value is taken and divided by 100. The result is a spread of 13.3 per cent in this example spread. Again, adding the risk-free rate for 1.5 years gives an estimated annual interest rate for USD-denominated debt of 17.7 per cent for this Caa2 rated importer in the final quarter of 1998.

33. A second difficulty is in extending the original regression equation to cover a broader list of importers. The original work of Kamin and von Kleist did not include countries with credit rating below B- (by Standard and Poor's ranking). In the present study, however, there are some countries with lower credit ratings. The regression equation is based on an ordinal ranking of credit ratings, so the computation is extended to include these countries with greater risk. For example, where the original work only extended to a ranking of 16 for a B-, this study simply continues by using a 17 for a CCC+ and so on. The results are generally acceptable in that a worse credit rating continues to result in a higher interest rate. However, this does create one suspect pattern in the interest rates. The original study found that the length of the loan is less important for countries with worse credit ratings. In other words, as the number of years to maturity increases, the increase in the annual interest rate for a country with a bad credit rating is smaller than the change in the interest rate of a country with a good credit rating. When the regression equation is extended beyond Ca3 (ranking number 22), the result is that the difference in the annual interest rate no longer increases with the length of the loan for extremely risky importer. However, these importers are very uncommon recipients and this is only relevant for export credits of longer length.

34. Kamin and von Kleist include several dummies in their regression model which must be given a value in the present study. The currency dummies are set aside and export credits are assumed instead to

operate on a US dollar basis. While switching to the currency of the exporter in each case might be preferred, the authors only provide information on three currencies directly. Also, the focus of the present study is on agricultural commodities, which are often quoted in US dollar prices. The Secretariat chooses to employ Kamin and von Kleist's estimates for bond interest rates as opposed to those of loans. At first examination, switching to loans may seem more appropriate since export credits may be direct financing or guarantees on private financing. However, when presented with these results, an author of a previous study on export credits (Skully) observes that there is no way to know how many loans in Kamin and von Kleist's original data set are guaranteed or supported loans. When contacted, Kamin acknowledged that they did not control for loans provided under such conditions. In order to find the discount rate appropriate for each importer, the bond rate is chosen in this study. In the updated work, the authors supply only the bond rate parameters.

35. The formula for calculating the interest rate spread is applied to each importer's credit rating for maturities of 0.5, 1.5, 2.5 and 3.5 years. These correspond to the categories of the data of less than 1 year, 1 to 2 years, 2 to 3 years, and over 3 years, respectively. Of course, this will tend to over-estimate the value of export credits on terms of less than the midpoint of their category (e.g. it will overstate the subsidy rate estimate of an export credit of 3 months by evaluating it as though it were of a 6 month term). On the other hand, using the midpoint will tend to under-estimate the value of export credits of term greater than the midpoint. Since this provides only the interest rate spread due to risk, the spread is added to the risk-free rate used in the Kamin and von Kleist study, which is the annual USA treasury rate (as drawn from the USA Federal Reserve web site). The relevant USA treasury rate data are for 6 month, one year, two year, three year and five year terms, all annualised. The six month rate is used for the 0.5 year term in this study, obviously, and the simple average of the two nearby rates for each of the other terms. For example, the 1 year and 2 year are averaged to give the 1.5 year rate, the 2 and 3 year for the 2.5 year rate and the 3 year and 5 year to give the 3.5 year term risk-free rate. Better accounting of the yield curve would not change these approximations very much, as the annual rates are quite similar for nearby terms, at least in the periods used in this study.

36. The interest rate database is constructed as described above to produce annual interest rates for importers' USD-denominated financing. This is an extremely important element of the study since it is the difference between these rates and the guaranteed interest rate which is required in estimating the subsidy rate. The complete set of data is extremely large, covering a long list of importers and several alternative lengths. However, given the importance of these data, the mapping is presented in Table A.4. This shows explicitly the results of adding Kamin and von Kleist's estimated spreads to the risk-free rate. Moreover, the interest rate of this study for any importer can be found using this table and the table of composite credit ratings at the end of the annex. For example, the estimated interest rate of Zimbabwe in 1998Q1 for a 1.5 year term is found by taking its credit rating of 1998Q1 from Table A.3, which is Ba3, and then mapping that rating to the interest rate of a 1.5 year term in Table A.4 to get 8.5 per cent. By the same logic, the estimated interest rate for an importer in Australia in 1998Q4 with a term of 0.5 year can be found. (Remember: By assumption this is not equal to the government's interest rate.) The composite credit rating at far right in Table A.8, which is A2, is mapped to the interest rate below, which is 5.4 per cent.

Table A.4: Estimated Mapping from Credit Ratings to Interest Rates

Composite Credit Rating (<i>Moody's scale</i>)	Estimates of 1998, Q1				Estimates of 1998, Q4			
	Term of the Financing, in years				Term of the Financing, in years			
	0.5	1.5	2.5	3.5	0.5	1.5	2.5	3.5
	<i>(annual interest rates in per cent)</i>							
A2	5.7	6.1	6.3	6.4	5.4	5.8	6.0	6.2
A3	5.8	6.2	6.4	6.5	5.6	5.9	6.2	6.4
Baa1	5.9	6.3	6.5	6.6	5.8	6.1	6.4	6.6
Baa2	6.1	6.4	6.6	6.7	6.0	6.4	6.6	6.8
Baa3	6.2	6.6	6.8	6.9	6.3	6.6	6.9	7.0
Ba1	7.1	7.6	7.8	8.0	7.8	8.4	8.8	9.1
Ba2	7.5	8.0	8.3	8.5	8.5	9.2	9.5	9.8
Ba3	8.0	8.5	8.8	9.0	9.3	10.0	10.4	10.7
B1	8.6	9.1	9.4	9.6	10.4	11.1	11.5	11.8
B2	9.3	9.9	10.2	10.4	11.6	12.3	12.7	13.0
B3	10.2	10.8	11.1	11.3	13.1	13.8	14.2	14.5
Caa1	11.3	11.9	12.2	12.3	14.9	15.6	16.0	16.2
Caa2	12.6	13.2	13.4	13.6	17.0	17.7	18.1	18.3
Caa3	14.2	14.7	15.0	15.1	19.6	20.2	20.5	20.7
Ca1	16.2	16.6	16.8	17.0	22.8	23.2	23.4	23.6
Ca2	18.6	18.9	19.1	19.1	26.5	26.7	26.9	27.0
Ca3	21.5	21.6	21.7	21.7	31.0	31.0	31.0	31.0
<i>US Treas. Rate</i>	5.3	5.4	5.5	5.5	4.5	4.4	4.4	4.4

