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The impact of steel protection in industrialized countries on Brazil's export capacity

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The Impact of Steel Protection in Industrial-
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by

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1. Introduction

Since the beginning of the 1970s most industrialized countries have been facing serious structural adjustment problems in the steel sector, which can be attributed mainly to two reasons. On the one hand, declining demand in industrialized countries caused overcapacities in their domestic production, while, on the other hand, NICs began to catch up in heavy industries, thus steadily penetrating the world steel market, which increasingly became a buyers' market¹.

The immediate response of the industrialized nations was a new wave of protectionism and subsidization, as in all instances questions of national interests and politics were involved. However, in the case of the steel crisis these measures were not only applied with respect to declining industries, as they persist in industrialized countries. Following the infant industry argument, governments in NICs rendered considerable support to their steel industries.

As a result, trade in steel products cannot be regarded as the outcome of a free market process, since supply side factors are dominated by political decisions. The vicious circle of cumulative subsidization and subsequent retaliation through protectionism has led to a competition between national governments both in developed and developing countries².

The figures in Table 1 show the subsidy content embodied in steel supply to the US market, as it has been determined by the U.S. International Trade Commission for a number of major producer countries. Only in West Germany, Korea and Luxembourg subsidy margins keep below 10 percent. In Brazil and Spain subsidies reach levels well beyond 35 percent. Since the steel sector encompasses a wide range of rather heterogenous products, there is also a need to sketch the extent of subsidization for specific products. On the whole, more simple and commodity-like steel products, i.e. hot-rolled products, tend to be more heavily sub-

Table 1: Subsidies as investigated by the US Department of Commerce on the US Market in 1982

Country	Number of Products Investigated	Subsidy Margin (as a percent of value added)
Belgium	3	0.35 - 13.41
Brazil	5	12.35 - 62.18
France	5	3.70 - 24.42
West Germany	5	1.13
Italy	3	6.32 - 14.56
South Korea	4	0 - 1.88
Luxembourg	1	0.54 - 1.52
South Africa	8	5.70 - 21.64
Spain	8	0 - 29.94
United Kingdom	3	1.88 - 20.33

Source: Jones (1986), p. 79.

sidized than special steel products such as welded pipes and tubes.

All these distortions in world steel markets seriously affect the potential export performance of newly industrializing countries such as Brazil which have put an emphasize on the development of their national steel industries. Whether this emphasize on steel is in line with export-oriented industrialization cannot, however, be answered in general, since the structure of steel exports and protectionist treatment of particular countries differ considerably. For this reason, the focus of this paper is on Brazil.

The effects of steel protectionism in the USA and the European Community (EC) on steel producing NICs has already been tackled in a recent study by Tarr (1987) for the case of South Korea. The underlying static three-country-model clearly shows the welfare losses in South Korea, the EC and the USA under alternative quota and tariff arrangements in industrialized countries. However, steel is treated as a homogeneous product in the simulation experiments. This study assesses steel protectionism and its effects on Brazilian export at a disaggregated level. Furthermore, the focus is on the impact on Brazilian exports rather than welfare effects.

In the second section, Brazil's steel export opportunities on the markets of the three major trading blocs are assessed. For this purpose, the main-stream protectionist measures in the USA, Japan and the EC are surveyed. Thereafter, section 3 considers the consequences of these policies, especially subsidization, on Brazil's export performance in other countries, in which it has to compete with subsidized exports. The implications of multi-lateral trade negotiations will be briefly sketched in section 4. It has to be noted that the analysis is restricted to protectionist tendencies prevailing in the 1980s. Hence, the implications of long-term processes of substitution as well as business cycle implications go beyond the scope of this paper.

2. Import Protection in Industrialized Countries

Among industrialized countries the three big trading blocs, the USA, the EC and Japan, are still the largest steel consumers in the world covering 15.8, 14.6 and 10.6 percent of world demand in 1984³. Thus, it can be expected that Brazil's overall export performance depends to a high degree on import protection in these markets. The export shares in Table 2 show that the ranking in world consumption is not reflected in the ranking of Brazil's biggest trading partners. The USA, Japan and the EC account for 27.6, 8.7 and 3.6 percent of Brazil's steel exports in 1985. In comparison, smaller economies such as China, Argentina and Algeria imported 8.6, 7.8 and 5.8 percent of Brazilian steel exports. The EC countries, especially West Germany, have imported less than it could have been expected on the grounds of their huge internal market, which amounted to 14.6 and 4.9 percent of world consumption in 1984. The question is, to which degree this can be attributed to steel policies applied in the EC. In contrast, the USA absorbs the bulk of Brazilian steel exports, so that protectionist tendencies on the U.S. market will immediately affect Brazil's export performance. Another indication for the impact of protectionism is due to the very different product mix which each of the three large consumer countries imports from Brazil. According to the notion of comparative advantage, the EC, the USA and Japan should import similar products from Brazil which are more labor- than technology-intensive in production. As this is not the case, trade policies for steel products seem to differ among industrialized countries.

2.1 Steel Trade Policy in the USA

The USA are one of the very few countries that have so far refrained from implementing an overall industrial policy with extensive regulations and subsidies⁴. Instead, the government resorted to restrictive trade policies, such as antidumping and countervailing duties, escape clauses, and finally voluntary export restraints (VERs). Especially the latter became important

Table 2: Brazilian Steel Exports by Kind and Country of Destination 1985
- thousand tons -

