

# Thalassorama

## Impact of the Drawback Mechanisms in the Chilean Salmon Industry

EDUARDO LETELIER

EXEQUIEL GONZÁLEZ

Interamerican Centre for Sustainable Ecosystems Development

### Introduction

Chilean fisheries have been one of the most dynamic economic sectors in the country in the last two decades and are the third in national exports, representing approximately 12% of total Chilean exports in value in 1996 (Central Bank of Chile 1998). In 1997, Chilean fisheries exports reached a total value of US\$1.9 billion and, of this, harvest fisheries accounted for 61%, with US\$1.1 billion. Aquaculture (mostly salmon) made up the remaining 39%, at US\$730 million (Chilean Undersecretary of Fisheries 1997).

Several questions have been raised recently with respect to the present drawback mechanisms that exist in Chile. In particular, questions have arisen regarding the Chilean salmon industry and the potential subsidiary role played by the simplified tax drawback mechanism and its possible effect on fair market competition. The purpose of this paper is to analyze whether the drawback mechanisms in Chile play a relevant subsidiary role in the Chilean salmon industry, with special emphasis placed on the mechanisms related to the value-added tax (VAT).

The analysis is brought into context through a synthesized review of the origin of and government justification for creating the different mechanisms for indirect tax recovery from exports, and a simple analytical discussion on the theoretical conditions under which each mechanism may be seen as an export subsidy. A quantitative analysis of the probable effects of indirect tax recovery mechanisms on the industry's economic outcomes, based upon a calculation of total industry tax recovery, is presented. The quantitative analysis is centered on the salmon industry in the Xth region of Chile (figure 1). This region represents approximately 85% of Chilean salmon and trout production. The period covered is 1990 through 1996, the industry's greatest growth period and a time for which the most significant official data on quantity and quality is available. This was also the period when the most important legal modifications of the drawback mechanisms were implemented, and one in which a persistent decrease in real exchange rates was realized. Finally, it is discussed whether existing drawback mechanisms may be considered a subsidy to the Chilean salmon industry.

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Eduardo Letelier is a research associate and Exequiel González is Acting Director; both are at the Interamerican Centre for Sustainable Ecosystems Development (ICSSED), Casilla 27016, Santiago, Chile, e-mail: exequiel@icsed.org or centro@icsed.org.

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Figure 1. The Tenth (Xth) Region of Chile

### Value-added Tax and the Origin and Need for Drawback Mechanisms Related to Export Activities

Value-added tax (VAT) is an indirect tax imposed on the sale of goods and services and is the main source of income for the Chilean Government. Producers and/or traders collect VAT along the production and marketing channels. Producers and/or traders purchasing capital or intermediate goods and services, at a price including VAT, acquire a tax credit equivalent to the extra money paid (purchase value multiplied by the tax rate). Producers and/or traders selling final goods or services, at a final price also including VAT, acquire a tax debit equivalent to the extra money received (sales value times the tax rate).

When it comes to paying tax, each producer and/or trader must declare both credits and debits previously acquired and reimburse the difference to the state. That

is, producers/traders act as simple tax collectors, transferring the higher price originated by this tax to the final consumer.

When levied goods or services are consumed abroad, it is not possible for the exporter to collect this tax. The need to avoid the export of national indirect taxes, and, thus, avoid double tax payment by recovering them in the country of origin, has been signaled in international trade agreements. Chilean legislation provides for alternative mechanisms that allow exporters to recover the indirect tax paid for inputs used in producing export commodities. These mechanisms are classified as general drawback mechanisms and special drawback mechanisms. The Chilean government also considers special drawback mechanisms as a means of reducing transaction costs and as incentives for export growth and diversification.

### **General Drawback Mechanism Related to the Value-added Tax**

The general VAT reimbursement mechanism (GTR) related to export activities, as defined in Decree Law No. 825 of 1976, Article No. 36, gives exporters the right to recover the tax levied while purchasing goods or acquiring services in national markets or while importing goods required for their business. Taxed goods and services eligible for a tax reimbursement include fixed assets and inputs required by the export activity. Tax reimbursement, as such, may be used to pay any state tax debt, as long as the exporter owes the state tax money, except in the case of deferred import right payments.