Importer interest rates are estimates -- NOT observed interest rates. Spreads are estimated based on Kamin and von Kleist, using the appropriate credit rating and term for each entry. The base interest rate to which spreads are added is the US Treasury rate, which are simple averages of rates from the USA Federal Reserve web site.

37. This interest rate database is used in this study and is an important element in determining the subsidy rate estimates. The database is a compromise across the three goals shared by this and previous studies of the same nature. Regarding accuracy, this method depends on the link between contemporaneous credit ratings and interest rates. It is important to note that this does not depend on the predictive ability of credit rating services, but only on the fact that they tend to move with contemporaneous interest rates. While credit ratings may or may not reliably predict changes in interest rates, the only question for this work is whether credit ratings and market interest rates move alike over quarterly or even annual data. The original Kamin and von Kleist study reports an adjusted R-squared of 0.82 (for the corresponding equation). Work by Cantor and Packer also report strong correlation between ratings and market rates. Thus, while there will be an element of error introduced by this step, the estimates are likely to be fairly accurate and there should be no bias.

38. The other criteria of the interest rate database are wide coverage across both terms and importers. By using the estimated equation of Kamin and von Kleist, the rate for any term (e.g. 0.5, 1.5, 2.5 and 3.5 years) can be estimated in a manner which should be consistent with the credit rating of the importer and the yield curve prevailing during the sample period, tailored to the time period in question using the appropriate dummy variables. The coverage over importers offered by this method is quite good and superior to most preceding studies of this type. The *World Development Indicators* presents a long list of countries' credit ratings whose interest rates can then be extrapolated based on Kamin and von Kleist's equation estimates. At least at present, an alternative database of interest rates which can provide such wide coverage across both terms and importers is not available.

Testing the sensitivity of subsidy rate estimates to the interest rate data

39. The interest rate estimates are intended to be as accurate as possible and as complete as required for the purposes of the present study. However, there are legitimate arguments that the interest rates allow an additional element of error beyond the survey data (discussed below). First, they are derived from an estimated contemporaneous relationship between credit ratings and interest rates. The original credit ratings may contain errors and the estimated link also has statistical errors although, as already discussed, the original study reports good statistics of fit. Nor is there reason to expect a bias in these errors. No less serious are questions about certain assumptions required to apply these interest rate data in the context of the present study. The survey data are not always reported on a calendar year basis and the export credits are given at a particular point in time during a given year, so the interest rate link selected may allow some additional error to the extent that the interest rates change between the time of the transaction and the timing of the interest rates of this study. In addition, some Participants did not report the recipients of all their export credits in the survey, thus requiring some assumption regarding the credit rating of these importers, as well as the smaller amount of export credits going to importers for whom no credit rating is available, in order for the study to be inclusive and so that the fee data and export credits are consistent. In other words, there are reasons to expect an element of unbiased error in the supporting data used in the present value calculations.

40. There are arguments that the error may contain a bias which would then cause a bias in the subsidy element calculations. Calculated interest rates based on sovereign credit ratings are used to represent importers' interest rates and the risk-free rate. This assumes that the importing agent is the sovereign state. (The exceptions are importers which have very good credit ratings, in which case it is assumed that the actual importer is not likely to be the government and is not likely to be well represented by the government's credit rating.) In applying this assumption in cases where the importer's credit rating is relatively poor, accuracy will not be diminished as long as the sovereign is the actual importer or, alternatively, that the sovereign interest rates closely approximate those of any private importers. If the importer is in fact not the importing country government but rather a firm and, furthermore, the actual risk of the importer is not well represented by the sovereign country's credit rating, then additional error will be introduced. Moreover, if it is the case that the importing agents in high-risk countries generally are not the country government and if these agents tend to be more risky than the government, then this would introduce a biased error and the estimates reported in the main text could tend to understate the actual subsidy element. However, it should also be recognised that if the importing agent is in fact a private agent, then there may also be competition among multiple private importers. In this case, if competition is as intense in the import market as in the export and banking markets, then a substantial portion of any benefits to be gained by the programme may be lost as importers bid the benefits away. Thus, it is not altogether clear whether allowing for private importers would bias the results of this study, even if data were available to indicate the extent to which this does occur. In practice, the survey data do not provide any information about the importing agent and, even if this information were known, the interest rates of private agents may not be available.

41. On the other hand, there is evidence that some portion of the calculated benefits are not received by importers as banks are able to charge a higher than expected rate. If banks' opportunity costs of capital are considered to be the best rate that importers can achieve even with a government guarantee, then it might be argued that the minimum rate at which they would loan money is correspondingly higher than the guaranteed rate calculated in this study. If true for all countries and incorporated as an element of this analysis, this would require that the opportunity cost of capital for banks serve as the lowest possible guaranteed rate. Thus, following the method of past researchers who have focused on the USA export credit programmes, the current study could apply LIBOR plus 0.25 per cent as the best possible guaranteed rate for all exporters. The impact of this possibility is explored in the sensitivity analysis below.

