Volume Title: The Structure and Evolution of Recent U.S. Trade Policy

Volume Author/Editor: Robert E. Baldwin and Anne O. Krueger, eds.

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-03604-9

Volume URL: http://www.nber.org/books/bald84-1

Publication Date: 1984

Chapter Title: The Benefits and Costs of Official Export Credit Programs

Chapter Author: Heywood Fleisig, Catharine Hill

Chapter URL: http://www.nber.org/chapters/c5839

Chapter pages in book: (p. 321 - 358)

9 The Benefits and Costs of Official Export Credit Programs

Heywood Fleisig and Catharine Hill

9.1 Introduction

Governments support export credits in, broadly, two ways: through direct loan and subsidy programs and through insurance and guarantee programs. Under direct loan programs, government institutions extend export credits directly, often in association with private financing. Under subsidy programs, governments operate indirectly on export credits by extending preferential refinancing and interest subsidies to private lenders. In the United States, Canada, and Japan, official export institutions lend directly to both domestic exporters and foreign importers at fixed subsidized rates. In Germany, France, the United Kingdom, and Italy, official institutions combine direct lending, refinancing of private export credits at preferential rates, and interest rate subsidies to achieve similar results.[1]

The subsidy in officially supported export credits arises in several ways: loans are made at fixed rates to borrowers who would normally qualify only for variable rate loans, at maturities generally longer than available in the private market for comparable loans to such borrowers, and at lower rates than these borrowers would otherwise pay. Governments also subsidize exports through loan insurance and guarantee programs when

Heywood Fleisig and Catharine Hill are with the World Bank, Washington, D.C.

The authors are obliged to J. Michael Finger, Ben Crain, and David Dod for numerous helpful comments, encouragement, and support during this project. Nicholas Hope, Jeffrey Katz, and Thomas Klein of the World Bank, and Bevan Stein of the Organization for Economic Cooperation and Development, provided comments and invaluable guidance through the data. Mark Connell provided excellent research assistance. Any errors of fact or logic remain the authors' responsibility, as do the views expressed in this paper, which are not necessarily those of the World Bank.

they sell insurance and guarantees at prices below their true market value.

When a government guarantees or insures a loan made to finance an export, it creates a financial instrument against which the lending institution, either a bank or an exporter, can borrow at rates close to the government borrowing rate. The potential profit on a guaranteed or insured loan to the lender equals the rate at which the importer could have borrowed in the private market without insurance or a guarantee, and the rate at which the lender can borrow against the guaranteed loan, minus any insurance or guarantee fees.

All of the countries considered have institutions that extend export credit insurance or guarantees. Through these institutions the government assumes a large proportion of the credit risk on loans to foreign buyers. Although the subsidy element on an insured or guaranteed loan is generally smaller than on a directly supported export credit, there are about three times more insured or guaranteed export credits outstanding than direct loans. Therefore, the total subsidy on such programs may still be substantial.

This paper analyzes the costs and benefits of the direct loan and subsidy programs. Section 9.2 considers various methods of determining the subsidy element in official export credits and presents estimates of the export credit subsidies provided by the major lending countries. It estimates that the subsidy in the direct loan and subsidy programs for these countries ranged from $1.5 billion to $3.5 billion in 1980. Of this amount, after export price changes, it is estimated that developing countries received between $500 million and $2.4 billion.

This paper then analyzes the market factors that determine the subsidy's effect on export prices and volumes and, thereby, the ultimate division of the subsidy between borrowers and lenders. Borrowers are found to receive between 50 and 100 percent of the subsidy, depending on the supply, demand, and market structure of the export industries receiving subsidized credit. Section 9.3 raises a variety of issues relevant in assessing the social costs and benefits to borrowers and lenders resulting from the subsidy and the ensuing changes in export prices and volumes. This paper concludes by describing the various international efforts that have been made to limit official export credit subsidies.

9.2 Measuring the Subsidy on Official Export Credit Programs

Outstanding direct and subsidized export credits of the major lending countries (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) amounted to nearly $55 billion at the end of 1978. These lenders offered substantial subsidies, charging interest rates

between 7 and 8 percent, at the same time that private lenders charged rates between 5 and 15 percent.

9.2.1 Methods of Calculating the Subsidy on Official Export Credits

Calculating the subsidy on official export credits requires first making a judgment about the private rate that the borrower would have paid. This rate will always exceed the government borrowing rate, but beyond that will depend on the characteristics of both the borrower and the loan. The subsidy element may be calculated as an annual interest differential or as the present value of future interest differentials over the life of the loan.

The subsidy a borrower receives equals the difference between the official export credit institution's rate and the rate charged in the private market for the same type of loan and borrower. Some estimates compute the subsidy by comparing the government borrowing rate with the official export credit rate. Such computations underestimate the subsidy, however, because importers will always pay a higher interest rate on their loans, given currency denomination and maturity, than will the government of the country issuing the currency. The reasons are, first, that privately granted export credit is tailored to the individual transaction—a retail transaction—with a low volume and a high overhead. In contrast, government debt is marketed in large volumes and in standardized units and maturities. Second, privately granted export credit, because of this individual tailoring, is harder to resell; by contrast, liquid markets exist at most maturities for government debt. Finally, only the government of the currency-issuing country can absolutely guarantee the payment of bonds denominated in its own currency because only that government can legally create that currency at will. Since no private or foreign government borrower can make the same guarantee about his debt, lenders will always require additional compensation for this added risk. The market interest rate measures the cost to society of granting export credit when its productive resources are fully employed (see Appendices A and B). The government interest rate, at full employment, will always fall short of the private market rate for the same maturities, for the reasons discussed above. At full employment, the social cost is the difference between the export credit agency's rate and the market rate. The difference between the export credit agency's rate and the government interest rate provides only some peripheral information relating to the budgeted cost—not the social cost—of the export credit granting agency.

Fixed-Rate and Floating-Rate Estimates

Borrowers can pay interest on their loans at interest rates fixed over the life of the loan, or at interest rates that float above the wholesale bank

rate. Typically, good credit risks can borrow at either rate, while riskier borrowers must take floating rate loans.

This paper computes the subsidy under both of these assumptions about the riskiness of the borrower. It estimates the subsidy for borrowers who otherwise would have borrowed at fixed rates by multiplying the loans granted in each year by the difference between the bond rate at which they could have borrowed and the interest rate charged on the direct export credit. It derives the total subsidy on the loan portfolio by adding the subsidies on all loans still outstanding. It estimates the subsidy for borrowers who would otherwise have financed their imports with a floating rate loan by multiplying the outstanding portfolio of officially supported export credits by the interest rate differential between the lending country's short-term market rate and the average interest rate actually received on the portfolio.

These methods produce an ex post measure of the subsidy that represents the savings in debt service in any given year under different assumptions about the alternative borrowing possibilities available to the borrowing country. The two measures of the subsidy may differ from ex ante expectations of the subsidy. In the fixed-rate calculation, the savings in interest payments in future years are set at the time the loan is committed and, if the borrower does not refinance, the expected and actual future interest subsidy are equal. In the floating rate case, the subsidy in any year will change with movements in the short-term interest rate. The expected subsidy and the actual subsidy will, therefore, only be equal if borrowers realize their expectations of movements in the floating rate.

The procedures followed under these two methods can be illustrated with the export financing activities for one year, 1980, of the Export-Import Bank of the United States (Eximbank).

Only the best of Eximbank's borrowers could have borrowed at the U.S. Aaa corporate bond rate. Assuming that all borrowers from Eximbank could have obtained loans at the Aaa corporate bond rate results in the fixed-rate estimate of the value of the subsidy. Given detailed information on the loans in the outstanding portfolio, the fixed-rate subsidy can be calculated as

$$(1) \qquad \sum_{t=T}^{1980} A_t(r_t^{AA} - r_t).$$

A_t = authorizations made in t still outstanding in 1980.

r_t^{AA} = corporate Aaa bond rate in t.

r_t = average interest rate on loans authorized in t.

T = year during which oldest outstanding loans were authorized.

Table 9.1 shows the amount of direct loans authorized and the weighted-average interest rate charged. The Aaa corporate bond is also shown,

Table 9.1 Estimation of the Eximbank Loan Subsidies

	Weighted-Average Interest Rate on Direct Loans	New Direct Loan Authorizations (millions of dollars)	Aaa Corporate Bond Yield	Estimated Subsidy (millions of dollars)
1971	6.00	2,300	7.39	32.0
1972	6.00	2,200	7.21	26.6
1973	6.00	2,900	7.44	41.8
1974	6.38	4,300	8.57	94.2
1975	7.90	2,300	8.83	21.4
1976	8.42	2,100	8.43	0.2
1977	8.50	800	8.02	−3.8
1978	8.38	2,900	8.73	10.2
1979	8.28	4,300	9.63	58.1
1980	8.44	3,600	11.94	126.0

SOURCES: Weighted-average interest rates were supplied by Eximbank staff. The Aaa corporate bond yield was taken from the *Federal Reserve Board, Annual Statistical Digest*, and *Federal Reserve Bulletin*, various issues.

as is the amount saved annually by Eximbank borrowers—the subsidy. The total subsidy on Eximbank's loan portfolio in any year is the sum of the subsidies on the debt still outstanding from earlier years.

If the data on the percent of past authorizations still outstanding are not available, these estimates assume that all loans authorized in a given year have a maturity equal to the average and that t/T percent (where T = average maturity and t ranges from 1 to T) of loans authorized ($T + 1 - t$) years in the past are still outstanding. For example, one-ninth of loans authorized nine years ago would still be outstanding, given $T = 9$. These estimates weight the resulting subsidy so that the weighted average of loan authorizations made in the past equals the total outstanding export credits. Using this procedure for Eximbank yields a fixed-rate estimate of the subsidy equal to $213.5 million for 1980.