There is also a legal mechanism for avoiding tax payment on required imported raw materials (Article 12 of DL No. 825), via a formal authorization for a tax exemption from the Chilean Internal Revenue Service. Nonetheless, transaction costs involved in obtaining this authorization are high (*e.g.*, exporters may apply for this exemption only if they have separate accounting systems and are willing to be subject to periodic scrutiny by the Chilean Internal Revenue Service), making this mechanism an exception rather than a rule.

### **Special Drawback Mechanisms**

Two special mechanisms for export tax reimbursement were created during the 1980s, with the explicit purpose of reducing transaction costs to exporters and creating incentives for export growth and diversification. This action was directed at small- and medium-sized firms specifically as a way to reduce the impact of the balance of payments crisis which existed in Chile during the early 1980s. The first special drawback mechanism (Law No. 18,480 of 1985), is known as simplified tax reimbursement (STR) [Reintegro Simplificado de Gravámenes], and the second (Law No. 18,708 of 1988), is known as customs tax reimbursement (CTR) [Reintegro de Gravámenes Aduaneros] (Ministry of Economics 1985–96).

#### *Simplified Tax Reimbursement*

The STR was enacted as an incentive to emerging and nontraditional export growth, which is an important component of the Export Promotion Policy of the Chilean government. The STR is aimed at facilitating access to international markets to small- and medium-sized firms by reducing the costs of creating and maintaining an

appropriate accounting system, securing the necessary working capital, and offering assistance with the paperwork necessary to obtain drawbacks.

The STR originally secured reimbursement of 10% of the total free-on-board (FOB) value of national, nontraditional goods exported with an average value (by customs category, as classified at acceptance time of export declaration), of less than or equal to US\$2.5 million in 1983 and 1984.<sup>1</sup>

In 1986, in order to secure the “nontraditional export” nature of commodities eligible for the STR mechanism, the Chilean Ministry of Economy posted a first list of products excluded from STR benefits. This list was renewed annually until 1990, with commodities whose export value (in real terms) was greater than FOB US\$7.5 million in the previous calendar year. Also included were export commodities with capital and/or input import value (in real terms) higher than US\$7.5 million (CIF).

In 1987, a step-wise system for STR was introduced (Law No. 18,653), allowing exporters to obtain different percentage levels for tax reimbursement. This step-wise system was upgraded in 1991 (Law No. 19,024) and in 1993 (Law No. 19,270). The objective of these changes was to fit the STR mechanism to the real expansion path and level of Chilean exports, including the salmon industry, as well as to improve the economic instrument. Table 1 shows the tax reimbursement levels and eligibility conditions.

The positive aspect of the STR mechanism is the simplicity of the required paperwork procedure. In fact, to apply for STR an exporter must present only an export declaration processed by the Chilean Customs Service and a notarized declaration of the exported value. On the other hand, the most important criticism of STR is that the total reimbursement amount is calculated from FOB export value and not from actual tax paid in producing the export commodities, possibly implying an over-reimbursement and a positive net difference in favor of exporters.

### *Customs Tax Reimbursement*

The customs tax reimbursement (CTR) mechanism was established as part of a stronger implementation of the Chilean Government's Export Promotion Policy. The main objective of CTR is the reimbursement of VAT and import tariffs paid by exporters when importing (directly or via third parties) raw materials, intermediate goods, and parts to be used (with transformation) in the production of an export commodity.

The CTR differs from the STR in that it excludes all imported services, fuels, and any other energy resources, when their main use is to generate heat or energy required in producing an export commodity or service. The advantage of the CTR mechanism is that there is no limit on imported inputs as a percentage of FOB export value in order to be eligible for this reimbursement mechanism.

To apply for CTR, an exporter has to present a completed application form and an import declaration in order to request a certificate from the Customs Service. This certificate, if granted, will establish the reimbursement amount in US\$ calculated from the proportion of inputs used in producing the export commodity.

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<sup>1</sup> FOB value does not include any costs or disbursement deductible by the export firm, and is calculated (in U.S. dollars) according to the exchange rate established in Article No. 122 of Chilean Customs Ordinance. National export goods are defined as those produced entirely in the country with national inputs or using imported raw materials, intermediate goods, or parts with a total cost of insurance and freight (CIF) value equal to or less than 50% of the FOB value of the exported goods. Additionally, imported raw materials, intermediate goods, or parts must be transformed during the production process.