Table A.5: Sensitivity of Subsidy Amount and Rate Estimates to Interest Rates

Table A.5: Sensitivity of Subsidy Amount and Rate Estimates to Interest Rates										
	Base case		Limit Guaranteed Rate							
	(Start 98)		(LIBOR+25)							
	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate
Australia	1.6	0.1	-3.7	-0.2						
Austria	0.0	0.0	0.0	-0.3						
Belgium	0.2	0.1	-0.2	-0.2						
Canada	8.3	0.7	4.6	0.4						
Finland	0.1	0.3	0.0	0.0						
France	8.2	2.5	6.5	2.0						
Germany	0.0	0.7	0.0	0.5						
Greece	0.0	-0.4	-0.1	-0.7						
Korea	0.1	0.1	-0.1	-0.2						
Netherlands	2.2	0.5	1.2	0.3						
Norway	0.0	2.8	0.0	2.8						
Spain	4.6	0.6	1.6	0.2						
USA	191.2	4.9	152.0	3.9						
Total	216.3	2.6	161.8	1.9						

	Base case		Narrower Spreads				Wider Spreads			
	(Start 98)		Fixed		Proportional		Fixed		Proportional	
	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate
Australia	1.6	0.1	-5.3	-0.3	0.9	0.1	8.5	0.5	2.4	0.2
Austria	0.0	0.0	-0.1	-0.5	0.0	-0.1	0.0	0.4	0.0	0.0
Belgium	0.2	0.1	-0.4	-0.3	0.1	0.0	0.9	0.6	0.4	0.2
Canada	8.3	0.7	3.1	0.3	7.0	0.6	13.3	1.2	9.5	0.9
Finland	0.1	0.3	0.0	-0.1	0.1	0.3	0.2	0.8	0.1	0.4
France	8.2	2.5	5.5	1.7	7.1	2.2	10.8	3.3	9.2	2.8
Germany	0.0	0.7	0.0	0.3	0.0	0.6	0.0	1.1	0.0	0.8
Greece	0.0	-0.4	-0.1	-0.8	0.0	-0.4	0.0	0.0	0.0	-0.3
Korea	0.1	0.1	-0.2	-0.3	0.0	0.1	0.3	0.6	0.1	0.1
Netherlands	2.2	0.5	0.6	0.1	1.8	0.4	3.7	0.9	2.5	0.6
Norway	0.0	2.8	0.0	2.5	0.0	2.6	0.0	3.2	0.0	3.1
Spain	4.6	0.6	0.7	0.1	4.0	0.5	8.4	1.1	5.1	0.6
USA	191.2	4.9	138.3	3.5	171.2	4.4	242.8	6.2	210.9	5.4
Total	216.3	2.6	142.2	1.7	192.2	2.3	288.8	3.5	240.1	2.9

Source: Calculations by the Secretariat. The base case corresponds to the interest rate estimates of the start of 1998. The subsidy rate estimates are first recalculated with a minimum guaranteed rate of LIBOR+25 basis points imposed. The subsidy rate estimates are then recalculated to test the sensitivity with respect to the interest rate spreads. Note: Subsidy amounts are in millions of USD. Subsidy rates are in per cent terms.

42. It is accurate to state that the subsidy rates of the main text are empirical estimates based on imprecise survey and interest rate data. While efforts are made to prevent errors and especially biases, the subsidy rate estimates are not and cannot be exact. This raises the question of how sensitive the results are to the interest rates, which is examined in Table A.5 and discussed below.

43. The base case reported in Table 2 of the main text, which represents the results using interest rate estimates following the methods of Kamin and von Kleist as evaluated for the beginning of 1998, are

reproduced in Table A.5 The first experiment is to use the banks' costs of capital, assumed to be LIBOR plus 0.25 per cent, as the best possible guaranteed rate. In this case, the degree to which the net benefits of the export credit programmes are passed on is reduced. The benefits to importers would be reduced by new processing or collection costs specific to the export credit or by banks capturing part of the subsidy element. The results show the average reduction in importers' costs falls to about 2 per cent and the rates of many exporters become negative. However, the general conclusions hold as the subsidy rates of several countries remain positive and the USA continues to account for the majority of the distortion.

44. The effect on the subsidy rate estimates of a different spread as measured by the Ohlin formula has been noted (e.g. compare examples 2 and 3 of Table A.1). On the other hand, the implications of a systematic bias on the calculations over all exporters, all importers and all lengths of export credits is less clear. To investigate the sensitivity of the subsidy rate estimates to the spreads over the risk-free interest rate, the subsidy rate estimates have been repeated for different interest rate spreads in Table A.5. For example, the effects of narrower spreads (e.g. less of an increase in interest rates as risk increases) are reported. The results show that the subsidy rate estimates for every export credit programme would be lower, as expected if the interest rate spreads are reduced. This experiment is performed first by reducing the interest rate spreads by a fixed one per cent and then by reducing them proportionally by 10 per cent -- in that the spread itself is multiplied by 0.9. In the case of the fixed change, the average subsidy rate of all these exporters falls to 1.7 per cent and many are negative. Again, subsidy rate of the USA remains positive, but falls below the levels of past studies. Similar results follow in the case that interest rate spreads do not increase as quickly as estimated by Kamin and von Kleist. In the case of a proportional decrease in interest rate spreads, the average subsidy rate estimate falls to 2.3 per cent and subsidy rate estimates of more countries remain positive.

45. The case in which the risk-related interest rate spreads are wider than estimated using the method of Kamin and von Kleist is reported at the right side of Table A.5. Again, the first method is a fixed one per cent decrease. As expected, all export credits are estimated to have a greater subsidy rate. In fact, with the slightly wider spreads, no negative subsidy rates are estimated and the average is 3.5 per cent across all these exporters. The USA subsidy rate estimate of 6.2 per cent is higher than comparable studies would indicate, but is closer to the rates estimates which correspond to the interest rate estimates of the end of 1998, as reported in the main text (see Table 2). The proportional increase in interest rate spreads shows the consequences of a proportional increase (in which the spread is multiplied by 1.1). In the final experiment, the average subsidy rate estimate is 2.9 per cent and, again, the USA subsidy element estimate continues to account for the majority.