Kind	Ingots & Semis		Uncoated Sheets			Coated Sheets			Special Sheets				Non-Flat Products								Total			
	Steel Ingots	Semi-Finished Prods.	Hot Rolled Plates	Cold Rolled Sheets and Coils	Galvanized Sheets	Packing Sheets	Other	Stainless Steel Sheets	Silicon Sheets	High Carbon Sheets	Other	Welded Tubes	Strips and Hoops	Rail and Track Ass.	Structural Shapes	Bars	Reinforcing bars	Wire Rod	Seamless Tubes	Drawn Prods.	Quantity ('000t)	FOB Value (Million US\$)	Percent of FOB Value	
1. North America	48.2	235.5	9.3	145.2	204.3	7.4	6.0	-	0.6	2.0	4.7	6.3	263.2	108	0.1	38.2	213.1	127.2	64.9	70.6	49.8	1606.6	508.7	30.9
- USA	1.0	235.5	-	95.7	187.8	7.4	-	-	0.1	0.6	-	4.7	263.0	107.7	0.1	38.2	202.8	127.2	33.7	65.9	44.6	1416.0	455.0	27.6
- Canada	47.2	-	-	22.0	3.6	-	-	-	-	-	-	-	0.2	0.3	-	-	12.3	-	31.2	4.7	5.2	126.7	35.2	2.1
2. South America	-	369.1	75.4	79.8	86.3	-	15.6	0.4	2.1	0.7	11.8	1.5	29.6	3.3	-	39.4	8.3	66.0	24.2	18.2	14.1	918.4	239.7	14.6
- Argentina	-	252.3	63.7	180.2	-	-	5.0	-	2.0	0.6	9.3	2.5	-	0.4	0.4	-	-	-	-	-	1.4	518.2	123.3	7.5
- Ecuador	-	100.8	-	-	21.3	-	8.2	-	-	-	-	-	-	-	-	-	-	18.9	-	-	-	149.2	35.8	2.2
3. EC	-	57.4	-	91.0	-	18.2	1.4	-	-	-	-	-	-	0.3	-	-	4.9	35.9	22.4	-	-	231.3	59.1	3.6
- West Germany	-	8.6	-	60.0	-	18.2	-	-	-	-	-	-	-	-	0.3	-	-	-	8.7	-	-	95.8	26.4	1.6
4. Other European Countries	4.6	214.4	-	32.4	-	-	-	-	-	-	-	-	-	-	-	-	-11.1	12.5	-	-	0.7	275.7	41.8	2.5
- Turkey	4.6	130.8	-	32.4	-	-	-	-	-	-	-	-	-	-	-	-	-	12.5	-	-	-	180.3	24.1	1.5
5. Africa	15.7	35.6	-	38.3	-	-	-	-	-	0.1	-	-	37.3	-	-	-	0.7	452.8	11.6	-	3.7	593.8	131.4	8.0
- Algeria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	438.5	5.8	-	-	444.3	94.7	5.8
6. Asia	-	287.1	599.7	531.7	164.2	11.9	13.6	-	-	-	-	5.8	8.3	0.8	-	-	154.2	439.5	113.0	13.0	6.6	2351.4	527.5	32.0
- Saudi Arabia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	179.8	-	-	-	1798	37.5	2.3
- China	-	43.2	210.9	-	67.2	2.0	-	-	-	-	-	3.8	-	-	-	-	92.9	115.4	82.1	5.1	-	622.6	142.0	8.6
- South Korea	-	-	34.5	151.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	186.2	36.1	2.2
- Japan	-	129.6	260.2	207.3	10.6	-	-	-	-	-	-	-	-	-	-	-	32.9	-	-	-	-	646.6	142.6	8.7
- Thailand	-	-	33.7	102.8	25.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	162.3	33.7	2.0
- USSR	-	-	-	-	28.6	-	-	-	-	-	-	-	-	-	-	-	60.4	-	-	3.1	-	92.1	28.8	1.7
7. Other Countries	-	52.7	59.7	181.9	17.6	3.0	5.6	-	-	0.1	0.6	0.9	15.3	3.1	-	5.0	18.1	25.7	7.3	8.9	3.7	409.1	137.9	8.4
Total Quantity	68.5	1251.8	744.3	1200.6	472.4	40.5	42.2	0.4	2.7	2.9	18.1	15.5	353.7	115.5	0.1	52.6	412.4	1159.6	245.4	110.7	78.6	6388.5	-	-
FOB Value (Million US\$)	11.6	222.2	179.9	287.2	154.6	14.6	19.8	0.2	3.2	1.7	6.0	7.9	133.6	39.4	0.03	15.4	137.5	248.8	59.6	66.2	36.2	-	1646.1	-
Percent of FOB Value	0.7	13.5	10.9	17.4	9.4	0.9	1.2	0	0.2	0.1	3.6	4.8	8.1	2.4	0	0.9	8.4	15.1	3.6	4.0	2.2	-	-	-
Average Price (US\$/t)	169.8	177.5	241.7	239.2	327.3	361.3	469.6	487.5	1204.8	577.6	322.4	512.5	377.6	341.1	300.0	293.2	333.5	214.6	243.0	598.5	460.9	-	257.7	-

Source: IBS (1985); own calculations.

after 1982, when the so-called "trigger price mechanism" (TPM) turned out to be ineffective with respect to lowering imports⁵.

Voluntary export restraints often emerged from the attempt of US steel producers to receive protection against foreign suppliers by invoking the antidumping and countervailing duty legislation. In particular after 1982, US firms filed an increasing number of petitions against unfair trade practices with the Department of Commerce with the aim of restricting or at least discouraging steel imports from "low cost" countries. During a single month, in October 1983, U.S. producers filed 38 new antidumping and 94 countervailing duty suits. The Department of Commerce has investigated these petitions which concerned primarily imports from the EC, South Africa, Taiwan, Brazil, Mexico and South Korea⁶. The policy consequences of these investigations into a wide range of import categories for the 1982-1984 period are shown in Table 3 (first column).

The import restraint increases applied by the US Government have also affected Brazilian steel exports, to the US since Brazil's main export items (ingots, semis, sheets and tubes) were subject to countervailing duties, quota and other restrictions on imports of pig iron, steel tubes, and sheets.

This threat of retaliatory action induced many foreign producers to limit the volume of their steel exports voluntarily. Thus, there was a preference towards market-sharing agreements in order to avoid the risks of new complaints and affirmative rulings, although several petitions were dismissed due to insufficient evidence⁷. In the case of large countries, VERs were negotiated bilaterally between governments in order to avoid trade wars. Smaller countries, however, which have a weak bargaining position, were forced by the US industry to adhere voluntarily to quantitative export restrictions or to face additional protectionist measures. The pressure exerted on certain suppliers can

Table 3: Trade Measures Imposed by Industrialized Countries Against Steel Imports Except Steel Pact Agreements