If the data on past authorizations are not available, these estimates assume that authorizations have remained constant over time. Since authorizations have generally been increasing for the countries considered, this assumption will yield a lower bound for the fixed-rate estimate. For example, using this procedure for Eximbank yields an estimate of the subsidy of $171.2 million for 1980.

The floating-rate comparison is appropriate in cases where the borrowers are not creditworthy enough to secure fixed-interest loans by selling bonds. Instead, they borrow at rates that follow the Eurocurrency rates. In 1980, on a portfolio of $13.8 billion, Eximbank earned a return of 7.31 percent. Comparable floating rate on Eurodollar loans for that year bore

an average rate of 14.5 percent, so the subsidy was 7.19 percent on $13.8 billion, or $992 million. The floating-rate subsidy in 1980 is calculated as

$$\bar{A}_{1980}(r^{E}_{1980} - \bar{r}_{1980}). \tag{2}$$

$\bar{A}_{1980}$ = total outstanding official export credits in 1980.

r^{E}_{1980} = Eurocurrency loan rate in 1980.

$\bar{r}_{1980}$ = average interest rate on total outstanding official export credits in 1980.

Computing the subsidy requires knowing the weighted-average interest rate on the entire portfolio. Sometimes the lending agency supplies that information, but in other cases the lending agency supplies only the average interest rate for each year's authorizations. In the latter case, computing the average interest rate on the entire portfolio requires knowing the volume of each year's authorizations still outstanding. When the lending agency does not supply that information either, we estimate the authorizations still outstanding, by year, as we did for the fixed-rate estimate of the subsidy (see above).

The above estimates assume that borrowers faced, as an alternative, the market rate on loans denominated in the same currency as the subsidized export credit. Recently, countries have begun providing officially supported export credits in foreign currencies. In such cases, the subsidy for any one country is the difference between the subsidized rate and the market rates for loans in the currencies in which the subsidized export credits are made. This procedure was used for the calculation of the subsidy for Canada, where a large proportion of loans are denominated in U.S. dollars. Although several other countries have started to provide official export credits in foreign currencies, inadequate data prevented our taking this into account in the subsidy calculations. The error introduced is probably small, however, both because foreign currency authorizations have only become important in the last few years and because authorizations are not immediately reflected in outstanding loans.

An alternative method for calculating the subsidy would be to express it as the discounted present value of the fixed-rate subsidy on loans authorized in any one year. The subsidy would equal the difference between the face value of the subsidized loan and the present value of the repayment stream computed at the market rate of interest.[2] Computing the present discounted value of the subsidy permits representing and analyzing the interest subsidy in a price-equivalent form: borrowers should be indifferent between receiving the interest subsidy and receiving a decrease in the price of the good equal to the present discounted value of the interest subsidy. However, official institutions lend only a portion of the purchase price of an export; since that portion differs both between

countries and within countries among different goods, and since some important countries do not report these data, computing the price-equivalent subsidy still does not permit comparing its size to export prices or unit values.

The present value of the subsidy, moreover, is difficult to compute because its calculation requires information on people's beliefs about the future course of interest rates (for a floating-rate loan) or about their refinancing plans (for a fixed-rate loan). By contrast, the method presented in section 9.2.1 avoids this problem by calculating the interest subsidy for one year on all loans outstanding in that year.

9.2.2 Empirical Findings

Following the methods illustrated above with U.S. data, this paper estimates that the total subsidy of the major lending countries amounted to about $1.5 billion in 1980 if the borrower's alternative was, in actuality, a fixed-rate loan (see table 9.2). A negative entry in this table implies that a borrower took an official loan at a rate in excess of the market bond rate. Since a sensible borrower would not willingly do that, negative entries rather indicate that the typical recipient of official export credits, contrary to assumption, could not borrow at the fixed bond rate assumed and that the estimate of $1.5 billion is too low.

If the typical recipient of official export credit would have borrowed at floating rates in the absence of official lending, the estimated subsidy rises to about $3.5 billion in 1980 (see table 9.3). Negative subsidies, as shown in the table, can arise either where borrowers are unable or unwilling to refinance their fixed-rate official loans at lower floating rates. Borrowers

Table 9.2 **Estimate of the Subsidy When Borrowers' Alternative Is a Fixed-Rate Loan ($ million)[a]**

	1976	1977	1978	1979	1980
Canada	14.6	13.7	24.6	(27.3)[b]	(46.9)
France	n.a.	n.a.	420.5	(464.8)	(552.4)
Germany	23.9	6.3	(−5.4)	(−16.2)	(−17.5)
Italy	53.3	74.0	94.2	(110.9)	(128.8)
Japan	36.7	31.7	21.2	15.4	(55.6)
United Kingdom	289.7	358.7	423.9	(499.9)	(543.1)
United States	108.3	81.6	57.5	85.2	213.5
Total	526.5	566.0	1,036.5	1,187.3	1,522.8

[a]The estimates are based on data obtained from the Export-Import Bank of the United States. For a detailed discussion of the data, see appendix C.

[b]The numbers in parentheses were calculated assuming outstanding loans remained constant over the previous year. This was done when data were not available for recent years. Since most programs have been growing, this should provide a lower bound on the estimate of the subsidy.

might be unable to refinance at the spreads assumed in table 9.3 (50 basis points over the three-month interbank rate in the country where the loan is made). In that case, table 9.3 underestimates the subsidy.[3] On the other hand, borrowers might be unwilling to refinance longer-term fixed rate commitments at lower, floating short-term rates if they foresaw a pattern of short-term rates over the life of the longer-term loan that would make it unprofitable for them to refinance; it is difficult to imagine an operational test of this explanation.

Lacking direct information on the regional distribution of the subsidy by type of borrower, this paper estimates it by assuming that lenders subsidize all borrowers by approximately the same amount. Then the distribution of the loans by type of borrower would be the same as the distribution of the subsidy by type of borrower. Table 9.4 shows the distribution of loans by type of borrower: 69 percent of the loans went to developing countries, 24 percent to Eastern Europe and China, and the remainder to other developed countries.[4]

The entire subsidy is not transferred to foreign borrowers, however, because domestic exporters in the lending country can raise prices and recapture part of the subsidy's benefits. Section 9.3.1 discusses why recapture probably ranges between zero and one-half in most typical markets. Applying these recapture rates to the estimated range of total subsidy granted by the export credit—$1.5–$3.5 billion—yields an estimate of subsidy actually transferred of $.75–$3.5 billion.

Assuming that the transferred subsidy is distributed by type of borrower in the same proportion as the pattern of lending implies that developing countries would have received about 70 percent of the transferred subsidy, or $.5–$2.4 billion. Because the Arrangement on Guide-

Table 9.3 **Estimate of the Subsidy When Borrowers' Alternative Is a Floating-Rate Loan ($ million)[a]**

	1976	1977	1978	1979	1980
Canada	−14.8	−23.6	91.0	(151.2)[b]	(288.4)
France	n.a.	n.a.	152.2	(336.4)	(725.1)
Germany	−76.2	−44.4	(−113,1)	(−40.3)	(39.5)
Italy	169.5	134.4	81.4	(92.8)	(222.0)
Japan	95.4	−35.2	−253.7	−107.9	(471.5)
United Kingdom	243.0	37.4	118.4	(533.0)	(855.9)
United States	−86.4	−44.6	189.8	546.3	992.2
Total	330.5	24.0	266.3	1,511.5	3,524.6

[a]The estimates are based on data obtained from the Export-Import Bank of the United States. For a discussion of the data, see appendix C.

[b]The numbers in parentheses were calculated assuming outstanding loans remained constant over the previous year. This was done when data were not available for recent years. Since most programs have been growing, this should provide a lower bound on the estimate of the subsidy.

Table 9.4 Geographic Distribution of Subsidized Export Credits

Lender	Borrower	1978 (percentage)	1979 (percentage)
France	Developed countries	19	5
	Eastern Europe and China	18	33
	Less developed countries	63	62
	Total	100	100
Germany	Developed countries	7	5
	Eastern Europe and China	28	26
	Less developed countries	66	69
	Total	100	100
Italy[a]	Developed countries	—	—
	Eastern Europe[b]	52	30
	Less developed countries	48	70
	Total	100	100
Japan	Developed countries	4	2
	Eastern Europe and China	26	43
	Less developed countries	70	55
	Total	100	100
United Kingdom	Developed countries	13	15
	Eastern Europe and China	34	19
	Less developed countries	53	66
	Total	100	100
United States	Developed countries	16	11
	Eastern Europe and China	1	2
	Less developed countries	83	87
	Total	100	100
Total	Developed countries	12	7
	Eastern Europe and China	22	24
	Less developed countries	66	69
	Total	100	100

SOURCE: *Trends in Export Credits among Major Competitors*. Export-Import Bank of the United States. Policy Analysis Staff. Washington, D.C., 6 March 1981.

[a]The figures for Italy only include credits with a repayment term over five years.

[b]Figures for Italy do not include loans to China.

lines for Officially Supported Export Credits (see section 9.4) permits lower interest rates and longer maturities for low-income countries, 70 percent is a conservative estimate of the proportion of the subsidy going to developing countries.

9.3 The Benefits and Costs of Export Credit Subsidy Programs

In both competitive and most monopolistic export markets, recipients of subsidized export credits cannot lose while, symmetrically, providers

of subsidized export credits cannot gain, so long as there are not external costs or benefits. This section first analyzes how the market reaction of export prices and volumes to the subsidy determines the final distribution of the subsidy between lending country exporters, lending country citizens who provide the subsidy, and the borrowing country importers. In view of the modest size of these programs relative to the output of the lending countries, we have used a partial equilibrium approach for this analysis. The section concludes by considering a variety of external costs and benefits that affect the social costs and benefits arising from various redistributive and efficiency aspects of the program.