**Table 1**  
 VAT Reimbursement Levels (%) for Chilean Exports Through  
 the STR Mechanism and Eligibility or Exclusion Conditions

Year	Percent of Tax Reimbursement	Eligibility/Exclusion Conditions
1987	10%	Export value of commodities less than or equal to US\$7.5 million (FOB, real terms) the previous year.
	5%	Export value of commodities ranging from more than US\$7.5 million to US\$11.25 million (FOB, real terms) the previous year.
	Excluded	Export value of commodities greater than US\$11.25 million (FOB, real terms) the previous year.
1991	10%	Export value of commodities less than or equal to US\$10 million (FOB, real terms) the previous year.
	5%	Export value of commodities ranging from more than US\$10 million to US\$15 million (FOB, real terms) the previous year.
	3%	Export value of commodities ranging from more than US\$15 million to US\$18 million (FOB, real terms) the previous year.
	Excluded	Export value of commodities greater than US\$18 million (FOB, real terms) the previous year, or whose capital and/or input import value were greater than US\$10 million (CIF).
1993	Same steps as 1990	Same conditions for each step.
	Excluded	Same as 1991 or if import value (CIF) of required capital and inputs is greater than or equal to 85% of the export value (FOB).

Source: Decree Laws No. 18,653 (1987), No. 19,024 (1990) and No. 19,270 (1993). Ministry of Economics, various years.

## Use of Drawback Mechanisms

All three VAT reimbursement mechanisms (GTR, STR, and CTR) are mutually exclusive on an export shipment lot basis, and exporters applying for any of them cannot apply for either of the others. Since all three mechanisms have different calculation systems and restrictions, exporters must decide which one best fits their needs.

In this paper, the impact of different cost structures in selecting the best strategy is analyzed. This is done under the assumption that exporters decide their strategies based upon per-unit and financial costs.

## Conditions Determining Drawback Mechanism Preference

For operational purposes, the analysis is centered on a single, homogeneous export commodity which is produced using national and/or imported inputs and services. This is done in order to determine under which conditions STR, CTR, or GTR will be preferred.

### *A Simple Model*

Preference for any of the three mechanisms depends on the relative and absolute values of required inputs (national or imported goods/services), exported commodity, proportion of imported inputs in relation to total input requirement, the VAT rate, the drawback rate, and input import tariff rates.

The main variables to be considered are the FOB value of exports (FOBV) and the VAT reimbursement value, according to the GTR, STR, and CTR mechanisms. The functional relationships for these variables may be expressed as follows:

$$\text{FOBV} = [(RM_n + S_n) + (RM_i + S_i) \cdot (1 + t)] \cdot (1 + \text{VAT}) + \text{VA} \quad (1)$$

where FOBV = FOB value of export (US\$);  $n$  = national items;  $i$  = imported items;  $RM_n$  = total cost of national raw materials, intermediate goods, and parts incorporated in producing the export commodity (US\$);  $S_n$  = total cost of national services incorporated in producing the export commodity (US\$);  $RM_i$  = total cost of imported raw materials, intermediate goods, and parts incorporated in producing the export commodity (US\$);  $S_i$  = total cost of imported services incorporated in producing the export commodity (US\$); VAT = the value-added tax rate (%). The VAT value in Chile is 18%;  $T$  = input import tariff rate (%). The “ $t$ ” value in Chile is 11%; and VA = Value added before reimbursement (US\$), including wages and salaries, recovery of fixed assets, depreciation, and profits.

$$\text{GTR} = [(RM_n + S_n) + (RM_i + S_i) \cdot (1 + t)] \cdot \text{VAT} \quad (2)$$

where GTR = value of the general VAT reimbursement (US\$). All other variables, constants, and coefficients are as previously defined. Also notice that  $(RM_n + S_n)$  represents the national intermediate consumption required to produce the export commodity, and  $(RM_i + S_i)$  represents the imported intermediate consumption.

The STR mechanism is based upon the reimbursement of VAT, calculated as a percentage of FOB value of the export commodity, and it may be expressed as:

$$\text{STR} = \text{FOBV} \cdot s \quad (3)$$

where STR = value of the simplified VAT Reimbursement (US\$); and  $S$  = value of the reimbursement rate (%). The “ $s$ ” value in Chile may be 10%, 5%, or 3%, depending on into which category the export commodity falls. All other variables, constants, and coefficients are as previously defined.

The CTR mechanism is based upon the reimbursement of tariff and VAT, and it is calculated as:

$$\text{CTR} = RM_i \cdot (1 + t) \cdot \text{VAT} + RM_i \cdot t \quad (4)$$

where CTR = value of the customs VAT reimbursement (US\$). All other variables, constants, and coefficients are as previously defined.