Country	USA	EC	Canada
Products Affected			
Carbon Steel Sheets (Steel Sheets for EC)	1982: Countervailing duties, voluntary export restraints, antidumping duties, global quota	1979: Antidumping duties for all steel sheets	1982: Antidumping duties
Laminated Steel Wire	1983: Antidumping duties, global quota		
Carbon Steel Wire (Steel Wire for EC)	1982: Countervailing duties, antidumping duties, voluntary export restraints	1982: Antidumping duties for all steel wire	
Steel Tubing	1983: Countervailing duties, antidumping duties, voluntary export restraints		
Stainless Steel Bars and Wires	1983: Countervailing duties, bilateral voluntary export quota restraints		1984: Antidumping duties
Alloy Steel Bars	1982: Countervailing duties, bilateral quotas, voluntary export restraint		1984: Antidumping duties
Pig Iron	1979: Countervailing duties		
Steel Pipes	1984: Countervailing duties, antidumping duties		
Cast-Iron Connections	1984: Countervailing duties		
Alloy Steel Sheets			1984: Antidumping duties
Chrome Steel Wheels			1981: Antidumping duties

Source: Anjaria, Kirmani and Petersen (1985), p. 157.

be illustrated for the case of Brazil. Table 4 shows protective measures proposed by the Department of Commerce as the result of investigations carried out against the Brazilian steel exporters. These measures were directed against all product categories, which were of relative importance for Brazil's steel exports. According to the data in Table 2 the proposed measures would have covered 77 percent of Brazilian steel exports to the USA. Brazilian steel exports would have lost the no longer favourable tariff treatment granted to DCs under the General System of Preferences (GSP). When the International Trade Commission (ITC) was about to announce its final decision on the antidumping margins against one specific import category, carbon steel, the Brazilian authorities proposed to negotiate an orderly market agreement⁸. The US producers accepted this negotiation offer insisting that the new quota should be restricted to one quarter of Brazil's 1983 export volume. As the voluntary reduction pact failed, the US government imposed duties of more than 27 percent on the respective Brazilian carbon steel imports⁹. In the case of stainless bars and wire rods investigations were suspended, when the Brazilian representatives gave in and eventually agreed on rather restrictive unilateral VERs. This example demonstrates that countries like Brazil do not have the bargaining position to maintain access to US markets.

Nonetheless, the US steel industry engaged in further legal activities to restrict foreign competition. In July 1983, the US president imposed safeguard measures in the form of duty increases and global quotas on the grounds of GATT Article XIX. Protection against import competition was granted because imports were supposed to be a source of injury to the US special steel industry¹⁰. Again, Brazil was hit as material injury was also involved in the case of cast-iron pipe fittings. In addition, a new escape clause petition (under Section 201 of the US Trade Act of 1974) was filed by US firms in January 1984 in order to generally restrict all imports of carbon and alloy steel. After an affirmative determination of injury issued by the ITC, the US

Table 4: US Tariff Treatment of Brazilian Steel Products Subject to ITC Investigations in 1983/84

Item	TSUSA No.	Rate of Duty in Percent (1984)				GSP Rate for Brazil	Proposed ITC Treatment for Brazilian Products
		Column 1 (MFN) Rates for 1987 are given in parentheses	LDCs	Column 2 for Communist Countries			
<u>Carbon Steel Sheets</u>							
Not pickled	607.6710						
Not rolled	607.6720	6.2(4.9) ad val.	4.9 ad val.	20 ad.val.	-		Material injury antidumping case Dec. 1983
	607.6730						
	607.6740						
Pickled but not cold rolled	607.8320 607.8342	6.6(5.1) ad val.	5.1 ad val.	0.2/116 + 20 ad val.	-		
<u>Cast-Iron Pipe Fittings</u>							
	610.62	7.9 ad val.	n.a.	n.a.	0		Material injury Nov. 1984
	610.65	2.8 ad val.	n.a.	n.a.	0		
	610.70	7.9 ad val.	n.a.	n.a.	0		
	610.74	8.6 ad val.	n.a.	n.a.	0		
<u>Stainless Steel Bars</u>							
Not cold-formed	606.9003	10.5 ad val.+ add. duties	-	28 ad val. + add. duties	-		Material injury, Countervailing duties
cold-formed	606.9010	10.5 ad val.+	-	28 ad val. + add. duties	-		
<u>Stainless Steel Wire Rods</u>							
Not tempered, not treated and not partly manufactured	607.2600	4.3 ad val. + add. duties	-	10 ad val. + add. duties	-		Suspended after VER June 1983
Tempered, treated or partly manufactured	607.4300	4.6 ad val. + add. duties	-	10 ad val. + add. duties	-		
<u>Iron Bars</u>							
Ductile iron, alloy steel not cold formed	606.97	9.0(6.0) ad val. free	-	28 10	-		Materially injured; countervailing duties Dec. 1983
<u>Hot Rolled Carbon Steel</u>							
Plate in coils	607.6610	7.0 (6.0)	6.0	20	-		Materially injured or threatened thereby; countervailing duties and anti-dumping measures August 1984
Steel Sheets	607.66	6.6 (4.9)	4.9	20	-		
	607.8320 607.8342	7.0 (5.1)	5.1	20 + 0.2 ¢ 1.6	-		

Source: ITC (1983a), (1983b), (1983c), (1984a), (1984b).

government announced the establishment of global steel quotas in September 1984, which were based on negotiated "surge control" arrangements with countries whose exports had increased rapidly. This policy concerned Brazil, which in particular had increased its steel exports to the USA by 96 percent between 1980 and 1985. According to the US government, unfair trade practices were the main source of injury, which had to be eliminated through bilateral agreements. Except for the EC, which retained the limits agreed upon in the 1982 US-EC steel pact, global steel arrangements were negotiated with all major steel exporters. The results are given in Table 5. The allocations of market shares were expected to reduce import penetration to 18.5 percent of actual consumption, which was believed to be the "fair trade" level. For Brazil, this allocation was equivalent to slightly over half of its actual market share in 1983. Thus, Brazil suffered comparatively hard from these bilateral agreements in contrast to other countries such as South Korea. Japan was even in a position to negotiate a quota in excess of its market share. In absolute terms, Brazil has been the largest loser with a quota cutting 0.7 percent of its actual market share. The quota regulation should lead to an absolute decline of Brazilian steel exports to the USA in subsequent years if US steel consumption continues to stagnate. Steel consumption in the USA has been declining at an average annual rate of 1.5 percent between 1980 and 1985. If this trend continues, the quota allocation to Brazil would cause an export decline of at least 46 percent in 1986 compared to 1983. Hence, the US market does not seem to provide much scope for an expansion of Brazilian steel exports in the near future.