9.3.1 The Distribution of the Subsidy between Borrowers and Exporters

The distribution of the subsidy will depend on supply, demand, and market organization in the markets receiving subsidized export credit. In a competitive market, when officially supported export credits increase demand for a good whose supply is totally inelastic, subsidized buyers bid up the price above its previous level. Since the quantity sold remains constant, by assumption, buyers can only be satisfied when the price has risen by enough to extinguish the extra demand created by the subsidy. The export price must rise then by the full amount of the subsidy. The domestic exporting industry, therefore, recaptures the entire subsidy through higher prices, and the borrowing country gains nothing. If the price of the export is fixed on world markets, whatever the supply conditions, the entire subsidy is also transferred to the domestic exporting industry. The existence of many perfect substitutes for the subsidizing country's exports means that only a slight price advantage suffices to capture much of the market. Subsidy recipients will bid up the price of the subsidizing country's exports by nearly the full amount of the subsidy and still willingly buy the same or greater amounts than before.

If supply is less than totally inelastic and the price of the export is not given on world markets, however, some of the subsidy must be transferred to the borrowing country to induce them to purchase more. When supply curves are infinitely elastic over the range of the subsidy, all of the subsidy is transferred to the borrowing country importers.

If the exporter in the lending country is a monopolist, some of the subsidy must be transferred to the borrowing country importer. The monopolist always operates in the elastic portion of his demand curve and can always increase profits by expanding sales volume when his demand curve shifts out.

Given available information on supply, demand, and market organization in the markets receiving subsidized export credit, this paper estimates that borrowers receive between 50 and 100 percent of the subsidy (see appendix A). In competitive markets, existing estimates of elastici-

ties of supply and demand (Stern, Francis, and Schumacher 1976) suggest that almost all of the subsidy is transferred to the borrower. If the exporters in lending countries are monopolists, this paper estimates that borrowers get half of the subsidy,[5] though this finding rests on assumed values for the second derivatives of demand and marginal cost functions.

9.3.2 Distributional Effects within Lending Countries

If official export credit lending does not solve a market failure within the lending country, and markets are competitive, then overall efficiency or output cannot rise. If the subsidy eliminates no market failure but, at the same time, makes borrowing country importers and lending country exporters better off, then it must make other citizens of lending countries worse off. If borrowing country importers receive any of the subsidy, as is likely, the lending country as a whole must lose. Depending on whether the price or volume of exports rises, nonsubsidized citizens in lending countries bear the cost in different ways.

In a fully employed economy, real net exports can rise only by reducing real domestic investment, consumption, or government expenditure (see appendix B for further discussion). If the rise in net exports forces a decline in domestic investment projects, the lending country citizens lose the market rate of interest on the foregone investment,[6] while the lending country government receives the lower, subsidized interest rate on the same quantity of exports. The loss to the lending country government and its nonsubsidized citizens amounts to the difference between the market rate and the lower subsidized rate. These lossses may, however, be partly offset by terms of trade gains that increase exporters' profits when the subsidized loan increases demand. As discussed above, however, the lending country typically will not recover part of this subsidy; that part will be transferred to the borrowing country and lost through the inefficient use of resources.

When the economy is fully employed, but where an increase in imports offsets the rise in exports so that net exports remain unchanged, the net cost to the subsidizing country is the same as before. Purchasers of imported goods pay the higher world market interest rate to finance their additional imports, while their government receives the lower, subsidized interest rate on the additional exports it financed. As before, gains to exporters partly offset this loss, but the rest of the subsidy is retained by borrowing country importers or absorbed by the higher cost of less efficient production.

9.3.3 Other Benefits and Costs to Borrowing Countries

While borrowing countries generally gain from the subsidy on export credits even after prices adjust, other costs, difficult to quantify, may offset the gain. Restrictions on the currency denomination of the export

credit may distort the currency denomination of the borrowing country's debt and, thereby, offset part of the gain from the subsidy to the borrowing country. The subsidy calculation may also overstate the gain to borrowing countries if they compete in third markets against exports from industrialized countries that receive subsidized credit.

Portfolio Effects

Just as a country will choose a portfolio of international reserve currencies that, by various accounts, produces some optimal risk-return combination in the light of that country's future consumption and investment plans, so a country will desire a portfolio of international debt denominated in different currencies that achieves the same end.

If the borrowing country's acceptance of the export credit leads to denominating additional debt at market rates in a currency that moves the borrowing country away from its optimal debt portfolio, then the above estimate of the interest subsidy overestimates the gain to the borrower. The gain to the borrower cannot be negative, however, since the subsidy expands the choices available to the borrower, and the borrower need not accept the subsidized credit to purchase the export.

Terms of Trade Effects

The gain to borrowing countries from subsidized export credit may be offset if the borrowing countries also export goods to third markets which compete with exports from industrial countries that receive subsidies. When a developing country's exports compete with goods which receive subsidies from industrial countries, its terms of trade deteriorate. The fact that many developing countries have instituted official export credit programs to match industrial country subsidies suggests that these countries do export goods competitive with subsidized industrial country exports. In particular, some evidence exists that developing countries have become increasingly competitive at producing customized capital goods.

When developing countries compete against industrial country exports to other developing countries that receive subsidized credit, the distribution of the subsidy among individual developing countries changes, but the estimate of the transfer to all developing countries does not. Subsidies granted or price reductions on developing country exports to industrial countries could, however, reduce the estimates of the transfer presented here. Developing country exports competing against industrial country exports that receive most subsidized export credits (SITC category 7), however, amounted to only $14 billion in 1980, while industrial country export credits go primarily to developing countries. Given this, terms of trade for developing country exports would have to deteriorate far

beyond those ever experienced to reverse the estimates of the flows given above. At most, even assuming that all developing country exports of such goods to industrial countries compete against goods receiving subsidized credits, the subsidy estimate would be reduced by about 25 percent.[7]

9.3.4 Other Benefits and Costs to Lending Countries

The exporter generally recaptures only part of the export credit subsidy through higher prices. Whether the lending country as a whole gains from the subsidy, therefore, depends on whether the official export credit solves a market failure within the lending country. A variety of externalities on which export credit subsidies could act have been advanced by proponents of officially supported credits. Even where these arguments have merit, however, in few cases are export credit subsidies the best means of achieving a given goal.

The Effects of Officially Supported Export Credits on Employment

Export subsidies can increase employment in export industries. However, when the economy is already at full employment, employment in the subsidized export industry rises at the expense of employment elsewhere. Since total employment cannot increase beyond full employment, and the resulting resource shift may temporarily aggravate inflation, employment gains in export industries provide no net social gain for the subsidizing country.

In the face of general unemployment, an export subsidy can increase total employment. However, so can monetary and fiscal policies. Moreover, as general tools to regulate the economy, monetary and fiscal policies may be superior to export subsidies. The export credit subsidy normally increases the production of exports relative to other domestically produced goods, increasing the relative cost of the export goods to domestic consumers. Unless considerations other than a general increase in employment prompt the use of subsidies, other policies—such as monetary and fiscal policies—could increase employment and output without these side effects on relative prices and sectoral outputs. No reason exists, moreover, to believe that an export subsidy will provide a stronger or less inflationary stimulus to employment than other forms of budgetary spending or tax reductions.

In addition, if export credits do not vary over the business cycle, their beneficial effects in reducing unemployment in recessions will bear a cost later when they contribute to overheating the economy during booms. Since export credits are often committed far in advance of actual transactions and are usually extended over periods that are longer than any one stage of the cycle, and since future cycles cannot be perfectly foreseen,

great difficulties beset the use of export credits for stabilization purposes.[8] These rigidities enhance the desirability of alternative policies to deal with unemployment and inflation.

Export subsidies could be used to support employment in chronically depressed industries or regions. The subsidy could serve as an alternative to unemployment payments if it were clear that, in the absence of the subsidy, the unemployed labor in a particular industry or region would not be employed elsewhere. However, pursuing such a policy for a long time would result in increasing losses to the country by extending the period of time during which resources were used inefficiently.

Official Export Credits and Capital Market Imperfections

Sometimes the absence of private market credit may indicate a market imperfection that prevents the gains from trade from being fully realized. In such a case, the government can correct the market deficiency by providing credit, making society's use of resources more efficient.

The original impetus for the formation of the Eximbank arose in such a situation. The Eximbank was set up during President Franklin D. Roosevelt's administration to finance trade with the Soviet Union. The administration viewed opening diplomatic relations with the Soviet Union as an important political objective. At the same time, it wished to alleviate the constricting effects that the 1930 Hawley-Smoot Tariff had on trade and to promote exports as a means of increasing domestic employment. Since the economy was in a depression, these were all important policy objectives. The Soviet Union, unlike many other countries, was agreeable to increasing imports at that point.

At the same time, the private market was unlikely to finance trade with the Soviets. The lack of diplomatic recognition had slowed the development of commercial ties, and unofficial State Department policy, together with the Johnson Debt Default Act, operated to block loans to countries that had defaulted on war debts. Unlike the present situation, there was much evidence then to support the view that the private market would not have lent sufficiently to secure the side effects that were considered desirable on political and economic grounds.

Similarly, after World War II, when the U.S. government viewed the level of private lending to Europe as insufficient to prevent economic difficulties and consequent political disorder that could have seriously compromised the NATO alliance, the Eximbank was one of the institutions used to channel government loans to Europe.

The absence of private market loans, however, does not prove that the market is imperfect. Some less-developed countries, for example, cannot float bonds in the bond market. Many reasons exist for this, all relating to the absence of the kind of creditworthiness and volume of credit demand that makes floating a bond issue worthwhile. Likewise, many corpora-

tions cannot raise funds by selling bonds. Instead, they and smaller partnerships and individuals must ordinarily finance their business loans by borrowing from a retail bank at higher rates of interest than bond issuers pay.