Let us now analyze when each of these special mechanisms may be preferred.

### Preferring STR over GTR

Whenever adopting the STR mechanism yields higher reimbursement values (US\$) than the GTR mechanism, the former is preferred. Notice that the value difference between them depends upon: (i) the proportion of imported inputs with respect to total required inputs for producing the export commodity; (ii) the relative magnitude of the CIF value (US\$) of imported inputs with respect to total FOB value (US\$) of the exported commodity; and (iii) the values assigned to VAT, “ $t$ ,” and “ $s$ .” Thus, a higher value yielded by STR over GTR is mathematically expressed as  $\text{STR} > \text{GTR}$  and is specified as:

$$\text{FOBV} \cdot s > [(RM_n + S_n) + (RM_i + S_i) \cdot (1 + t)] \cdot \text{VAT} \quad (5)$$

Rearranging terms, we get:

$$s/\text{VAT} > [(RM_n + S_n) + (RM_i + S_i) \cdot (1 + t)]/\text{FOBV} \quad (6)$$

Assuming that no imported inputs are used in producing the export commodity and evaluating “*s*” at a 10%, the left-hand side of equation (6) yields a coefficient of 0.556. If, however, it is assumed that only imported inputs are used in producing the export commodity, the left-hand side of equation (6) yields a coefficient of 0.495. This indicates that an exporter will prefer STR over GTR whenever the value of total required inputs is smaller than 49.5%, or 55.6% of the total FOB value of the exported commodity.

When evaluating “*s*” at 5%, the limit of the relationship between inputs and export values changes to a range of 25.2% to 27.7% for STR to be preferred over GTR. With “*s*” at 3%, the limit decreases to a range of 15% to 16.7%

### *Preferring CTR over GTR*

Similarly, the CTR mechanism will be preferred whenever it yields higher reimbursement values (US\$) than the GTR mechanism. A higher value yielded by CTR over GTR is mathematically expressed as  $\text{CTR} > \text{GTR}$ , and it may be specified as:

$$RM_i \cdot (1 + t) \cdot \text{VAT} + RM_i \cdot t > (RM_n + S_n) \cdot \text{VAT} + (RM_i + S_i) \cdot (1 + t) \cdot \text{VAT} \quad (7)$$

When rearranging terms, it may be expressed as:

$$t/\text{VAT} > [(RM_n + S_n) + S_i(1 + t)]/RM_i \quad (8)$$

Assuming that no imported services are used in producing the export commodity, and evaluating “*t*” at 11% value and VAT at 18%, the left-hand side of equation (8) yields a coefficient of 0.611. This means that an exporter will prefer CTR over GTR whenever the national intermediate consumption is smaller than 61.1% of the CIF value of imported raw materials and intermediate goods and parts, before tax.

### *Preferring STR to CTR*

Again, whenever adopting the STR mechanism yields higher reimbursement values (US\$) than the CTR mechanism, the former is preferred. A higher value yield by CTR over GTR is mathematically expressed as  $\text{STR} > \text{CTR}$  and may be specified as:

$$\text{FOBV} \cdot s > RM_i \cdot (1 + t) \cdot \text{VAT} + RM_i \cdot t \quad (9)$$

Rearranging terms yields:

$$s/[(1 + t) \cdot \text{VAT} + t] > RM_i/\text{FOBV} \quad (10)$$

Thus, evaluating “*s*” at 10% yields a coefficient of 0.323 for the left-hand side of equation (10). This means that STR will preferred over CTR whenever the CIF value of imported raw materials and intermediate goods and parts is smaller than 32.3% of the export commodity FOB value. If “*s*” is evaluated at 5%, STR will be preferred whenever CIF value is less than 16.1% of FOB value, and, if “*s*” is evaluated at 3%, the preference limit falls to 9.7%.

## Do Special Drawback Mechanisms Constitute Implicit Subsidies?

Under the principle of avoiding the “export” of indirect taxes, the use of STR or CTR mechanisms should yield the same results as applying the GTR mechanism. This may not be the case in Chile, since, as the previous analysis showed, preference for STR or CTR over GTR may not only be based on savings related to lower transaction costs and higher availability of short-run financial resources, but also on larger amounts of reimbursed taxes. Thus, it is may possible to identify the existence of a potential overpayment or “implicit subsidy” in using STR or CTR instead of the GTR mechanism.