2.2 Steel Politics in the European Community

The European Community (EC) as a customs union applied a far more restrictive approach than the USA, as the instruments provided by the "European Community for Coal and Steel" (ECCS) agreements facilitate interventions at all stages of the production process,

Table 5: The 1984 Steel Pact Agreements of the USA compared with Market Shares of Respective Countries (Percent of US Annual Consumption)

Country	Market Shares			Pact Agreement
	1982	1983	1984 ^a	
Japan	6.3	5.1	6.7	5.8
South Korea	1.4	2.1	2.4	1.9
Brazil	0.8	1.5	1.4	0.8
Spain	0.7	0.7	1.6	0.67
South Africa	0.7	0.7	0.7	0.42
Mexico	0.1	0.8	0.9	0.36
Australia	0.2	0.2	0.3	0.18
Argentina	0.2	0.3	0.3	n.a.
Finland	0.2	0.2	0.4	n.a.
Canada	2.4	2.9	3.2	n.a.
EC ^b	7.3	4.9	5.9	5.9
Total	21.8	20.5	26.1	~ 17-20

^a 1984 values include only first nine months.

^b EC values are subject to the 1982 US-EC arrangement.

Source: Jones (1986), p. 152.

namely R&D, production, distribution and investment. The ECCS treaty enables the Commission of the EC to apply the following measures:

1. common subsidization in the fields of R&D and social benefits;
2. setting of maximum and minimum prices;
3. implementation of common allocation schemes for production;
4. common tariffs;
5. indicative planning for investment and production.

In addition, governments of EC member countries grant national subsidies to their steel industries, despite the explicit ban on subsidies at the national level in the ECCS treaty.

The Federal Republic of Germany, which is the largest steel producer in the EC, did not apply a specific steel policy. Steel production is mainly in the hands of the private sector, which in comparison to companies in other EC member countries has received negligible subsidies until 1982, except for the case of Arbed Saarstahl. Protection at the national level was only granted in the form of subsidies to capital formation, i.e. loans at preferential terms, securities and some other instruments, as shown in Table 6. In France, Italy and the United Kingdom subsidization and interventionism were more common, since steel production is dominated by a few state-owned enterprises. Thus, governments in these countries provide equity at preferential terms, i.e. there is no need to pay dividends.

In 1980, support at the national level was harmonized in a code on state interventions, which aimed at progressively phasing out subsidies in the medium term and required approval of all national measures by the Commission. Nevertheless, as it can be seen from Table 6, subsidization in all EC member countries reached unprecedented levels in 1984-85. Even the German government, which had refrained so far from excessive subsidization, began to subsidize on a broad scale. According to multilateral decisions among the EC members, subsidies aiming at environmental

Table 6: Released Subsidies in the European Community (- in Million ECU -)

Country	Subsidies for Interest Payments			Venture Capital Paid in as Shares or Loans			Debt/Equity Conversion			Loans with Preferential Interest Rates			Securities, Guarantees and Loans on Market Terms			Other Subsidies			Total Subsidies		
	1984	1985	1980-1985	1984	1985	1980-1985	1984	1985	1980-1985	1984	1985	1980-1985	1984	1985	1980-1985	1984	1985	1980-1985	1984	1985	1980-1985
Belgium	83	50	166	390	203	1216	1425	37	1740	110	-	187	499	27	947	-	-	-	2507	317	4256
FRG	1960	279	2811	-	-	-	-	-	-	-	-	68	704	42	935	-	-	29	2664	321	3844
France	-	-	150	805	2835	8298	-	-	-	-	-	-	-	-	693	-	-	-	805	2835	9141
Italy	388	1931	3354	2085	4552	9902	-	-	-	1512	1727	3600	-	-	-	-	-	-	3985	8210	13856
United Kingdom	168	80	294	1153	1003	5346	-	-	-	-	-	-	-	-	-	-	-	-	1321	1083	5640
Ireland	129	-	44	-	33	162	-	-	-	-	-	-	6	-	58	-	-	-	135	33	264
Netherlands	19	-	97	222	-	222	-	-	-	-	-	-	-	-	137	-	-	-	241	-	456
Luxembourg	141	-	211	59	104	165	-	-	-	1	-	27	182	-	226	-	-	2	383	104	631
EC Total	2888	2340	7127	4714	8730	22350	1425	37	1740	1623	1727	3882	1391	69	2996	-	-	73	12041	12903	38169

Note: These figures reflect only those subsidies as they can be obtained from the budget of the respective countries. For more accurate data on subsidization in the Federal Republic of Germany see Dicke and Glismann (1987).

Source: Krägenau (1986), p. 80-82; own calculations.

protection and R&D efforts may be granted until 1990. State support for closures of plants have been extended until 1988. In addition, governments are allowed to cover up to 50% of the employer's social expenditures in cases of dismissal and plant closure¹¹.

Another internal measure provided by the EC Commission comprises the introduction of mandatory production and distribution quotas as well as target guide prices for a number of steel products. The mandatory quotas have been replacing the voluntary quotas set by the privately organized EUROFER cartel, so that meanwhile most products are subject to mandatory quotas¹². Since both production and distribution quotas are controlled by production certificates and accompanying documents for deliveries within the EC issued by the administration, there is an implicit control of exports to non-EC member countries. The system of quota allocations was to be abolished at the end of 1987. However, in light of the prevailing conditions in the European steel industry, it is likely to be prolonged.

Through the quota system and minimum prices for some steel products, the EC governments are in a position to tailor production capacities to the actual internal demand. Of course, the maintenance of this system requires a tight import control policy, which comprises both voluntary agreements on export restraint and import price thresholds. The latter are the basis for antidumping regulations established in 1978 under strong pressure from the Council of Ministers, and especially France, Italy, Belgium and Luxembourg. The basic import price does not reflect the lowest production cost on the world market, as GATT rules stipulate. The basic import price is calculated with respect to the minimum costs of EC producers¹³. Since this system is only applicable for countries, which have not entered into VERs with the EC, import price regulations served as an "incentive" to agree on VERs. The number of VERs agreed upon in 1978 bears witness to the "efficiency" of this policy approach. In comparison to the USA, the EC did not have to resort to antidumping investigations on a broad

basis, as Table 3 shows. Under the bilateral arrangements, foreign suppliers may sell at "discounted" prices which are up to 4-6 percent below basic import prices. This meant that those countries which did not sign voluntary agreements had to sell their steel products at the basic import prices and were hardly able to compete with cheaper suppliers from other sources¹⁴.