Most less-developed countries raise funds by borrowing from banks in the Eurodollar market or in national banking markets. Their loans typically have interest rates that float at a predetermined number of basis points (hundredths of a percentage point) over a benchmark interest rate, such as the prime rate or the London Interbank Offer Rate (LIBOR). When an official export credit institution lends to such a borrower at, for example, a rate comparable to a lower corporate bond rate, it grants that country a subsidy equal to the difference between the retail rate it would have been charged because of the greater risk, and the rate charged by the official institution.

When a bank refuses credit to a foreign borrower at market rates because of the condition of the country or of the borrower within the country, then the risk attached to the loans exceeds that represented by the retail rates that banks typically charge these countries. The subsidy granted by the official institution is greater than the difference between the rate it charges and the market rate because it is taking a risk larger than the one reflected in the market rate.

When the private sector responds to risky loans by charging higher rates or by refusing to make them at all, this does not, as noted, necessarily mean that a market imperfection exists. When such imperfections are absent, official loans at below-market rates cannot raise total income or increase efficiency. Without solving a market imperfection, such practices can only redistribute income away from nonsubsidized citizens and toward domestic exporters or citizens of a borrowing country.

Matching Foreign Subsidized Credit Programs

If a foreign government permanently subsidizes an export product, the policy that would yield the largest income for another country's citizens as a group would permit the foreign producer to supply the good. In this way, the country that does not match the foreign subsidy can earn larger quantities of foreign exchange and import more goods by reallocating domestic resources from the production of the foreign-subsidized good to the next most productive sector. The receipts from the sales of these next-best exports will be only marginally lower, and the subsidy to foreigners will no longer be necessary. Although neither workers nor equipment can be reallocated without costs, reallocation involves a one-time cost whereas matching subsidies involves a permanent stream of costs. For that reason, the reallocation of resources may be cheaper when the foreign subsidy program is expected to last a long time.

If it is known, however, that the foreign country's subsidy is only

temporary, then the lending country may gain by competing with a matching subsidy. Whether a country will benefit from matching subsidies depends on whether the costs of competing in the short run are outwieghed by the benefits of not having to shift productive resources first out of and then back into the affected export sector.

Any one lending country might use subsidized export credits to bring pressure on other countries that refuse to curb their own subsidized lending through an international agreement. Whether this would produce a benefit for any one country would depend on the cost to the country of continued subsidization of exports by other countries.

Common views of fairness may also dictate matching foreign subsidies. When one government subsidizes export credits, it injures the producers in other countries who are competing directly with those subsidized products in both the foreign and domestic markets. Because neither workers nor equipment can be reallocated without cost, citizens in the nonsubsidizing country as a whole may temporarily lose income and wealth. The workers and capital owners in the industry will typically bear these costs, but costs will be spread to other citizens through programs such as unemployment insurance. These risks are quite similar to those borne by other groups of industrialists and workers who face weather changes, technical changes in foreign countries, demand changes, input price changes, and changes in local governments' subsidies and tax exemptions. Nonetheless, when one government makes a conscious decision aimed largely and necessarily at damaging exporters in other countries, the fellow citizens of damaged exporters may believe this commercial misfortune is more inequitable than the others described above. In this case, a country may be willing to sacrifice some efficiency to attain an outcome it sees as more equitable. The total costs of the subsidy must be weighed against the equity considerations.

The Effect of Officially Supported Export Credits on the Exchange Rate

Increased exports can produce exchange rate appreciation. Where small interest rate subsidies produce a large increase in the total value of exports, an export credit subsidy program may result in exchange rate appreciation. However, where comparatively large interest rate subsidies fail to produce a much larger increase in exports, any appreciation may be quickly reversed.

After the merchandise sale, however, the receipt of interest payments on the subsidized loan will fall short of the payments on foreign loans made by citizens who were originally crowded out of the national capital market. This net drain on interest payments will reduce the current account. Therefore, after the initial, temporary rise in export receipts,

the subsidized loan may produce a current account deficit and exchange rate depreciation that counteracts the initial trade surplus and exchange rate appreciation.

The Benefits of an Increase in Exports

A rise in exports can reflect a socially desirable increase in productivity or in savings, but subsidizing exports does not force this relation to operate in reverse. For example, exports may increase because productivity rises in the export industries. If the exchange rate does not change, exporters will either supply more exports at the old price, undersell their competitors, or deliver a higher quality product at the same price. The rise in productivity would be a clear benefit to the country, with more output resulting from a given quantity of inputs. However, the rise in exports would only reflect these gains; it would not produce them.

Similarly, higher saving rates can increase net exports, but subsidizing exports need not raise total national saving. A rise in saving will reduce the consumption of imported goods and free up more domestic goods to be exported, thus increasing the current account surplus. Such an increase in the current account surplus means citizens are accumulating capital in foreign countries. Accumulation of foreign assets passes on a larger total capital stock to future generations of citizens. Although the future generation's consumption gain is partly offset by the current generation's loss, so long as both generations fully undertake this shift, no external cost warrants using public policy to undo the savings decision.

In economies at full employment, however, a subsidized rise in exports can occur only at the expense of some domestic activity—consumption, investment, or government expenditure—or when offset by a corresponding rise in imports. If imports rise to provide the goods absorbed by the increase in exports, then the subsidy has produced no rise in net exports. If the subsidy does increase net exports at the expense of domestic consumption or government spending, then the subsidy may ultimately raise the total of domestic and foreign investment. However, the domestic expenditure most likely to fall as a consequence of subsidy-induced rises in borrowing rates is domestic investment. In this case, there will be no net increase in capital passed on to future generations, although future generations will get more capital located in foreign countries. Citizens as a group will gain no obvious advantage from such a shift.

A Foreign Policy or National Security Role for Official Export Credits

Official export credits are sometimes justified as a way of protecting industries that are important for national defense, and as a way of

transferring resources to foreign countries that need economic aid. It is doubtful, however, that export credit subsidies are an efficient way of achieving either of these ends.

If a country wished to preserve an industrial activity within its borders on national security grounds, it could achieve that by subsidizing the exports of that industry.[9] Secondary national defense benefits may also accrue from having a larger pool of skilled workers in a given industry. It must be shown, however, that an export credit subsidy is a relatively inexpensive way to achieve this end. For example, if maintaining a core of trained technicans and a manufacturing capacity in naval nuclear generating units is an important national defense objective, then a standing annual order for such devices might be cheaper than subsidizing the export of entire nuclear power plants, which include mostly goods and services that are unrelated to defense preparedness.

Official export credits may also serve a foreign aid function. This does not, however, appear to have been their primary purpose. In the United States, for example, official export credits have been more concentrated in Europe than is foreign aid, and do not bear much relation to the pattern of foreign aid disbursement in areas outside Europe (see table 9.5). If official export credits are distributed differently from other foreign assistance, it is unclear how to evaluate them as effective foreign aid instruments. It might be that an addition to foreign aid would be voted by lending countries' governments in exactly the way it is spent by official export credit institutions; but, on the other hand, it might not be. Official export credits are also an inefficient form of foreign aid since they are tied to the export of particular goods. As discussed above, part of the subsidy is absorbed in the inefficient use of resources, lost to both domestic citizens and foreigners alike.

On occasion, the granting of export credits might also be valuable as a foreign policy device if it enabled a government to take quicker action. This was the case in the United States in the past, when the Eximbank was set up to finance trade with the Soviet Union in the 1930s and later used to assist in European recovery after World War II.

Other Externalities

A variety of other purposes for subsidized export credits could be advanced. In all cases, however, not only does the existence of an externality justifying government involvement need to be proved, but the use of export credit subsidies rather than other policies must be shown to be optimal. For example, subsidized export credits might be part of a successful industrial policy program. The case for adopting an industrial policy would first have to be made, however, and only then could the relative efficacy of subsidized export credit relative to other policies be evaluated. The different economic performances of intensive users of

Table 9.5 **Distribution of U.S. Economic Assistance and Eximbank Loans, by Region, Fiscal Years 1962–79 (percentages of annual totals)**

	1962–76		1977		1978		1979	
	Economic Assistance	Eximbank Loans	Economic Assistance	Eximbank Loans	Economic Assistance	Eximbank Loans	Economic Assistance	Eximbank Loans
Near East and South Asia	38.2	11.4	63.5	2.8	59.5	2.3	63.8	8.9
Latin America	19.4	22.0	9.3	21.1	8.9	32.9	11.1	15.0
East Asia	28.7	20.6	9.0	33.2	8.7	38.8	8.7	40.1
Africa	10.3	5.6	11.1	19.8	13.9	19.1	14.8	16.2
Europe	2.1	32.6	4.1	21.5	9.0	5.9	1.5	18.7
Canada	0.0	1.8	0.0	0.1	0.0	0.8	0.0	0.3
Oceania	1.3	6.0	3.0	1.4	0.1	0.3	0.2	0.8
Total[a]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Agency for International Development, *U.S. Overseas Loans and Grants and Assistance from International Organizations, Obligations, and Loan Authorizations, 1 July 1945–30 September 1979*, Washington, D.C.

[a]Columns may not add to totals because of rounding.

official export credit—the United Kingdom and Japan, for example—suggest caution in adopting easy generalities.

9.4 International Controls of Officially Supported Export Credits

Countries have attempted to control subsidized export credit terms since the 1930s. The Berne Union (the International Union of Credit and Investment Insurers) was formed in 1934 to provide a forum for the discussion and exchange of information among member export credit insurance agencies, now numbering thirty-five member agencies from twenty-seven countries. Over the years, the Berne Union has made nonbinding recommendations on the regulation of export credit policies. For example, in 1953 the member nations agreed to limit maturities to five years on export credit for heavy capital goods, and to three years on all other export credit. Beginning in the late 1960s, members increasingly disregarded these guidelines.