46. In conclusion, the interest rate database is an extremely important element underlying the subsidy rate estimates of this study. Table A.5 shows the sensitivity of the subsidy rate estimates to the interest rates. The main results of the main text remain valid even under these conditions. Namely, several countries continue to have a positive subsidy rate estimate and the USA continues to account for the majority of the distortion caused by export credits, followed by France and Canada. That said, the estimates of Table A.5 should not be considered to be more reliable than those of the main text. Of course, this study is empirical and does contain an element of error due to data limitations in the original survey and in the construction of interest rate data, as well as in the assumptions required to complete this study. However, efforts have been made to minimise these errors and, especially, to avoid any bias in the subsidy rate estimates of the main text.

Annex 3. Details of the survey by the Participants to the Export Credit Arrangement

47. In April 1999, the Agriculture Directorate of the OECD presented the goals of the present study to the Participants to the Export Credit Arrangement (the Participants), who are undertaking the

negotiations for an Arrangement governing the use of officially supported export credits, at the OECD. At that time, the Participants agreed to reissue a survey to update confidential data on the application of export credits [Annex 1, TD/CONSENSUS(99)AGRQUEST]. Additional, optional questions were included with the goal of aiding the empirical analysis [Annex 2, TD/CONSENSUS(99)AGRQUEST]. Most responses were received prior to a delayed deadline of August 1999. The Agriculture Directorate and Trade Directorate of the OECD offered updates of the process and added subsequent questions to clarify the initial response. Most of these questions focused on details of the data or apparent omissions in the text. Some questions were still outstanding at the time of the first draft of this study. Subsequent to that draft many Participants issued clarifications or revisions to their data, as well as corrections regarding the entry of the data in the database or the draft report. The revisions have sometimes lead to further questions to clarify the new data, which are later answered. The data, having evolved over the course of more than one year through such an iterative process, is described below.

48. The survey data are confidential, although Participants in April 1999 allowed the present study to use these data. The justification for confidentiality is that even past export credits are commercial secrets. As such, discretion is used in the present study to avoid reporting any specific transaction from a given exporter to a particular importer. Instead, aggregated or processed data are reported.

Commodity groups of the survey

49. The commodity group definitions are defined with detail in the note to Annex 3 of the questionnaire. These are “based on Chapters 1 to 24 of the customs Co-operation Council’s Harmonised Commodity Description and Coding System (‘The Harmonised System’).” The commodity groups of the survey are given as follows:

Group 1 Live Animals: Animals Products (not including breeding cattle). Chapter 1 to 5.

- Group 1 (a) - Breeding Cattle
- Group 1 (b) - Fresh, chilled or frozen meat
- Group 1 (c) - Dairy Products
- Group 1 (d) - All other products in Group 1

Group 2 Vegetable Products (not including Cereals). Chapters 6 to 9 and 11 to 14.

- Group 2 (a) - Wheat flour
- Group 2 (b) - Barley malt
- Group 2 (c) - Oilseeds
- Group 2 (d) - All other products in Group 2

Group 3 Cereals. Chapters 10.

- Group 3 (a) - Wheat
- Group 3 (b) - Rice
- Group 3 (c) - All other products in Group 3

Group 4 Animal or Vegetable Fats and Oils and their Cleavage Products; prepared Edible Fats, Animal or Vegetable Waxes. Chapters 15.

- Group 4 (a) - Vegetable oils
- Group 4 (b) - All other products in Group 4

Group 5 Prepared Foodstuffs; Beverages, Spirits and Vinegar; Tobacco and Manufactured Tobacco Substitutes. Chapter 16 to 24.

- Group 5 (a) - Protein meals
- Group 5 (b) - All other products in Group 5

Group 6 Rawhides and Skins. Chapter 41, items 41.01 to 41.03.

Group 7 Wool, Fine and Coarse Animal Hair.

- Chapter 51, items 51.01 to 51.02 or 51.01 to 51.05;
- a decision will need to be made at which point this commodity group ceases.

50. The commodity groupings are important in understanding the results and in understanding the present study's limitations. The commodity groupings correspond to the aggregates chosen in reporting the results of the analysis in the main text. In addition, the commodity groupings make a subsequent incorporation of the calculated subsidy rates or amounts in Aglink, the Secretariat's partial equilibrium model representing OECD agricultural commodity markets, difficult. The analysis of export credits' subsidy rates (if any) allows comparison against traditional export subsidies, but do not directly provide measures of the extent to which world markets are distorted (if at all). However, the commodity groups of the survey do not correspond to the aggregates used in the Aglink model. Hence, a second step of investigating the effects of export credits on world markets cannot be undertaken across a broad listing of products, without applying miss-matched commodity definitions. Nevertheless, an example regarding world wheat market effects is presented in the main text.

Difficulties experienced in compiling the survey responses

51. The survey process is not without difficulties. First, not all countries replied in a manner consistent with the questions due to difficulties compiling the data. For example, Spain's data did not specify both importer and length together. Instead, totals by length are supplied separately from individual importer transactions. For this study, the share of each length is applied to each importer. In 1998 data, Spain reports that 97.39 per cent of export credits are for less than one year, a very small amount are of term from 1 to 2 years and the remaining 2.60 per cent are from 2 to 3 years. Hence, for every importer, 97.39 per cent of the export credits is placed in the less than one year category, 0.01 per cent in the 1 to 2 year category and the remaining 2.60 per cent in the 2 to 3 year category. Similarly, Australia reported the commodity groups and importers separately, so the average distribution across groupings is applied to each importer. While not satisfactory, these steps do enable us to evaluate Spain's export credits and to attribute Australia's subsidy equivalent (if greater than zero) by commodity.

52. Participants may not share a uniform definition of export credits in their survey responses. For example, it is not specified whether data are on CIF or FOB basis. Perhaps of greater significance, accounting practices may differ as, for example, some countries report negative export credits. The Netherlands and Belgium responded to follow-up questions regarding these negative values to indicate that these are caused by revisions to early estimates. No such follow-up question has been presented to Australia, but the negative value is small and isolated. Nevertheless, this highlights the fact that the responses of the Participants to this survey differ in that they may not all use the same method of counting export credits.