In 1978 15 bilateral agreements were signed encompassing all major suppliers to the Community. These bilateral agreements are negotiated annually, based on expected domestic consumption and with reference to 1980 import levels. In 1981-1983 total import volumes were set at 12.5, 9.0 and 12.5 percent below the 1980 import level¹⁵.

Though the number of such bilateral agreements did not increase between 1979 and 1984, trade volumes covered by VERs amounted to 90 percent of total EC steel imports. In 1981, Switzerland, Portugal and South Africa have terminated their VERs, while Brazil and Bulgaria have entered into such agreements after 1981.

Moreover, the EC has been discriminating with respect to particular groups of countries. As it can be seen from Table 7, EFTA countries have on the whole been receiving by far the most favourable treatment. As far as total import quotas are concerned, Socialist countries managed to achieve the highest import quotas in 1979, but they were soon overtaken by EFTA countries, i.e. Austria, Spain, Sweden and Norway, which were allocated the largest quotas (except for Japan) in 1982. In addition, countries have to respect price discipline but for them there are no quotas for individual steel products as they are imposed on all other countries. Apart from that, there has been a high degree of discrimination, as far as the conditionalities of the quota agreement are concerned. In fact, some of the non-EFTA suppliers are even subject to a so-called "triple clause" provision built into their arrangements. This provision allocates imports for specific subperiods within the duration of the arrangement (1 year), regulates the geographical distribution among EC countries

Table 7: Import Quotas Provided in Bilateral Agreements with the EC 1979, 1982 (thousand tons)

	1979	1982
Total Import Quotas	5110	7913

of which:

Hungary	264	371
Czechoslovakia	612	637
Romania	324	394
Bulgaria	492	252
Poland	456	420
Austria	312	1017
Finland	312	389
Norway	192	568
Sweden	588	879
Spain	744	780
Japan	492	1220
South Korea	72	225
Australia	132	407
Brazil	-	253

Source: Trautlein (1984), p. 161.

and the volume of imports by product categories. These regulations are applied with respect to import quotas exceeding 100,000 tons¹⁶. Hence, the triple clause has also been applied to Brazilian steel products. As a newcomer to the European market Brazil was only granted a quota for pig iron, all other products are subject to the import price system. Since the Commission has emphasized its intention to maintain the present steel policy in the medium-run¹⁷, an increase of Brazilian exports to the EC beyond the present level (Table 2) appears to be rather unlikely.

2.3 The Japanese Steel Policy

The close cooperation between the government and the steel industry in Japan is the main characteristic of this country's steel approach, which is fundamentally different from steel policies applied in the western world. The characteristic features of this cooperation have been changing in accordance with the development of this industry. Subsidization of capital was granted during the infant industry and expansion phase in the 1950s and early 1960s. When steel production became a sunset industry, thereafter the Japanese government and the producers have been resorting to alternative means of steel support. The government has refrained from additional direct interventions into steel production and trade; it has rather influenced the adjustment process through administrative guidance and so-called "recommendations", which lack a clear legal definition. Because of this lack of transparency the following survey of Japanese steel policies has to remain tentative.

In contrast to other countries, Japan has refrained from subsidization of its declining steel industries. Government authorities have rather preferred to relax their anti-trust policy and to allow for cartellization. Shielded by import protection, cartels facilitate cross-subsidization between certain steel products, even though it does not necessarily delay the adjustment process. However, overall rationalization cartels, as they were organized in EC member countries (such as EUROFER), were never officially founded, although there is some indication for inter-firm coope-

ration. Since 1976, Japanese steel companies maintain their respective market shares and stick to a tight price discipline. In addition, the companies have organized a common supply of inputs. Only specific segments of the Japanese steel industry were officially declared so-called recession cartels by the government. In 1981, the Ministry of International Trade and Industry (MITI) approved the formation of a recession cartel for wrought iron products as it had been practiced before in the past - 1974 crisis. A similar arrangement was found for the electric furnace segment, which has also been accused of receiving state support by US companies¹⁸.

As far as import protection is concerned, the Japanese government was only indirectly involved by allowing for the foundation of the Japan Iron and Steel Importers' Institute (JISII). This institution was formed in an effort to maintain "orderly" imports of steel products. To be able to do so, JISII is granted the status of a monopolist importer which controls all steel imports to Japan. In January 1984, it has decided to reduce imports of steel-plate as well as hot-rolled steel and coil. This action was apparently the result of unacceptable increases in these imports from lower-cost suppliers. Even though only 5 percent of domestic demand were satisfied by imports in 1984, the JISII regarded 3 percent as adequate¹⁹. Hence, steel imports from low-cost suppliers such as South Korea and Taiwan were reduced. If import restrictions for the above items will be applied at broader scale, Brazilian exporters are likely to suffer, since 72 percent of Brazilian steel exports to Japan consist of plates, hot-rolled sheets and coils (Table 2). Since the JISII is a private purchase institution, it can easily discriminate against particular producer countries. It is not clear to what extent discretionary import decisions have actually affected the Brazilian export position. However, there can be no doubt, that a general import reduction of these products, as envisaged by the JISII, will seriously threaten Brazil's export capacity to Japan.

3. Competitive Export Subsidization on the World Markets

The export capacity of the Brazilian steel industry is mainly determined by the import protection of the large consumer countries, as it was discussed in the previous section. However, these countries account only for about 41 percent of Brazil's total steel exports, as it can be seen in Table 2. Another 22 percent can be attributed to Argentina, China and Algeria. The rest is quite equally distributed among a large number of countries. Protectionist policies due to one of these economies cannot affect Brazil's export standing substantially. However, export subsidization by large countries such as Japan and the EC members can severely undermine Brazil's competitive position on these third-country markets.