In 1963 the Organization for Economic Cooperation and Development (OECD) Trade Committee established a Group on Export Credits and Credit Guarantees. The Export Credit Group, as it is known, organized an information exchange system in 1972, which provided for prior consultation on credit of longer than five years. At the same time, the OECD reached agreement on credit terms for ships and aircraft.

Negotiations continued for a more comprehensive agreement on export credits. On 27 October 1974 the Export Credit Group concluded an informal agreement which has come to be known as the "Gentlemen's Agreement." It stipulated a minimum interest rate of 7½ percent on credits of over five years, and a maximum repayment period of three years on credits granted to wealthy nations.

Jurisdictional confusion slowed the negotiations in 1975, when both the European Commission and the individual governments claimed the right to negotiate on commercial policy for European Economic Community (EEC) members. Because the European Court of Justice awarded this authority to the European Commission, the export credit agreement concluded on 1 July 1976 was enacted as a series of unilateral declarations by the nations involved in its negotiation rather than as a formal agreement. These nations—Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States—agreed to a matrix of minimum interest rates and maximum repayment terms for officially supported credit of two years or more for three different income categories of recipient nations (see table 9.6). This 1976 agreement, known as the "Consensus," was accepted by thirteen additional OECD members during the succeeding year.

The dispute with the European Commission was resolved by 1977, and on 1 April 1978 the "Arrangement on Guidelines for Officially Supported

Table 9.6 Initial Consensus Minimum Interest Rates

Category of Country (per capita income)	Repayment Term	
	2–5 Years	Over 5 Years
Relatively poor (under $1,000)	7.25	7.50
Intermediate ($1,000–$3,000)	7.25	7.75
Relatively rich (above $3,000)	7.75	8.00

Export Credit" was concluded, superseding the Consensus. The members of the EEC participated as a single unit. The Arrangement reiterated the conditions specified in the Consensus and continued as a voluntary set of guidelines.

Because the Arrangement specifies the same minimum interest rates for credit denominated in all currencies, it permits actual credit subsidization to vary both over time and across countries. As market rates increased over time, the fixed minimum interest rates permitted a greater subsidy. The same fixed minimum rates permitted countries with high market interest rates to offer larger subsidies than could countries with low market rates.

At the request of participants in the OECD Arrangement, Mr. Axel Wallen, former chairman of the OECD Export Credit Group, examined alternatives to the existing Arrangement. This study (OECD 1980) discussed two alternatives to the fixed matrix: a "uniform moving matrix" and a "differentiated rate system." The uniform moving matrix would link the Arrangement minimum rates to a basket of market interest rates of participant countries. The minimum interest rate would be identical for all currencies, but the level would be tied to some average of market rates. If market interest rates increased, therefore, the minimum rate of officially supported export credits would also increase, preventing the subsidy on officially supported export credits from automatically increasing. As with the existing Arrangement, however, subsidization rates would vary considerably from currency to currency, depending on the individual currency's market interest rates relative to the Arrangement minima.

The differentiated rate system would specify different minimum interest rates for each currency. Rather than equalize nominal interest rates, this system would attempt to equalize interest rate subsidization. If minimum interest rates were defined to equal comparable market rates for each currency, subsidies would be eliminated. Alternatively, mini-

mum rates could be specified to allow for an agreed absolute or proportional rate of subsidization.

Despite a great deal of pressure, principally from the United States, little progress has been made in reforming the Arrangement according to either of the alternatives suggested in the Wallen Report (OECD 1980). In the summer of 1980 at the Venice Summit, the United States supported the differentiated rate system but was unable to reach agreement with the EEC. Instead, Arrangement signatories modestly increased the minimum interest rates and stated their intention to pursue a better solution.

Additional increases in the Arrangement minimum interest rates were negotiated in November 1981 and July 1982. The next round of negotiations was scheduled for May 1983, but because of the recent easing of interest rates, a further increase in the Arrangement rates appears unlikely.

The principle features of the present Arrangement are:

Cash payment. A minimum 15 percent cash payment is required on all contracts, no part of which may be provided by the donor agency.

Interest rates. Recipient countries are divided into three categories—category 1 contains those with per capita GNP over U.S.$4,000; category 2 contains those with per capita GNP under $4,000 but not eligible for International Development Association (IDA) assistance; and category 3 contains those eligible for IDA assistance. Minimum interest rates vary according to the category of country and term of the loan (table 9.7).

Maturity terms. Category 3 countries must repay loans within 10 years; all others must repay within 8½ years.

Exceptions. The Arrangement exempts agricultural commodities, military equipment, commercial jet aircraft, and nuclear power plants.

Table 9.7 **Current Arrangement Minimum Interest Rates (as of 1 January 1983)**

Category of Country	Repayment Term		
	2–5 Years	5–10 Years	5–8½ Years
Category 3 (relatively poor)	10.00	10.00	—
Category 2[a] (intermediate)	10.85	—	11.35
Category 1	12.15	—	12.40

[a]Countries recently graduated to Category 2 (e.g., Algeria, Colombia, Malaysia, Nigeria) are eligible for export credit at 11.35 percent with repayment terms up to 10 years, rather than 8½ years.

Partial exceptions allow extended repayment terms for satellite ground stations, conventional power plants, and cryogenic (liquified natural gas) tankers.

Local-cost support. The Arrangement pertains to financing the foreign exchange cost of export goods from the lending country, not to local costs incurred in installing equipment in the borrowing country. The Arrangement prohibits local-cost financing in relatively rich countries, but permits local-cost insurance and guarantees.

Mixed Credit. Export credits generally involve less than a 5 percent grant element. All credits with a grant element below 15 percent require prior notification of other Arrangement signatories. Credits involving a 15–25 percent grant element require prompt notification, while those with more than a 25 percent grant element are considered Official Development Assistance and are exempted from notification requirements.

Appendix A *Efficiency Losses and Income Redistribution Arising from Export Credit Subsidization*

For both competitive and most common monopolistic export markets, where external gains and losses are absent, a lending country cannot make itself better off by providing export credits at subsidized rates; nor can a borrowing country make itself worse off by accepting them.[10] Under typical supply, demand, and cost conditions, subsidizing export credit produces a combination of some loss in efficiency together with redistribution of income away from citizens providing the subsidy and toward domestic exporters and foreign importers. These effects become extreme at the limit: a lending country offering exports in perfectly price-inelastic supply or facing perfectly price-elastic excess demand will transfer nothing to the borrowing country; on the other hand, a lending country offering exports in perfectly price-elastic supply will transfer nothing to its home exporters from the subsidy program.

This analysis examines equilibrium reached in the market for the export good as prices and quantities adjust to a change in the export credit subsidy. We have not used a more general eqilibrium framework for two reasons. First, the smallness of these programs relative to the economies providing the loans would make the computation of the effects econometrically nonoperational. Second, proper expansion to more general effects would require a major escalation in complexity, since analyzing export credits perforce requires dropping the assumption that

trade is balanced and introducing instead a framework that optimizes over time.

The subsidy, s, is the present value of the interest rate subsidy expressed per unit of quantity demanded. The demand curve is entirely a foreign demand curve, so only the export market is shown. In equilibrium, the demand price and supply price will differ by the amount of the subsidy, so

$$P_S(Q_S) = P_D(Q_D) + s. \tag{A1}$$

In a competitive market, the social gain to the lending country, GL, from subsidizing the export credit equals the producers' surplus less the cost of the subsidy. For inverse supply curves whose integral is defined over the closed interval $[0, Q^*]$, social gain, GL, will be

$$\mathrm{GL} = P_S Q^* - {}_0\int^{Q^*} P_S(Q)dQ - sQ^*. \tag{A2}$$

Totally differentiating expression (A2), the change in the gain with respect to the subsidy will be

$$\frac{d\mathrm{GL}}{ds} = Q^* \frac{dP_S}{ds} - \frac{sdQ^*}{ds} - Q^* = Q^* \left(\frac{dP_S}{ds} - 1\right) - \frac{sdQ^*}{ds}. \tag{A3}$$

The social gain to the borrowing country, GB, equals the consumers' surplus plus the subsidy. For inverse demand curves whose integral is defined over the closed interval $[0, Q^*]$, the social gain, GB, will be

$$\mathrm{GB} = {}_0\int^{Q^*} P_D(Q)dQ - P_S Q^* + sQ^*. \tag{A4}$$

Totally differentiating expression (A4), the change in gain to the borrowing country with respect to the subsidy will be

$$\frac{d\mathrm{GB}}{ds} = -Q^* \left(\frac{dP_S}{ds} - 1\right). \tag{A5}$$

Endogenous Price, Upward-Sloping Supply Curve, Downward-Sloping Demand Curve

Where prices are endogenous, the changes in the quantities of exports supplied equal those demanded in equilibrium, so that $dQ_S = dQ_D = dQ^*$. The change in the equilibrium quantity of exports (Q^*) with respect to the subsidy (s) can be derived from (A1) and will be

$$\frac{dQ^*}{ds} = \frac{1}{\frac{\partial P_S}{\partial Q_S} - \frac{\partial P_D}{\partial Q_D}} \geq 0. \tag{A6}$$

Given that $Q_S(P_S) = Q_D(P_D)$, and $P_S = P_D + s$, the change in the equilibrium supply price will fall between zero and one:

$$\text{(A7)} \qquad \frac{dP_S}{ds} = \frac{-\dfrac{\partial Q_D}{\partial P_D}}{\dfrac{\partial Q_S}{\partial P_S} - \dfrac{\partial Q_D}{\partial P_D}}, \quad 0 \leqslant \frac{dP_S}{ds} \leqslant 1.$$

Evaluating (A3) by expressions (A6) and (A7) indicates that the leanding country cannot gain from the credit subsidy ($[d\text{GL}/ds] \leqslant 0$), while similarly evaluating (A5) indicates that the borrowing country cannot lose from the credit subsidy ($[d\text{GB}/ds]) \geqslant 0$).