53. It should also be noted that some countries report more data than is used in the present study. Belgium provided excellent detail on export credits with defaults and fees listed by importer. The USA provided a more detailed description of commodities receiving guarantees. However, while such detailed information is valuable, it is ignored in the current study. Instead, an effort is made to standardise the data to facilitate the analysis, even at the expense of some information which may increase accuracy regarding certain countries' programmes.

54. It should be noted that internal rules of the European Union are designed to prevent distortions from export credits on the common market. Thus, in the context of global commodity markets, these are unlikely to have an effect even taking into account competition between European Union members and non-members within the European Union common market (e.g. competing exporters, one being a European Union member and the other a third country, to an importer which is a European Union member). In the present report, European Union competition rules are assumed to succeed in prohibiting subsidy elements in export credits among members, so these data are excluded where possible. However, few European Union members provided fee data which exclude intra-EU trade. Thus, to prevent a bias in the estimates, in many cases intra-EU trade must be applied to the subsidy rate calculations.

55. The data of Hungary presented unusual problems. First, two organisations in Hungary reported export credits, whereas all other countries provided a single response. While this is not a problem, it does explain the two entries for Hungary in subsequent tables, where "Hungary (E)" refers to the Hungarian Eximbank and "Hungary (M)" refers to MEHIB. The totals of the main text represent the sum over both organisations' export credits. A second, more substantial problem prevented analysis of the export credits provided by MEHIB. The reply from this organisation did not provide lengths of the export credits. Thus, these cannot be evaluated in the context of this report, as it is unclear what interest rate should be applied. The third problem prevented analysis of the export credits from the Hungarian Eximbank and reflects a peculiarity of this export credit programme. Whereas all other export credit programmes offer guarantees or insurance, the Hungarian Eximbank provides export credits in the form of official financing support. The relevant survey question does not provide enough information regarding what interest rates are charged on for official financing support to allow this programme to be evaluated. Thus, the subsidy rates of the export credit programmes operated by Hungary are not estimated in this report.

Summary of the characteristics of officially supported export credit programmes

56. Key information necessary for this empirical work is drawn from the survey of export credit use undertaken by the Participants to the Export Credit Arrangement. Again, of course, the focus is on officially supported export credits. This information includes the use of export credits, as summarised in the main text, and details on how these programmes are operated. Table A.6 and Table A.7 report the values used for parameters of the calculation formula. These are the average guarantee rate (the share of the loan which is covered), fee, grace period, down payment requirement (if any) and the number of payments per year. The rate of net claims is also included in the table. However, it should be noted that the

net claims (or defaults less repayments) may or may not include whatever portion of the claims are forgiven or repaid by other government agencies of the exporting country rather than the importing agent.

Table A.6: Parameters from Survey Data: Fees and Net Defaults in 1998

	Absolute Amounts Reported			As Rates	
	Fees	Net Defaults	Export Credits	Fees	Default
	(millions of the specified currency)			(per cent)	
Australia	10.40 AUD	6.80 AUD	2467.3 AUD	0.4	0.3
Austria	0.07 Euro	0.00 Euro	10.758 Euro	0.7	0.0
Belgium	47.35 BEF	26.28 BEF	5606 BEF	0.8	0.5
Canada	5.90 CAD	8.70 CAD	1643.5 CAD	0.4	0.5
Finland	no data	0.13 FIM	144.67 FIM	NA	0.1
France	2.78 USD	0.00 USD	330 USD	0.8	0.0
Germany	0.00 DEM	0.00 DEM	0.678 DEM	0.3	0.0
Greece	19.09 GRD	0.00 GRD	2409.3 GRD	0.8	0.0
Hungary (E)	0.00 SDR	rate provided	10.03 SDR	0.0	2.0
Hungary (M)	0.23 USD	0.00 USD	4.99 USD	4.6	0.0
Korea	82.00 KRW	17.00 KRW	64915 KRW	0.1	0.0
Netherlands	2.10 NLG	2.56 NLG	815.95 NLG	0.3	0.3
Norway	definitions do not match		4.1473 NOK	NA	NA
Spain	107.07 ESP	no data	117409 ESP	0.1	NA
USA	18.80 USD	4.70 USD	3929.3 USD	0.5	0.1

Source: Survey data from the Participants to the Arrangement. Rates are calculated as the ratio of fees and net defaults to total export credits.

57. The fees and net claims are expressed as rates, with derivations for 1998 data shown in Table A.6. The total level of each is taken from the survey responses and then divided by the total export credits in the given year. In the case of fees, the fee rate has direct implications for the results. As noted in the discussion of the present value calculation method, the fee must be subtracted from the gross subsidy rate to estimate the net subsidy rate, as this is a cost incurred in making the transaction. The implicit assumption is that the fees associated with the export credit are paid by the importer, just as the importer benefits from the favourable financing rather than the exporter. This is consistent with the assumption of competitive world markets in that, if the importer attempted to push these fees on the exporter, the exporter would not view the transaction favourably as compared to a sale without these fees. Similarly, a bank is considered unlikely to pay such fees given that alternative uses of capital at similar risk but without such fees are likely. On the other hand, if the fees could be delayed as part of the export credit, then the full fee should not be subtracted, but rather the present value of the fee should be subtracted (discounted at the importers' rate). However, the survey data do not indicate whether or not fees may be deferred. The present study applies the annual average fee across all importers rather than a fee specific to the importer. Consequently, the fees assumed are not correlated to the risk. Thus, a low-risk importer's subsidy rate net fees may be estimated lower than would be the case if that importer paid a lower than average fee. On the other hand, a high-risk importer's subsidy rate is likely to be over-estimated in the present study if the export credit programme charges high-risk importers a higher than average fee. This may bias the rate following an attempt to disaggregate the results, but does not affect the subsidy rate estimate across all importers (e.g. there is no bias created in the total programme subsidy rate estimates reported in the main text).