Before analyzing the possible effects of export subsidization, it might be helpful to derive the economic rationale for competitive dumping. As it was discussed in the preceding sections, a number of industrialized countries support their steel industries through increased subsidization. State support is in almost all instances granted through preferential supply of capital, since capital costs in steel producing are considerable relative to variable costs. Because of the high physical capital intensity and the durability of equipment (reaching up to 50 years), steel producers regard their plants as sunk costs, once the investment has been undertaken²⁰. Consequently, firms face considerable barriers-to-exit. Assuming rationale behaviour firms as well as profit maximization, producers are (then) in a position to reduce their prices below marginal costs, because they realize a return on capital as long as prices do not yet equal average variable costs. The alternative to dumping would be a loss of all invested capital. Subsidization offers the opportunity to reduce the price even below that margin, since losses as well as costs of modernization of existing capital are taken over by the state. However, due to economies of scale in production downward price flexibility is only to be expected when the producers avoid overcapacities. Declining demand and minimum price arrangements in their

home markets, forces steel companies in industrialized countries to increasingly use exports as an outlet for their domestic over-capacities. Thus, even though in most industrialized countries specific export subsidies have not been granted, it can be concluded that the export performance of industrialized countries, i.e. EC member countries and Japan (Table 9) is influenced by the subsidies on investment which facilitates dumping. It is impossible to provide an empirical estimate of this influence, but assuming that general subsidization of capital is divided equally between exports and domestic production, state support can even become a crucial factor.

In addition, the trade barriers in industrialized countries facilitate cross-subsidization of exports. Since anti-trust policies in industrialized countries are quite generous, as far as cartelization of steel production is concerned, the foundation of national and international cartels, such as the German "Verkaufskontore", the Japanese Steel Exporters Association as well as EUROFER II, have facilitated cross-subsidization even between independent companies²¹.

As a result, Brazil's steel exports have to compete with subsidized exports from the EC and Japan on the world market. However, it is not possible to directly determine to what extent Brazil's export capacity is undermined through these exports, since subsidies are non-specific with respect to the particular products. The only fact one can state is that the product mix of the competitors plays a decisive role for Brazil's exposure to subsidized exports. If Brazil's steel exports are concentrated on exactly those products, which are the main steel export products of Japan and the EC, it is more likely that competitive export dumping affects Brazil's trade performance. In contrast, if Brazil specializes in those products, which have less relative importance in the export mix of industrialized countries, it is more likely that Brazil is not affected by export subsidization. Thus, assuming that domestic and foreign sales of steel producers in industrialized countries are equally benefitting from subsi-

dization, a comparison of Brazil's export structure with those of the industrialized countries may give a tentative answer, as to what extent Brazil's exports may suffer²².

In order to compare the Brazilian export structure with those of industrial economies the 1985 production-specific export quantities of Brazil, EC and Japan (Table 9 in the appendix) have been correlated. In addition, correlation coefficients of Taiwan and South Korea have been calculated, as they may show, to what extent the Brazilian export structure is different from the product mix of other NICs. A high correlation coefficient indicates a high degree of similarity between the Brazilian product mix and the export structure of the competing countries. In this case, Brazil is likely to be seriously affected by foreign subsidization. In contrast, a low or negative correlation coefficient indicates fundamental structural differences in the export baskets. Then, foreign subsidization would not cause a loss of competitiveness for Brazil. Table 8 reveals the correlation matrix for Brazil, Japan and the EC for 12 specific products, covering the entire steel exports of the respective countries.

It is obvious that Brazil's export structure is quite exceptional in comparison to other NICs such as Taiwan and Korea. Likewise, the correlation coefficients for Brazil are very low, or even negative with respect to Italy, Belgium and Luxembourg, the EC as a whole and Japan²³. This shows that Brazil exports a different product mix than both NICs and developed countries. Products which are of relative importance in the Brazilian export basket have less or no importance in the export basket of other countries. Of course, there is some reason to believe that the Brazilian export structure is just the outcome of a crowding-out process due to excessive competition in the world steel market. In this case, the coefficients would indicate that the adjustment process has already taken place in Brazil. An entirely different picture emerges for steel exports of South Korea and Taiwan. Steel producers in these countries face stiff competition from industrialized countries as high rank correlation coefficients

Table 8: Correlation of Product-Specific Steel Export Structures 1985 (Pearson Coefficients)

	West Germany	France	Italy	United Kingdom	Belgium & Luxembourg	European Community	Japan	Brazil	South Korea	Taiwan
West Germany	1.0	0.72	0.09	0.20	0.83	0.58	0.28	0.20	0.34	0.27
France	0.72	1.0	0.50	0.30	0.72	0.70	0.55	0.04	0.64	0.15
Italy	0.09	0.50	1.0	0.56	0.34	0.71	0.88	-0.03	0.83	0.61
United Kingdom	0.20	0.30	0.56	1.0	0.18	0.44	0.34	0.19	0.46	0.54
Belgium & Luxembourg	0.83	0.72	0.34	0.18	1.0	0.66	0.54	-0.15	0.62	0.31
European Community	0.58	0.70	0.71	0.44	0.66	1.0	0.84	-0.12	0.59	0.52
Japan	0.28	0.55	0.88	0.34	0.54	0.84	1.0	-0.20	0.72	0.63
Brazil	0.20	0.04	-0.03	0.19	-0.15	-0.12	-0.20	1.0	0.01	0.03
South Korea	0.34	0.64	0.83	0.46	0.62	0.59	0.72	0.01	1.0	0.34
Taiwan	0.27	0.15	0.61	0.54	0.31	0.52	0.63	0.03	0.54	1.0

Note: Exports of the European Community exclude intra-EC trade.

Sources: own calculations; for data sources see Table 9 in the appendix.

indicate. This leads to the conclusion that (at least in 1985) export subsidization in industrialized countries did not displace Brazilian steel exports, but was detrimental to export expansion in Korea and Taiwan.

4. Brazil's Steel Exports and the Uruguay Round

As discussed in section 2, the USA and the EC have increasingly made use of bilateral agreements. Since these arrangements have been concluded outside the multilateral trading system provided by GATT, world steel trade belongs to the so-called grey areas in which GATT rules have been eroded. Bilateralism involves a clear injury of the "most favored nation" (MFN) treatment, since the outcome of such agreements depend on the relative political strength of the contracting parties. As a result of their bargaining power, the big trading blocs, the USA, Japan and the EC are in a position to discriminate against politically weaker suppliers such as Brazil. Evidence for that can be found in the USA's treatment of Brazil concerning the VERs (see p. 8), as compared to concessions granted to the EC. In the same vein, Japan and the EFTA countries are given easier access to EC markets than Brazil which suffers from highly restrictive import quotas.

The Uruguay Round of multilateral trade negotiations is expected to redress these errors of the past by strictly applying GATT rules to the grey areas²⁴. However, it has to be noted that there are other sectors than steel, in particular agriculture which is at the centre of interest. At the moment, it seems that steel is not likely to be negotiated, since in most countries the steel industry is given national priority. In addition, in most countries steel industries are inward-oriented, while exports are regarded as an outlet for domestic overcapacities. For this reason, the majority of countries is interested in increased regulation rather than liberalization of world steel trade.