Although theoretically this may be true, in practical terms, its relevance as a subsidy will depend upon the relative weight the over-reimbursement may reach with respect to net revenue.

## Drawbacks in the Chilean Salmon Industry

### *Information and Procedure*

Information related to actual VAT paid by producers and exporters, as well as information on the actual value of reimbursement, is confidential in Chile, and the Chilean Internal Revenue Service does not publish these statistics. Consequently, this work is based on a gross estimation of the VAT paid and reimbursed by the Chilean salmon industry in the Xth Region of Chile.

Estimation of VAT paid and probable reimbursements is made for the period 1990 through 1996 and is based on the analysis of the intermediate consumption structure in the processing sector. Intermediate consumption structure is obtained from the seafood processing sector (CIU No. 3114), reported in the Yearly National Industry Survey [Encuesta Nacional Industrial Anual (ENIA)] produced by the Chilean National Institute of Statistics (INE 1990–95).

The ENIA contains information that was collected at the industrial processing firm level. For the salmon industry, the ENIA includes information on facilities where only salmon and trout are processed. Even though trout and salmon farms are not separately included in ENIA's information, farm production costs are included in the item labeled “Costs of Raw Material; Intermediate Goods and Parts Purchased and Received in Processing Facilities; and Third Party Services.” Therefore, in order to properly account for farm-level costs, it was necessary to break down the information on salmon and trout farm production as purchase or transference at cost value, among others.

To break down salmon farming costs, a cost structure reported by Foster (1995) for the Chilean salmon industry is used. This cost structure refers to farmed Atlantic salmon, exported as a fresh-refrigerated, gutted, head-on (HG) product.

Both types of information are used to specify a cost structure for the Chilean salmon industry, from the farm to export levels, as a weighted average of the industry's most relevant export commodities for the period analyzed. These export commodities include: HG frozen salmon and trout (65% of total volume), fresh-refrigerated Atlantic salmon (26% of total volume), and a variety of related products, such as frozen fillets and salted, smoked, and canned products (8% of total volume). Table 2 shows the evolution of export volume (tons) for the Chilean salmon industry at the national level during 1990 through 1996. During this period, there was an average, annual change in total exports of approximately 33%. The related median for these changes in annual export volume is approximately 31%, indicating low variability and an increase in annual export volume at decreasing rates.

Table 3 shows the export value (thousand US\$, FOB) of Chilean salmon at national level (*i.e.*, including Regions X, XI, XII, and others) during 1990 through



**Table 2**  
Export Volume (Tons) of the Chilean Salmon Industry, 1990-96

SACH	Item	1990	1991	1992	1993	1994	1995	1996	Total
0301.91.10	Live trout for reproduction or farming	0	0	0	0	0	0	0	0
0301.91.90	Other live trout	0	0	0	0	0	0	0	0
0302.11.00	Fresh-refrigerated trout	419	144	96	53	38	42	377	1,168
0302.12.00	Fresh-refrigerated Pacific, Atlantic and Danube salmon	8,326	11,461	14,248	15,763	15,914	21,555	26,207	113,474
0302.19.00	Other fresh-refrigerated salmon	90	1	0	0	0	0	1	92
0303.10.00	Frozen Pacific salmon, excluding livers, roes, and "lechas"	9,978	13,350	17,644	17,710	23,427	34,176	40,625	156,909
0303.21.00	Frozen trout	3,556	5,306	10,652	15,736	20,889	16,949	27,575	100,663
0303.22.00	Frozen Atlantic and Danube salmon	921	1,479	3,886	4,480	3,655	3,907	3,335	21,663
0303.29.00	Other frozen salmonids	0	83	0	0	33	18	2	135
0304.10.50	Fresh-refrigerated salmon fillets and other salmon meats	212	430	1,284	3,044	5,851	9,768	17,441	38,030
0304.10.60	Fresh-refrigerated trout fillets and other salmon meats	45	2	70	131	525	321	631	1,726
0304.20.50	Frozen salmon fillets	25	208	938	2,248	2,625	4,582	6,249	16,876
0304.20.60	Frozen trout fillets	3	18	136	391	854	1,986	3,309	6,697
0304.90.50	Other frozen salmon meats	0	9	45	82	195	483	1,222	2,037
0304.90.60	Other frozen trout meats	0	0	2	7	132	273	1,227	1,641
0305.41.00	Smoked Pacific and Atlantic salmon	63	44	124	128	416	894	822	2,490
1604.11.0	Salmon pieces or whole, excluding chopped, canned, and other salmon prep.	116	101	122	182	380	450	450	1,800
1604.20.30	Canned salmon and other salmon prep.	67	49	164	148	292	104	38	862
<b>Total</b>		<b>23,819</b>	<b>32,686</b>	<b>49,411</b>	<b>60,103</b>	<b>75,224</b>	<b>95,509</b>	<b>129,512</b>	<b>466,263</b>