58. Country responses to the survey did not always provide the information required for this empirical study. For example, Finland did not report any fees. Spain did not supply net claims. Norway reports total fees and net defaults for its entire programme, rather than only the fees and net defaults

associated with the commodities of the survey, so comparisons would bias the rates substantially. Austria's response similarly reported fees covering a broader definition of activities than the export credits, but an alternative was later offered for 1998 which better matches the export credits reported in the survey. Indeed, the same concern of unmatched data may apply to other responses, although the fee rates are reassuringly similar across countries. Where a country did not provide information, the empirical work proceeds based on the assumption of a zero value for the parameter in question. Ignoring these missing data, the simple average fee rate in 1998 across these countries is 0.8 per cent and the simple average net default rate is 0.3 per cent.

59. Table A.7 shows other parameters drawn from the survey for use as parameters in estimating the subsidy rate. This table shows data only for those countries which had active export credit programmes during 1998. The level of guarantee, at left, is the average per cent of the value which is guaranteed or insured by the government. In some cases, Participants indicated in their response that their level of guarantee may vary. In particular, some state that they are willing to guarantee a greater share of the political risk, as opposed to the commercial risk. This study does not differentiate the sources of risk either in terms of the level of guarantee, nor in the interest rate database (e.g. spreads are not disaggregated into different components of risk). While a more precise disaggregation may improve the results, the levels of guarantee of those few countries which stated the rates for political and commercial risk are not far apart. Another potential form of guarantee which is not included here is insurance against exchange rate risk. The credit ratings should account for the possibility that a currency change may affect the probability of an importer to meet its dollar-denominated obligations. However, there is no provision in this study for export credits which are denominated in a volatile currency of a particular importers and which, consequently would have very uncertain expected payouts. An export credit offering insurance against exchange rate risk in this case would offer an added benefit which is not included in the survey data nor in the present study. Finally, export credits provided by the Hungarian Eximbank take the form of officially financing supported, explaining the entry of "n.a." for the guarantee level.

Table A.7: Other Parameters from Survey Data in 1998

	Level of guarantee	Grace period*	Down payment**	Payments per year*
	(per cent)	(years)	(per cent)	(number)
Australia	95	0	0	1
Austria	90	0	15	2
Belgium	92.5	0	0	1
Canada	95	0	0	2
Finland	90	0	0	2
France	95	0	0	2
Germany	87.5	0	15	2
Greece	85	0	0	1
Hungary (E) ***	n.a.	0	15	2
Hungary (M)	90	0	0	2
Korea	95	0	0	1
Netherlands	82.5	0	0	2
Norway	85	0	0	1
Spain	99	0	0	1
USA	98	0	0	1.5

* Only applied where the term of the credit is at least one year.

** Only applied where the term of the credit is at least two years in the cases of Austria and Germany.

*** The Hungarian Eximbank reports official financing support, so the question relating to the level of guarantee is not applicable to their programme.

Source : Survey data from the Participants to the Arrangement.

60. The other columns of Table A.7 show other parameters drawn from the survey. The second column of data shows the grace period for export credits over one year in length. No Participant reports a grace period. The third column of data shows the down payment. The survey response of Austria indicates that this is applied only to export credits of over two years and the same is indicated by Germany in direct communication. The last column of data shows the payments per year. This is also only applied on export credits of length greater than one year. The values shown in Table A.7 are only those of 1998 and, in some cases, the survey data in previous years may be slightly different.

61. The simple averages of the parameters Table A.7 offer some indication of the level of these programme parameters across countries. The simple averages of these countries' level of guarantee is 91 per cent and the average payment per period for export credits over one year is 1.6. The average grace period is zero, of course, and the average down payment would be small. Yet the reader should be cautioned against assuming that the parameters of Table A.7 alone are entirely representative of export credit programmes' effects on world trade. It must be remembered that these may be offset by fees, such as those shown in Table A.6. Moreover, the value of these guarantees will depend upon the degree to which they reduce importers' total costs of importing, if at all. The better indications of the effects on world markets are those reported in the main text.

Annex 4. Limitations of the study

62. The Secretariat's evaluation of export credits has limitations as discussed in preceding paragraphs. There are some limitations in the method, although this study follows directly from previous authors' work. The second source of difficulties is the accumulation and construction of the data needed. The two components to this step, the survey and the interest rates, are required for the study, but each presents obstacles, often in the form of missing information. The analysis is based on data of a single year, so caution should be exercised in extrapolating the results to other years. We state in the text and annex what these limitations are and how we address them in order to complete this empirical evaluation of export credits.