In the previous GATT rounds it has been relatively easy for developing countries to voice their demands, as they face less obligations in the GATT agreement, especially with respect to governmental assistance²⁵. Given the MFN treatment, countries like Brazil were in a position to behave as a free-rider, since any liberalization of foreign trade negotiated between the USA, Japan and the EC would also accrue to developing countries.

However, it is not clear to what extent this position can be defended in the new Uruguay Round. As it was assessed in hearings of the US Senate, the import protection granted by the Brazilian government to its steel industry is of major importance for decisions on US import protection²⁶. Hence, it can be expected that the principle of reciprocity in trade will gain some relevance for large NICs such as Brazil.

Reciprocity is also involved in steel trade with the EC. The following criteria for LDC treatment have been developed by the Commission²⁷:

- contractual status of the country with respect to the community, as there are trade and association agreements;
- economic situation and indebtedness of the country;
- amount of steel imports from the community and their respective import treatment;
- overall trade balance with the EC.

The last two criteria stress the relevance of reciprocity. However, it is not likely that Brazil reconsiders its tight import protection on steel, i.e. the "law of the similars". Summing up, it has to be noted that the Uruguay negotiations cannot be expected to result in better access of Brazilian steel exports to markets in industrialized countries.

5. Conclusions

This paper assesses the impact of steel policies in industrialized countries on Brazilian steel exports. There are two major influences:

1. access to the markets of the three big steel consuming trade blocs, the USA, Japan and the EC, which is restricted by protectionist measures;
2. displacement of Brazilian exports on other markets due to excessive export subsidization in industrialized countries.

As far as protectionism in large consumer countries is concerned, it has been noted that markets in Japan and the USA have become increasingly closed in recent years. The EC is not likely to grant easier market access to Brazil, so that the Common Market persists to be a less important market for Brazilian steel exports. Nor does the U.S. market offer a field for export expansion, since steel protection is intended to fix the present market shares. The same does also apply to Japan. The increasing importance of bilateralism in world steel trade is an additional restraint for Brazilian exports, as small countries such as Brazil face an unfavourable bargaining position against the three large blocs. In this respect, little improvement is to be expected from the current Uruguay Round. Nevertheless, further displacement of Brazilian exports on other markets, as it could result from export subsidization, is not likely to occur, since Brazil has quite a different export structure as compared to Japan and the EC member countries. Thus, potential export opportunities for Brazil are much more likely to be realized in other markets than those of the three large consumers.

Appendix

Table 9: Steel Exports of NICs and Industrialized Countries by Specific Products 1985 (thousand tons)

Products	West Germany	France	Italy	United Kingdom	Belgium & Luxembourg	Total EC	Japan	Brazil	South Korea	Taiwan
Pig Iron	652.0	451.2	21.7	59.3	26.0	303	1082.5	2478	0	0
Ingots + Semis	1904.3	977.8	331.7	736.8	588.7	3134	323.7	2435	374	105
Plates	1360.1	261.5	453.8	231.3	1198.7	2556	3084.9	820	565	385
Hot Rolled Sheets & Coil	2658.1	2087.5	786.9	201.8	2556.4	3661	3073.2	1015	1143	0
Cold Rolled Sheets & Strips	3435.4	1819.7	1028.7	497.1	2675.1	8512	5976.7	326	642	358
Coated Sheets	942.2	833.7	214.1	287.7	910.0	1793	2895.8	153	258	1
Special Sheets	290.1	613.7	185.5	340.9	410.3	822	812.1	28	-	-
Rail & Track Material	206.4	130.4	6.8	101.7	83.0	394	322.5	0	39	0
Tubes	0	1202.7	2085.5	498.1	613.7	6502	6606.2	311	935	200
Structural Shapes	734.9	396.8	189.1	429.8	1323.7	1822	1421.8	26	215	0
Bars	1039.8	990.5	1667.1	807.2	1235.7	2849	4636.1	1436	1140	444
Wire Rod	1200.3	1262.8	385.7	407.7	512.6	2101	1714.9	542	229	143

Note: Coated sheets encompass tin-plates, galvanized sheets and terne plates. Special sheets cover fine stainless steel sheets, silicon sheets and high-carbon steel sheets. Bars cover also reinforcing bars.

Sources: IISI (1986) and (1987), Wirtschaftsvereinigung Eisen- und Stahlindustrie (1986), IBS (1985).

Footnotes

- 1 The causes and consequences of the world steel crisis have been surveyed by Kohana and Kajiwara (1987).
- 2 For a discussion of the so-called "international roundabout of subsidization" see Hiemenz and Weiss (1984).
- 3 Data can be obtained from Wirtschaftsvereinigung Eisen- und Stahlindustrie (1986).
- 4 See Krägenau (1986), p. 55.
- 5 The TPM was a minimum price arrangement fixed to Japanese production cost. In cases of underpricing of imports, it automatically enforced antidumping measures. Despite initial price increases, the TPM failed to improve the competitive stance of the US steel industry, which became impatient with the administration's apparent inability to ward off independent antidumping complaints. The political issues concerning the implementation of the TPM and successive measures are discussed in Jones (1986), p. 130-150.
- 6 See van der Ven and Grunert (1987), p. 153.
- 7 See Anjaria, Kirmani and Peteren (1985), p. 37.
- 8 The International Trade Commission is an institution within the US Department of Commerce. The ITC is in charge of antidumping, countervailing duty and material injury investigations, as provided by US trade legislation.
- 9 For a more detailed description of this particular case see van der Ven and Grunert (1987), p. 173-174.
- 10 See Anjaria, Kirmani and Petersen (1985), p. 38.
- 11 See Krägenau (1986), p. 56.
- 12 The so-called EUROFER cartel encompasses all major steel companies in the EC, no matter if they are state-economic enterprises or private steel producers. The aim of the cartel was to reduce production in the EC through voluntary production quotas. Most of these quotas have been replaced by mandatory quotas, so that EUROFER actually became redundant. However, the cartel still fixes quotas for those products, which are not the subject to mandatory quotas. In its present function, it is often referred to as the so-called EUROFER II cartel.
- 13 The basic import price is higher than the prices negotiated in the VERs and lower than the so-called "catalogue prices", which the EC producers have to report to the Commission.
- 14 See Tsoukalis and Strauss (1987), p. 203-206.