Endogenous Price, Horizontal Supply Curve

If the supply curve is horizontal ($P_S[Q_S] = k$), substitution of $\partial P_S/\partial Q_S = 0$ in (A6) implies

$$\text{(A8)} \qquad \frac{dQ^*}{ds} = \frac{1}{-\dfrac{\partial P_D}{\partial Q_D}} > 0,$$

while, by assumption,

$$\text{(A9)} \qquad \frac{dP_S}{ds} = 0.$$

Evaluating expression (A3) with the values shown in (A8) and (A9) indicates that the lender must lose ($[d\text{GL}/ds] < 0$), while similarly evaluating expression (A5) indicates that the borrower must gain the entire subsidy ($d\text{GB} = Q^* ds$).

Endogenous Price, Vertical Supply Curve

Since $dQ_S = dQ_D$ when the price is endogenous, a vertical supply curve implies that $dQ_S = dQ_D = dQ^* = 0$. Totally differentiating the inverse demand curve shown in (A1), given that $dP_D = 0$ because $dQ_D = 0$, indicates that

$$\text{(A10)} \qquad \frac{dP_S}{ds} = 1.$$

Evaluating expression (A3) given $dQ^* = 0$ and $dP_S = ds$ indicates that the lending country on net loses nothing ($[d\text{GL}/ds] = 0$); rather, inelastic supply forces the transfer of the subsidy from domestic taxpayers to domestic producers of the subsidized export product. Similarly, evaluating expression (A5) with those values indicates that the borrowing country gains nothing ($[d\text{GB}/ds] = 0$), but rather returns the entire subsidy to the lending country by paying a higher price for the product.

Exogenous Price, or Horizontal Demand Curve

If a country is a relatively small supplier in the international market, it can take the world market price as given. In this case, $P_S = P_W + s$, for a constant P_W. Recalling that domestic purchasers are not eligible for the loan subsidy,

$$\frac{dP_S}{ds} = 1, \tag{A11}$$

while

$$\frac{dQ^*}{ds} = \frac{1}{\frac{\partial P_S}{\partial Q_S}} > 0. \tag{A12}$$

Substituting the values of expressions (A11) and (A12) into expression (A3), the subsidizing country must lose because of the inefficiency resulting from the increase in production ($[d\text{GL}/ds] < 0$). Substitution in (A5), however, indicates that the borrowing country does not gain because the export price rises by the amount necessary to absorb the subsidy ($[d\text{GB}/ds] = 0$).

Monopolist Exporter

If a country's export market is monopolistic, the monopolist will set the market price at a level that maximizes profit. The monopolist's total cost curve is assumed to be $C = C(Q)$. In the presence of a subsidy, the price charged by the monopolist will be

$$P_M = P_D(Q) + s. \tag{A13}$$

Assuming the monopolist sells only in the export market, monopolist profits will be

$$\pi = QP_M - C(Q) = QP_D(Q) + sQ - C(Q). \tag{A14}$$

If the monopolist maximizes profits,

$$\frac{\partial \pi}{\partial Q} = \frac{Q\partial P_D}{\partial Q} + P_D - \frac{\partial C}{\partial Q} = 0. \tag{A15}$$

The second-order condition will be

$$\frac{\partial^2 \pi}{\partial Q^2} = Q\frac{\partial^2 P_D}{\partial Q^2} + 2\frac{\partial P_D}{\partial Q} - \frac{\partial^2 C}{\partial Q^2} < 0. \tag{A16}$$

The change in the quantity of exports (Q^*) with respect to the subsidy (s) can be derived by totally differentiating (A15) and will be

$$\text{(A17)} \qquad \frac{dQ^*}{ds} = \frac{-1}{Q\dfrac{\partial^2 P_D}{\partial Q^2} + 2\dfrac{\partial P_D}{\partial Q_D} - \dfrac{\partial^2 C}{\partial Q^2}} > 0.$$

This is greater than zero by the second-order condition, expression (A16). From (A13) and (A17)

$$\text{(A18)} \qquad \frac{dP_M}{ds} = \frac{-\dfrac{\partial P_D}{\partial Q}}{Q\dfrac{\partial^2 P_D}{\partial Q^2} + 2\dfrac{\partial P_D}{\partial Q} - \dfrac{\partial^2 C}{\partial Q^2}} + 1,$$

or, by the second-order condition and $(\partial P_D/\partial Q) < 0$:

$$\text{(A19)} \qquad \frac{dP_M}{ds} = \frac{Q\dfrac{\partial^2 P_D}{\partial Q^2} + \dfrac{\partial P_D}{\partial Q} - \dfrac{\partial^2 C}{\partial Q^2}}{Q\dfrac{\partial^2 P_D}{\partial Q^2} + 2\dfrac{\partial P_D}{\partial Q} - \dfrac{\partial^2 C}{\partial Q^2}} < 1.$$

Note that dP_M/ds is not necessarily positive. If the numerator in (A19) is greater than zero, then dP_M/ds will be negative.

Assuming that the monopolist sells only in the foreign market, the social gain to the lending country, GL, will equal the producer's surplus less the cost of the subsidy. For monopolist cost curves whose integral is defined over the closed interval $[0, Q^*]$, social gain will be

$$\text{(A20)} \quad \mathrm{GL}_M = P_M Q^* - {}_0\!\int^{Q^*} MC(Q)dQ - sQ^*, \qquad \frac{\partial c}{\partial Q} = MC(Q).$$

Totally differentiating expression (A20), the change in the gain with respect to the subsidy will be

$$\begin{aligned}\text{(A21)} \quad \frac{d\mathrm{GL}_M}{ds} &= Q^*\frac{dP_M}{ds} + P_M\frac{dQ}{ds} - MC(Q)\frac{dQ}{ds} - Q^* - s\frac{dQ}{ds} \\ &= Q^*\left(\frac{dP_M}{ds} - 1\right) + (P_M - s - MC(Q))\frac{dQ}{ds} \\ &= Q^*\left(\frac{dP_M}{ds} - 1\right) + (P_D - MC(Q))\frac{dQ}{ds}.\end{aligned}$$

Using (A15), (A17), and (A18) and noting the second-order condition,

$$\text{(A22)} \qquad \frac{d\mathrm{GL}_M}{ds} = \frac{s}{Q\dfrac{\partial^2 P_D}{\partial Q^2} + 2\dfrac{\partial P_D}{\partial Q} - \dfrac{\partial^2 C}{\partial Q^2}} < 0.$$

Therefore, the lending country loses from the credit subsidy ($[dGL/ds]) < 0$).

The expression for the gain to the borrower facing a monopolistic exporter is the same as in the competitive case (expression [A4]). Evaluating the change in the gain to the borrowing country, expression (A5) with expression (A19) indicates that the borrowing country gains from the credit subsidy ($[dGB/ds]) > 0$).

Empirical Estimates of the Distribution of the Subsidy between Borrowers and Exporters

In the competitive case, expression (A5) shows the gain to the borrower resulting from the subsidy. Representing the gain in relation to the total subsidy yields

$$\frac{dGB}{Qds} = 1 - \frac{dP_S}{ds}. \tag{A23}$$

Substituting for dP_S/ds from expression (A7) yields

$$\frac{dGB}{Qds} = \frac{\frac{\partial Q_S}{\partial P_S}}{\frac{\partial Q_S}{\partial P_S} - \frac{\partial Q_D}{\partial P_D}}. \tag{A24}$$

Using $Q_S = Q_D$ and assuming that $P_S = P_D$ before the subsidy is introduced, dGB/Qds can be written as

$$\frac{dGB}{Qds} = \frac{\epsilon}{\epsilon - \eta}, \qquad \epsilon > 0 \text{ and } \eta < 0, \tag{A25}$$

where ϵ and η are the elasticities of supply and demand for exports, respectively.

Using previously estimated supply and demand elasticities (Stern, Francis, and Schumacher 1976), dGB/Qds ranges approximately between three-quarters and one and, therefore, most of the subsidy is transferred to the borrower.

In the monopolist case, the gain to the borrower as a result of the subsidy as a proportion of the total subsidy is

$$\frac{dGB}{Qds} = 1 - \frac{dP_M}{ds}. \tag{A26}$$

Substituting for dP_M/ds from expression (A19) yields

$$\frac{dGB}{Qds} = 1 - \frac{Q\frac{\partial^2 P_D}{\partial Q^2} + \frac{\partial P_D}{\partial Q} - \frac{\partial^2 C}{\partial Q^2}}{Q\frac{\partial^2 P_D}{\partial Q^2} + 2\frac{\partial P_D}{\partial Q} - \frac{\partial^2 C}{\partial Q^2}}. \tag{A27}$$

Evaluation of the sign or the magnitude of this expression is impossible without estimates of the second derivatives of the demand and cost curves. If we assume the demand and marginal cost curves are linear, as the intermediate case between the convex and concave alternatives, then $d\text{GB}/Qds = 1/2$, and the borrower receives half of the subsidy.

Therefore, admittedly in the presence of some potentially large gaps, present knowledge about competitive and monopolistic market structure of industries receiving subsidized export credits suggests that borrowers receive between half and all of the subsidy on official export credits.

Appendix B *The Macroeconomics of the Size and Distribution of the Cost of Export Credit Subsidies*

Appendix A analyzed the distribution of costs and benefits of the export subsidy program in a microeconomic framework. Since, at full employment, domestic exporters and foreign importers must gain from subsidized credit, while total domestic output cannot rise, the subsidizing taxpayers must lose from the program. This appendix shows this outcome in terms of the GNP accounts; the results are similar.