Table A.8, page 1: Composite Credit Ratings

Country list Reproduced from W.D.I.	Beginning 1998			Ending 1998		
	Base	Max of A	Missing = Caa2	Base	Max of A	Missing = Caa2
(Using Moody's classifications)						
Albania	Ca1	Ca1	Ca1	Caa3	Caa3	Caa3
Algeria	B3	B3	B3	B2	B2	B2
Angola	Caa3	Caa3	Caa3	Caa3	Caa3	Caa3
Argentina	Ba3	Ba3	Ba3	Ba3	Ba3	Ba3
Armenia	Caa3	Caa3	Caa3	B2	B2	B2
Australia	Aa2	A2	A2	Aa2	A2	A2
Austria	Aaa	A2	A2	Aaa	A2	A2
Azerbaijan	Caa3	Caa3	Caa3	B2	B2	B2
Bangladesh	B1	B1	B1	B2	B2	B2
Belarus	Caa3	Caa3	Caa3	Caa2	Caa2	Caa2
Belgium	Aa1	A2	A2	Aa1	A2	A2
Benin	Caa2	Caa2	Caa2	Caa2	Caa2	Caa2
Bolivia	B2	B2	B2	B1	B1	B1
Bosnia and Herzegovina	..	..	Caa2	..	..	Caa2
Botswana	Baa1	Baa1	Baa1	Baa1	Baa1	Baa1
Brazil	B1	B1	B1	B2	B2	B2
Bulgaria	B3	B3	B3	B2	B2	B2
Burkina Faso	Caa1	Caa1	Caa1	Caa1	Caa1	Caa1
Burundi	..	..	Caa2	..	..	Caa2
Cambodia	Ca1	Ca1	Ca1	Caa1	Caa1	Caa1
Cameroon	Caa1	Caa1	Caa1	Caa1	Caa1	Caa1
Canada	Aa2	A2	A2	Aa2	A2	A2
Central African Republic	Ca2	Ca2	Ca2	Caa1	Caa1	Caa1
Chad	Caa3	Caa3	Caa3	Caa1	Caa1	Caa1
Chile	A3	A3	A3	A2	A2	A2
China	A3	A3	A3	A3	A3	A3
Hong Kong, China	A1	A2	A2	A1	A2	A2
Colombia	Baa3	Baa3	Baa3	Baa3	Baa3	Baa3
Congo, Dem. Rep.	..	..	Caa2	Caa1	Caa1	Caa1
Congo, Rep.	Ca2	Ca2	Ca2	Caa3	Caa3	Caa3
Costa Rica	Ba1	Ba1	Ba1	Ba1	Ba1	Ba1
Côte d'Ivoire	Caa1	Caa1	Caa1	B3	B3	B3
Croatia	Baa3	Baa3	Baa3	Baa3	Baa3	Baa3
Cuba	Ca1	Ca1	Ca1	Caa3	Caa3	Caa3
Czech Republic	Baa1	Baa1	Baa1	A3	A3	A3
Denmark	Aa1	A2	A2	Aa1	A2	A2
Dominican Republic	B1	B1	B1	B1	B1	B1
Ecuador	B1	B1	B1	B3	B3	B3
Egypt, Arab Rep.	Baa3	Baa3	Baa3	Baa3	Baa3	Baa3
El Salvador	Ba2	Ba2	Ba2	Ba2	Ba2	Ba2
Eritrea	..	..	Caa2	..	..	Caa2
Estonia	Baa1	Baa1	Baa1	Baa1	Baa1	Baa1
Ethiopia	Caa2	Caa2	Caa2	Caa2	Caa2	Caa2

(continued on next page, notes at end of table)

Table A.8, page 2: Composite Credit Ratings

Country list Reproduced from W.D.I.	Beginning 1998			Ending 1998		
	Base	Max of A	Missing = Caa2	Base	Max of A	Missing = Caa2
(Using Moody's classifications)						
Finland	Aa1	A2	A2	Aaa	A2	A2
France	Aaa	A2	A2	Aaa	A2	A2
Gabon	B3	B3	B3	B3	B3	B3
Gambia, The	Caa3	Caa3	Caa3	Caa1	Caa1	Caa1
Georgia	Ca1	Ca1	Ca1	Caa3	Caa3	Caa3
Germany	Aaa	A2	A2	Aaa	A2	A2
Ghana	B1	B1	B1	B1	B1	B1
Greece	Baa1	Baa1	Baa1	Baa1	Baa1	Baa1
Guatemala	B2	B2	B2	Ba2	Ba2	Ba2
Guinea	Caa3	Caa3	Caa3	Caa2	Caa2	Caa2
Guinea-Bissau	Ca2	Ca2	Ca2	B3	B3	B3
Haiti	Caa3	Caa3	Caa3	Caa3	Caa3	Caa3
Honduras	Caa1	Caa1	Caa1	Caa1	Caa1	Caa1
Hungary	Baa3	Baa3	Baa3	Baa2	Baa2	Baa2
India	Ba1	Ba1	Ba1	Ba2	Ba2	Ba2
Indonesia	Baa3	Baa3	Baa3	B3	B3	B3
Iran, Islamic Rep.	B2	B2	B2	B1	B1	B1
Iraq	Ca2	Ca2	Ca2	Ca2	Ca2	Ca2
Ireland	Aa1	A2	A2	Aaa	A2	A2
Israel	A3	A3	A3	Aaa	A2	A2
Italy	Aa3	A2	A2	Aa3	A2	A2
Jamaica	B1	B1	B1	Ba3	Ba3	Ba3
Japan	Aaa	A2	A2	Aa1	A2	A2
Jordan	Ba3	Ba3	Ba3	Ba3	Ba3	Ba3
Kazakhstan	Ba3	Ba3	Ba3	Ba3	Ba3	Ba3
Kenya	B1	B1	B1	B2	B2	B2
Korea, Dem. Rep.	Ca3	Ca3	Ca3	Ca2	Ca2	Ca2
Korea, Rep.	B1	B1	B1	Ba1	Ba1	Ba1
Kuwait	A2	A2	A2	A2	A2	A2
Kyrgyz Republic	Ca1	Ca1	Ca1	B1	B1	B1
Lao PDR	Caa3	Caa3	Caa3	..	..	Caa2
Latvia	Baa2	Baa2	Baa2	Baa2	Baa2	Baa2
Lebanon	B1	B1	B1	B1	B1	B1
Lesotho	Caa1	Caa1	Caa1	B3	B3	B3
Libya	B2	B2	B2	B1	B1	B1
Lithuania	Ba2	Ba2	Ba2	Ba1	Ba1	Ba1
Macedonia, FYR	Caa3	Caa3	Caa3	B3	B3	B3
Madagascar	Caa2	Caa2	Caa2	B2	B2	B2
Malawi	Caa1	Caa1	Caa1	Caa1	Caa1	Caa1
Malaysia	A1	A2	A2	Baa3	Baa3	Baa3
Mali	Caa2	Caa2	Caa2	Caa2	Caa2	Caa2
Mauritania	Ca1	Ca1	Ca1	Caa1	Caa1	Caa1
Mauritius	Baa2	Baa2	Baa2	Baa2	Baa2	Baa2

(continued on next page, notes at end of table)