- 15 See Anjaria, Kirmani and Petersen (1984), p. 39, for the figures.
- 16 See Tsoukalis and Strauss (1987), p. 206.
- 17 Basic prospects concerning future EC trade policies can be obtained from the reports of the Commission (1986).
- 18 See the statement of Peabody (1984), Chairman of the American Iron & Steel Institute, p. 52.
- 19 See Peabody (1984), p. 96, 50, 42.
- 20 The capital costs of the equipment have to be paid, no matter if the firm stops or continues production. These are the only alternatives, as there is no alternative use of the equipment. For this reason, the firm may regard its capital costs as sunk costs. For a broader treatment of sunk costs and predatory pricing see Scherer (1970), Chap. 12, and Aberle (1980) p. 66.
- 21 Evidence for cross-subsidization between independent companies is given by Krägenau (1986).
- 22 An additional assumption is that up-stream and down-stream products cannot be regarded as substitutes, since there is not any evidence available for the case of Brazil.
- 23 The calculation of so-called export-overlap indices have confirmed these results.
- 24 Adlung (1987) and Dunkel (1987) give a survey on these current negotiations in the Uruguay Round.
- 25 See Article XVIII of the GATT text.
- 26 See U.S. Senate (1984).
- 27 These are preliminary criteria, which have been developed in order to be negotiated at the Uruguay Round. See Commission of the EC (1986), p. 30-31.

References

- Aberle, Gerd (1980), Wettbewerbstheorie und Wettbewerbspolitik. Stuttgart, Berlin, Köln, Mainz: Kohlhammer.
- Adlung, Rudolf (1987), GATT and the "Uruguay Round". Inter-economics, Vol. 22, pp. 14-20.
- Anjaria, Shailendra S., Kirmani Naheed and Anne B. Petersen (1985), Trade Policy Issues and Development. IMF Occasional Papers No. 38, Washington.
- Commission of the European Communities (1986), Mitteilung der Kommission an den Rat: Außenhandelspolitik auf dem Stahlsektor - Bilanz und Perspektiven, 13.11.1985.
- Corden, Warner M. (1974), Trade Policy and Economic Welfare. Oxford.
- Dicke, Hugo and Hans H. Glismann (1987), The Rise and Decline of West German Steel Industry: The Role of National and Supranational Agencies. Aussenwirtschaft, Vol. 42, pp. 421-441.
- Dunkel, Arthur (1987), Uruguay Round of Multilateral Trade Negotiations. Foreign Trade Review, Vol. 21, No. 4, pp. 369-377.
- Hiemenz, Ulrich and Frank D. Weiss (1984), Das internationale Subventionskarussell. Kiel Discussion Papers, Institut für Weltwirtschaft, Kiel.
- Instituto Brasileiro de Siderurgia (IBS) (1985), Anuário Estatístico da Indústria Siderúrgica Brasileira (IBS Yearbook) 1985, Rio de Janeiro.
- International Iron and Steel Institute (IISI) (1986), Steel Statistical Yearbook 1986, Brussels.
- _____ (1987), Steel Statistics of Developing Countries. Brussels.
- Jones, Kent (1986), Politics vs. Economics in World Steel Trade. London, Boston, Sydney: Allen & Unwin.
- Kohama, Hirohisa and Hirokazu Kajiwara (1986), Structural Change in Steel Trade and International Industrial Adjustments. Developing Economies, Vol. 24, No. 2, June.
- Krägenau, Henry (1986), Stahlpolitik und Strukturanpassung in der EG-Stahlindustrie. HWWA-Report Nr. 72, Institut für Wirtschaftsforschung, Hamburg.
- Peabody, Robert B. (1984), Statement. In: The Steel Industry; Hearing before the Committee on Foreign Relation, United States Senate; 98th Congress, July 6, 1984, Washington: US Government Printing Office, pp. 132-168.

- Scherer, Frederic M. (1970), *Industrial Market Structure and Performance*. Chicago: Rand Mc Nully College Publ.
- Tarr, David G. (1987), *Effects of Restraining Steel Exports from the Republic of Korea and other Countries to the United States and the European Economic Community*. World Bank Economic Review, Vol. 1, No. 3, pp. 397-418.
- Trautlein, Donald H. (1984), *Statement*. In: *The Steel Industry; Hearing before the Committee on Foreign Relation, United States Senate; 98th Congress, July 6, Washington: US Government Printing Office, pp. 132-168.*
- Tsoukalis, Lukas and Robert Strauss (1987), *Community Policies on Steel 1974-1982. A Case of Collective Management*. In: Mény, Yves and Vincent Wright (Eds.), *The Politics of Steel: Western Europe and the Steel Industry in the Crisis Years (1974-1984)*. Berlin, New York: Walter de Gruyter, 1987, pp. 186-221.
- U.S. Senate (1984), *The Steel Industry; Hearing before the Committee on Foreign Relations; 98th Congress, July 6. Washington: US Government Printing Office.*
- USITC (United States International Trade Commission) (1983a), *Certain Carbon Steel Products from Brazil*. Dec. 1983, USITC Publication 1470, Washington, D.C.
- _____ (1984a), *Hot-Rolled Carbon Steel Sheet from Brazil*. Aug. 1984, USITC Publication 1368, Washington, D.C.
- _____ (1983b), *Iron Bars from Brazil*. Dec. 1983, USITC Publication 1472, Washington, D.C.
- _____ (1983c), *Hot-Rolled Stainless Steel Bar, Cold-formed Stainless Steel Bar, and Stainless Steel Wire Rod from Brazil*. June 1983, USITC Publication 1398, Washington, D.C.
- _____ (1984b), *Certain Cast-Iron Pipe Fittings from Brazil*. Nov. 1984, USITC Publication 1597, Washington, D.C.
- van der Ver, Hans and Thomas Grunert (1987), *The Politics of Transatlantic Steel Trade*. In: Mény, Yves and Vincent Wright (Eds.), *The Politics of Steel: Western Europe and the Steel Industry in the Crisis Years (1974-1984)*. Berlin, New York: Walter de Gruyter, 1987, pp. 137-183.
- Wirtschaftsvereinigung Eisen- und Stahlindustrie (1986), *Statistisches Jahrbuch der Eisen- und Stahlindustrie 1986*. Düsseldorf: Stahleisen.