Case 1: Export Subsidies That Result in Additional Export Volumes at Full Employment

Suppose that when the export subsidy increases foreign demand for exports, the export price remains unchanged but the volume of exports rises. Rearranging the national income identity produces:

$$\bar{Y} - C - I - G + M = X. \tag{A28}$$

If the economy is at full employment, so that Y is at its maximum ($Y = \bar{Y}$), the rise in exports cannot occur out of additional production; instead consumption, investment, or government expenditure must fall, or imports must rise.

If the rise in exports is achieved by increasing imports, no change occurs initially in the trade balance. The lending country gains an asset—the export credit that bears interest at the lower, subsidized rate; at the same time, lending country citizens incur an identical liability to finance additional imports, but they pay interest at the unsubsidized world interest rate. The lending country net debt position does not change, but the lending country loses the difference between the subsidized and the unsubsidized interest rates. Exporters sell a larger volume of their products, but total lending country national output remains unchanged. Foreign importers pay the lower, subsidized interest rate to the lending

country, while lending country importers pay the higher market interest rate and a larger total interest bill to foreigners.

Suppose now that imports remain unchanged, so that exports and the trade balance increase by reducing domestic investment. At the margin, domestic investment earns the domestic, unsubsidized rate of interest. By giving up the domestic investment project, lending country investors lose the unsubsidized rate of interest on the foregone domestic investment project now devoted to exports; in exchange, the lending country receives the lower, subsidized rate of interest on the rise in exports. If consumers require the same marginal return on a unit of consumption that they require on a unit of investment, then a rise in exports at the expense of domestic consumption produces the same net loss for society. If the government requires the same marginal return on government expenditure that its private citizens receive on private investment, then a rise in exports at the expense of government expenditure produces the same net loss for society.

Case 2: Export Credit Subsidies That Increase Export Values and Unit Values but Leave Export Volumes Unchanged

If the volume of exports does not change, export promotion incurs no real cost to the economy as a whole. The preceding discussion rests on the assumption that there is such a real cost, and that it is borne by investors, consumers, or the government. This section establishes that, even in the absence of such a real cost, the loss to the nonsubsidized sector will exactly equal the gain to the subsidized sector.

With constant real exports, resulting from a vertical export supply curve, the export price (P_X) will rise by the change in the present value of the interest subsidy per unit of sales (appendix A, expression A10):

$$dP_X = ds. \tag{A29}$$

Assume, for simplicity, that there are two types of goods—those produced for home consumption, H, and those produced for export, X. The geometrically weighted GNP deflator would then be

$$P_Y = P_H{}^a P_X^{(1-a)}. \tag{A30}$$

Assume now that the central bank pursues credit policies that prevent the GNP deflator from rising despite the credit subsidy's initial upward impact on export prices, so that the rate of change of the GNP deflator is

$$\dot{P}_Y = a\dot{P}_H + (1-a)\dot{P}_X = 0. \tag{A31}$$

The real value of exporters' output measured in terms of GNP is

$$V_1 = \frac{XP_X}{P_Y}. \tag{A32}$$

The change in that value as a result of the subsidy is

$$dV_1 = \frac{XdP_X}{P_Y} = \frac{Xds}{P_Y}. \tag{A33}$$

The real value of products produced for home consumption measured in terms of GNP is

$$V_2 = \frac{HP_H}{P_Y}, \tag{A34}$$

and this will fall by the same amount as the rise in the real value of exports

$$dV_2 = \frac{-Xds}{P_Y}. \tag{A35}$$

Appendix C *Data on Official Export Credits*

Organization for Economic Cooperation and Development

The Development Assistance Committee (DAC) of the OECD collects information on transfers of long-term financial resources from DAC member countries to developing countries. DAC reports data for officially supported export credits comprising directly extended official export credits and officially insured or guaranteed private export credits. Guaranteed private export credits, in turn, include financial credits and supplier credits. Supplier credits are private export credits extended by an exporter. Financial credits refer to credits by a bank or other financial institution extended to a foreign buyer. Included under guaranteed private export credits are credits on which an export creditor receives official support, including discounting of an export credit at preferential terms by an official agency or provision of a subsidy to an export creditor to reduce the interest rate charged by him to the borrower.

Data reporting procedures raise problems in calculating the subsidy. When official support for export credits takes forms other than direct credits (e.g., the United Kingdom's interest make-up scheme or France's rediscounting facilities), program activities show up in data for guaranteed private export credits. As a result, while OECD data permit deriving figures on total officially supported export credits, they do not permit isolating those programs equivalent to the direct loan program of the U.S. Eximbank.

The OECD Trade Committee's Group on Export Credits and Credit Guarantees also collects data on officially supported export credits. These data do not, however, differentiate among types of systems used to support export credits and, therefore, do not permit breaking out the equivalent of direct loan programs only.

World Bank

Under the Debtor Reporting System (DRS), the World Bank collects information on the external debt of developing economies that have received either World Bank or International Development Association (IDA) loans. Countries report changes in their long-term external public and publicly guaranteed debt to the DRS. For the *World Debt Tables*, several other sources supplement these data, including the OECD's Creditor Reporting System (CRS) and the World Bank's Capital Markets System (CMS). Available data on private debt without public guarantees are also included. The data are broken down by official and private creditors. Officially extended buyer export credits can be identified for the United States, Germany, Japan, and Canada. As with the OECD data, however, credits receiving support through refinancing at preferential rates or interest rate make-up schemes are included in private-source loans and cannot be distinguished from other private credits.

Berne Union

The Berne Union (the International Union of Credit and Investment Insurers) collects data on export credit insurance and guarantees issued by thirty-five export credit and insurance agencies from twenty-seven countries.

Berne Union data cover commitments and offers. Commitments are export credits for which insurance or guarantees have been issued by Berne Union member agencies. They are reported on an outstanding basis, net of repayments, and include undisbursed amounts. Commitments are broken into short-term credits and payments due on an annual basis. Offers, reported separately, are potential export credits which have not yet reached the contract stage and for which insurance and guarantees have not been issued. The Berne Union presents data organized by recipient country and by Berne Union member agency, updated on a quarterly basis.

Commitments include supplier credits extended directly by the exporter (which are said to be "insured") and buyer credits or financial credits extended by private banks (which are said to be "guaranteed"). Commitments also include export credits extended directly by two member agencies, the U.S. Eximbank and Canada's Export Development Corporation (EDC). Berne Union data also indirectly include official export credit support supplied by the remaining five countries discussed in the paper (Germany, France, Italy, Japan, and the United Kingdom), since each country requires insurance or guarantees for official support. The Berne Union data as reported cannot, however, be used to calculate the subsidy element on direct official export credits; although they include such credits, they are aggregated with other export credits for

which insurance and guarantees have been issued by Berne Union member agencies.

Export-Import Bank of the United States

The Export-Import Bank of the United States submits a semiannual report to Congress on competition in the provision of officially supported export credit and financing (*Report to the U.S. Congress on Export Credit Competition and the Export-Import Bank of the United States*). Until recently, data on official export credit financing programs were reported for the seven countries considered in this paper. Financing programs include both direct credits, such as those extended by the U.S. Eximbank and Canada's EDC, and refinancing facilities and interest rate subsidy programs (programs comparable to direct export credits).

Notes

1. The export credit programs of these countries are discussed in detail in Organization for Economic Cooperation and Development (1982) and Midland Bank (1980).

2. Boyd (1982) defines the subsidy in this way, and Feinberg (1982) reviews three studies that use this concept of the subsidy.

3. A 50-basis point spread probably underestimates the cost of export credit, particularly to developing countries. If the spread is increased to 200 basis points, the estimate of the subsidy increases from $3.5 billion to $4.5 billion, and most of the entries in the table turn positive.

We might calculate the subsidy more accurately by using available data on the actual risk premiums that borrowers receiving official subsidized export credit pay in the private market. If most borrowers pay a higher spread than we have assumed, or if some borrowers receiving subsidized export credits are not creditworthy enough to borrow in the private market, then we have underestimated the actual subsidy.

4. Currently we do not have data on the geographic distribution of direct and subsidized loan programs. We assumed, therefore, that such programs were distributed geographically in the same pattern as the sum of direct and subsidized loan programs and guarantee programs. In addition, no information was available on the geographic distribution of Canadian official export credits. We assumed, therefore, that it equaled the average of the other lending countries.

5. See appendix A for an analysis of the competitive and monopolistic situations.

6. If private citizens and the government choose additional consumption and investment expenditures so that the returns on those expenditures equaled those on additional investment projects, the cost of additional exports to society would be the same whether investment, consumption, or government expenditure is displaced.

7. We thank Helen Hughes for bringing this point to our attention and Ernst Lutz for providing the trade data.

8. In the United States, the evidence suggests that export credits have not been used countercyclically. Instead, direct loan authorizations have been high when unemployment has been low.

9. Aircraft producers receive one of the largest shares of official export lending. Military considerations do not generally govern such loans, though. Subsidized loans are made for civilian aircraft that are generally not used by the military. In the United States, for example, most military airframes are made by other companies, and when the government finance sales of those planes, it does so with loans from other programs. Indeed, Appendix II, section 5 of the Export-Import Bank Act of 1945, as amended through 10 November 1978, states that the "Bank shall not extend loans, guarantees, or insurance under this Act in connection with the sale of defense articles or defense services."

10. In several special cases paying an export subsidy, as compared to levying a tariff or doing nothing, may increase domestic welfare. When domestic product markets are imperfectly competitive, and producers sell in both the home and foreign markets, an export subsidy rather than a tariff may increase domestic welfare. For example, if a domestic monopolist has a decreasing marginal cost curve, an export subsidy will lead to increased output and lower average costs. If the monopolist can discriminate between the domestic and foreign markets, the falling marginal cost of total output will lead the monopolist to reduce prices in the domestic market and increase the welfare of domestic consumers. The optimal export subsidy will balance the cost of the subsidy against the increased consumer surplus. Even if the monopolist cannot discriminate between the two markets, an export subsidy may increase welfare under certain elasticities of demand in the home and foreign markets (Auquier and Caves 1979).