Table A.8, page 3: Composite Credit Ratings

Country list Reproduced from W.D.I.	Beginning 1998			Ending 1998		
	Base	Max of A	Missing = Caa2	Base	Max of A	Missing = Caa2
	(Using Moody's classifications)					
Mexico	Ba2	Ba2	Ba2	Ba2	Ba2	Ba2
Moldova	Ba2	Ba2	Ba2	B2	B2	B2
Mongolia	B3	B3	B3	B2	B2	B2
Morocco	Ba1	Ba1	Ba1	Ba2	Ba2	Ba2
Mozambique	Caa3	Caa3	Caa3	Caa1	Caa1	Caa1
Myanmar	Caa1	Caa1	Caa1	Caa1	Caa1	Caa1
Namibia	Caa1	Caa1	Caa1	Ba2	Ba2	Ba2
Nepal	B2	B2	B2	B2	B2	B2
Netherlands	Aaa	A2	A2	Aaa	A2	A2
New Zealand	Aa1	A2	A2	Aa2	A2	A2
Nicaragua	Caa3	Caa3	Caa3	Caa3	Caa3	Caa3
Niger	Caa2	Caa2	Caa2	B3	B3	B3
Nigeria	Caa3	Caa3	Caa3	Caa2	Caa2	Caa2
Norway	Aaa	A2	A2	Aaa	A2	A2
Oman	Baa3	Baa3	Baa3	Baa3	Baa3	Baa3
Pakistan	B2	B2	B2	Caa1	Caa1	Caa1
Panama	Ba1	Ba1	Ba1	Ba1	Ba1	Ba1
Papua New Guinea	Ba3	Ba3	Ba3	B1	B1	B1
Paraguay	Ba3	Ba3	Ba3	Ba3	Ba3	Ba3
Peru	Ba2	Ba2	Ba2	Ba2	Ba2	Ba2
Philippines	Ba1	Ba1	Ba1	Ba1	Ba1	Ba1
Poland	Baa3	Baa3	Baa3	Baa3	Baa3	Baa3
Portugal	Aa3	A2	A2	Aa2	A2	A2
Puerto Rico	..	..	Caa2	..	..	Caa2
Romania	Ba3	Ba3	Ba3	B3	B3	B3
Russian Federation	Ba2	Ba2	Ba2	B3	B3	B3
Rwanda	Ca1	Ca1	Ca1	..	..	Caa2
Saudi Arabia	A3	A3	A3	A3	A3	A3
Senegal	Caa1	Caa1	Caa1	B3	B3	B3
Sierra Leone	Ca2	Ca2	Ca2	Ca2	Ca2	Ca2
Singapore	Aaa	A2	A2	Aaa	A2	A2
Slovak Republic	Baa3	Baa3	Baa3	Ba1	Ba1	Ba1
Slovenia	A3	A3	A3	A3	A3	A3
South Africa	Baa3	Baa3	Baa3	Baa3	Baa3	Baa3
Spain	Aa2	A2	A2	Aa2	A2	A2
Sri Lanka	Ba3	Ba3	Ba3	Ba3	Ba3	Ba3
Sudan	Ca2	Ca2	Ca2	Ca2	Ca2	Ca2
Sweden	Aa3	A2	A2	Aa2	A2	A2
Switzerland	Aaa	A2	A2	Aaa	A2	A2
Syrian Arab Republic	B3	B3	B3	B2	B2	B2
Tajikistan	Caa3	Caa3	Caa3	B2	B2	B2
Tanzania	Caa1	Caa1	Caa1	Caa1	Caa1	Caa1
Thailand	Baa3	Baa3	Baa3	Ba1	Ba1	Ba1
Togo	Caa2	Caa2	Caa2	Caa1	Caa1	Caa1

(continued on next page, notes at end of table)

Table A.8, page 4: Composite Credit Ratings

Country list Reproduced from W.D.I.	Beginning 1998			Ending 1998		
	Base	Max of A	Missing = Caa2	Base	Max of A	Missing = Caa2
	(Using Moody's classifications)					
Trinidad and Tobago	Ba1	Ba1	Ba1	Ba1	Ba1	Ba1
Tunisia	Baa3	Baa3	Baa3	Baa3	Baa3	Baa3
Turkey	B1	B1	B1	B1	B1	B1
Turkmenistan	Caa3	Caa3	Caa3	B3	B3	B3
Uganda	Caa1	Caa1	Caa1	Caa1	Caa1	Caa1
Ukraine	Caa1	Caa1	Caa1	B3	B3	B3
United Arab Emirates	A2	A2	A2	A2	A2	A2
United Kingdom	Aaa	A2	A2	Aaa	A2	A2
United States	Aaa	A2	A2	Aaa	A2	A2
Uruguay	Baa3	Baa3	Baa3	Baa3	Baa3	Baa3
Uzbekistan	Caa1	Caa1	Caa1	B2	B2	B2
Venezuela	Ba2	Ba2	Ba2	B2	B2	B2
Vietnam	Ba3	Ba3	Ba3	B1	B1	B1
West Bank and Gaza	..	..	Caa2	..	..	Caa2
Yemen, Rep.	..	..	Caa2	..	..	Caa2
Yugoslavia, FR (Serb./Mont.)	Ca1	Ca1	Ca1	B3	B3	B3
Zambia	Caa2	Caa2	Caa2	Caa2	Caa2	Caa2
Zimbabwe	Ba3	Ba3	Ba3	B1	B1	B1

Sources: Credit ratings are a composite of Moody's, Standard and Poor's, Institutional Investors, and Euromoney rankings, as reported in *World Development Indicators* (WDI), following the method described in the text. Moody's nomenclature is used, but only some portion of the composite credit ratings reported here are Moody's own rankings. The second column of credit ratings demonstrates the assumption that importer credit ratings is not allowed to be better than "A2" (under the assumption that the sovereign credit rating does not reflect the average importer's). The third column of credit ratings demonstrates the assumption that a "Caa2" is used in cases of missing observations.

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