These results do raise the possibility that policymakers, in structuring an export credit subsidy program, could identify industries with increasing returns or could base subsidies on different home and foreign demand conditions.

However, two serious problems greatly weaken this case for export subsidization: first, the argument artifically restricts policymakers' choices, thereby neglecting the even superior welfare outcome that the subsidizing government could achieve by simply regulating the home monopolist's home market price; and second, the rise in the monopolist's real output that contributes to the rise in home welfare must, under full employment, incur costs that reduce other output whose loss is not accounted for in the calculation.

References

Auquier, A. A., and Caves, R. E. 1979. Monopolistic export industries, trade taxes, and optimal competition policy. *Economic Journal* 89:559–81.

Bank for International Settlements. 1969. *Export credit insurance and export credit*, vol. 1, *Country studies*. Basle: Bank for International Settlements.

Basevi, G. 1970. Domestic demand and ability to export. *Journal of Political Economy* 78:330–37.

Boyd, J. H. 1982. Eximbank lending: A federal program that costs too much. *Federal Reserve Bank of Minneapolis Quarterly Review* (Winter), pp. 1–17.

Cizauskas, Albert C. 1980. *The changing nature of export credit finance and its implications for the developing countries*. World Bank Staff Working Paper no. 409. Washington, D.C.: The World Bank.

Export-Import Bank of the United States. Various years. *Report to the U.S. Congress on export credit competition and the Export-Import Bank of the United States*. Washington, D.C.: Export-Import Bank of the United States.

———. Various years. *Annual report of the Export-Import Bank of the United States*. Washington, D.C.: Export-Import Bank of the United States.

———. 1981. *Trends in export credits among major competitors*. Policy Analysis Staff Report. Mimeo.

Feinberg, R. E. 1982. *Subsidizing success, the Export-Import Bank in the U.S. economy*. Cambridge: Cambridge University Press.

Fry, Richard. Various years. *Export finance service*. The Banker Reserch Unit Annual Report. London: The Banker Research Unit.

———. 1979. Competition in export credit terms. *The Banker* (August):65–71.

Hovarth, J. 1975. Are Eximbank credits subsidized?: Toward an empirical analysis. *U.S. financing of East-West trade*, ed. Paul Marer. Indiana University.

Midland Bank. 1980. Export credit facilities: An international comparison. *Midland Bank Review* (Autumn):20–29.

Organization for Economic Cooperation and Development. Various years. *OECD financial statistics*, vol. 1, tables. Paris: OECD.

———. 1980. *Arrangement on guidelines for officially supported export credits—interest rate study*. Report by Axel Wallen to the OECD Trade Directorate. Paris: OECD.

———. 1982. *The export credit financing systems in OECD member countries*. Paris: Director of Information, OECD.

Stern, Robert M., Jonathan Francis, and Bruce Schumacher. 1976. *Price elasticities in international trade*. London: Macmillan.

United States. Congress. House of Representatives. Subcommittee on International Trade, Investment and Monetary Policy of the Committee on Banking Finance and Urban Affairs. 1981. *The benefits and costs of the Export-Import Bank loan subsidy program*. 97 Cong., 1st sess., 5, 12, 17, 18 March and 28 April 1981.

U.S. Federal Reserve System. 1980. *Annual statistical digest, 1974–78*. Washington, D.C.: Publications Services of the Federal Reserve System.

———. 1982. *Federal Reserve Bulletin* 68 (1):A68. Washington, D.C.: Publications Services of the Federal Reserve System.

Comment

Rachel McCulloch

With export performance in general and the role of subsidized export credit in particular currently subjects of intense policy debate, a thorough reexamination of the rationale for and likely effects of export credit programs is indeed timely. Fleisig and Hill, in evaluating the costs and benefits of these programs, stress several important points often obscured or neglected in policy discussions.

The first, a major theme of the paper, concerns the cost of direct loan and subsidy programs. As the authors indicate, the appropriate cost measure reflects the difference between actual credit terms obtained and the best terms otherwise available to a given borrower.[1] While actual terms are usually a matter of public record, the alternative must be inferred from market rates at the time the loan was made, a process that in turn requires an ex post assessment of the borrower's creditworthiness at that time.

To estimate the subsidy element in credit obtained through the Export-Import Bank of the United States (Eximbank) and similar agencies of six other industrialized nations, Fleisig and Hill use two proxies for borrowers' market alternatives. The first is the Aaa corporate bond yield, the rate available to the best corporate borrowers. This is used to generate a lower limit of the amount of the subsidy. Less creditworthy borrowers would be unable to secure such loans, however. Instead, they would have to borrow at floating rates determined in the Eurocurrency market. Eurocurrency rates are therefore used to estimate an upper limit of the amount of the subsidy. In both cases, the authors calculate the total subsidy in a given year for all loans outstanding in that year. Because new loan authorizations have been increasing over time, this procedure yields a figure less than the value of the *current* subsidy to exports implied by the programs.

In several instances, the subsidy calculated by this method is negative, that is, the actual rate was above the hypothetical market alternative. As the authors note, such negative values probably mean that, contrary to assumption, recipients of official export credits could not borrow at the rate assumed. In such cases, however, the estimated subsidy should be set at zero. This would yield higher values for both the lower and upper limits than those reported in the paper.

A second major theme of the paper is the potential benefit to the exporting country from subsidized export credit (most of the same arguments would apply also to a wide range of other export incentives). Fleisig and Hill strongly question the common justifications of export credit programs on efficiency grounds. In the absence of market failure,

Rachel McCulloch is professor of economics at the University of Wisconsin-Madison.

efficiency is necessarily reduced by such programs, while the presence of market failure neither ensures that intervention will improve the situation nor that export credit subsidization is the most efficient type of intervention.

As the authors note, when resources are fully employed any increase in exports must entail increased imports or reduced domestic absorption. Another possibility, not explored by the authors, is that the effect on total exports is minor. If other nations offer similar terms, it is unlikely that subsidized credit has an important effect on total exports even for the industries directly affected, and it is quite possible that any increase for these industries is offset by reduced sales for the nation's other exporters.

Even when resources are idle, a case for subsidized export credit on macroeconomic grounds is weak. Fleisig and Hill note that monetary and fiscal stimulus could achieve the same effect without distorting the allocation of resources between industries. More important but never mentioned is that, like import restrictions, successful export incentives merely shift employment in beggar-your-neighbor fashion to other nations competing in the same foreign markets. Arguments for subsidized export credit to maintain the viability of a domestic industry are similarly second-best.[2] If a given production level is required (e.g., for national security reasons), a direct production subsidy is the most efficient way of ensuring this.

With respect to the distributive impact of subsidized export credit, the authors seem to be on firm ground in asserting that exporters and foreign borrowers typically share the gain; the precise division depends on conditions of supply and demand. Fleisig and Hill work out the details for two cases, perfect competition and simple monopoly. Here the analysis seems curiously devoid of institutional content, especially in a paper prepared for a conference on U.S. trade policies. Surely it is relevant that the lion's share of U.S. export credit supports the sales efforts of just a tiny number of large oligopolistic firms. In 1980, loans supporting sales of aircraft alone accounted for nearly one-half the total, with the successful U.S. exporter usually facing at most two rival suppliers worldwide. Apart from aircraft, the purchases most frequently financed through Eximbank are of major capital equipment, including such specially tailored items as turnkey industrial facilities, nuclear power plants, and communications satellites. On the demand side, purchasers obtaining credit are almost always national governments or enterprises owned by them.

Thus, at least for U.S. export credit programs, the model of perfect competition is largely irrelevant. Sellers are monopolists or oligopolists, and since the nature of the products facilitates price discrimination, Fleisig and Hill's assertion that the buyer necessarily shares in the benefits need not hold. On the other hand, these buyers are hardly likely to be price-takers, so the final bargain struck is likely to include some gains

to both parties. Unfortunately, the potential for corruption is obviously present; there is a clear danger that any benefits to the importing nation will be captured by government officials responsible for awarding the contract.[3]

The authors' discussion of costs and benefits focuses exclusively on the exporting and importing nations. Yet, as already indicated, this is inappropriate. If competing exporters do nothing in response, their share of lucrative export markets will be invaded. More typically, all suppliers offer comparable credit terms. In fact, the Eximbank justifies its operations as merely allowing U.S. exporters—in selected industries—to compete on "equal" terms with their foreign rivals. Obviously the effect on total exports from all suppliers is likely to be small, which explains the ongoing efforts, described by Fleisig and Hill without comment as to motivation, to negotiate international controls on this type of trade intervention.

Notes

1. As the authors' analysis implies, neither the profits and losses of the credit agency nor the delinquency and default experience on loans is directly relevant in calculating the amount of the subsidy. Until recently, Eximbank operations yielded a positive net income, and its annual report highlighted dividends paid by the agency to the U.S. Treasury. This net income was generated by borrowing at essentially government rates and relending at higher ones still well below the market alternative available to borrowers. Such "profits" are not a measure of national benefit or cost of Eximbank activities, but only of budgetary impact.

2. The FY 1980 report of the Eximbank indicates continued support for the "essential aircraft sector" and explains that although this financing absorbs a "substantial portion of the Bank's resources, official support is necessary to ensure that U.S. manufacturers maintain their competitive position in export markets."

3. Recognizing the extent to which sales of aircraft dominate the Eximbank credit totals leads to still other questions concerning ultimate gains and losses. Even if the actual cost per plane is lower to the purchaser than in the absence of such programs, are developing countries well served by incentives to expand the operations of their money-losing national airlines? And what of U.S. commercial airlines, which must compete on some international routes with foreign carriers benefiting from Eximbank credit subsidies?