Source: Central Bank of Chile, 1990-96.

1996. During this period, there was an average, annual change of approximately 30% in FOB value of global exports (*i.e.*, total exports). The related median for these changes in annual export values is approximately 28.5%, also showing a low variability in annual values and an increase in export value at decreasing rates.

Imported items included in intermediate consumption of this industry are vaccines, medications, and salmon eggs. An analysis of import statistics shows that, as a whole, these inputs do not represent more than 2% of the industry's FOB export value in 1995.

On one hand, active components of vaccines and medications used in this industry are imported, but they are purchased predominantly on the national market. Therefore, for our purposes, they are considered national inputs.

On the other hand, analysis of fifty-three firms in the Chilean salmon industry in the Xth region during 1995 (representing approximately 90% of the industry's total export value), showed the existence of vertical integration between farming, processing, and marketing activities. In fact, 83% of the sampled firms were vertically integrated between farming and processing activities. These vertically integrated firms represent approximately 90% of the sample's export value. In turn, 64% of the sample firms were vertically integrated in processing and marketing activities, representing approximately 75% of the sampled export value. The above, along with the fact that Decree Law No. 18.480 establishes that the subject for reimbursement is the exporter, leads us to consider salmon eggs as an imported raw material, even though smolts are still considered national inputs (Ministry of Economics, 1985–96).

Table 4 shows STR rates for the period 1990 through 1996, which are used to estimate VAT reimbursements presented in table 5. Modifications instituted in 1990 implied an increase in the level of reimbursement available to the Chilean salmon industry. Nonetheless, the rapid growth of Chilean salmon exports simultaneously implied the exclusion of relevant industry commodities from STR benefits.

The brief review presented above leads to three main findings: (*i*) the main imported inputs represent less than 2% of export value, indicating that CTR may not be an attractive reimbursement mechanism; (*ii*) even though eligibility requirements to use STR and CTR require the clear distinction of export products and/or product lines for each shipment lot, available official statistics (cost structures at farm, processing, and marketing levels) only allows for the calculation of general average aggregated industry figures; and (*iii*) given the fact that STR was created as a mechanism to induce development of nontraditional export goods and services, the low variability and increasing tendency (at decreasing rates) in export volume and value, may be a sign that the industry should decrease its interest in this reimbursement mechanism.

Finally, based on the first and second findings, the CTR mechanism is not analyzed further in this paper. Also, a formal analysis of the potential subsidiary role played by STR would require calculating reimbursements obtained by the industry (from both STR and GTR mechanisms) on a product-by-product basis; calculating the positive difference (US\$) generated from using STR instead of GTR, and; weighting the importance of this difference in relation to net revenue (after tax reimbursement) generated by the industry. However, the second finding implies that it is only possible to perform average, aggregated industry reimbursement calculations based on an average cost structure. Therefore, estimates of STR are only rough, based on the relative importance of total intermediate consumption of products (national or imported). Therefore, any estimate of reimbursement differences generated from STR with respect to GTR will be inaccurate. At this time, it is best to analyze the gross, average importance of STR with respect to GTR and its evolution during the period 1990 through 1996. This analysis is presented below.

**Table 3**  
Export Value (Thousand US\$ FOB) of the Chilean Salmon Industry, 1990–96

SACH	Item	1990	1991	1992	1993	1994	1995	1996	Total
0301.91.10	Live trout for reproduction or farming	0	0	0	0	0	0	0	0
0301.91.90	Other live trout	0	0	0	0	0	0	0	0
0302.11.00	Fresh-refrigerated trout	1,666	609	375	200	128	263	1,359	4,600
0302.12.00	Fresh-refrigerated Pacific, Atlantic, and Danube salmon	46,349	57,968	67,198	69,615	64,450	85,908	96,596	488,083
0302.19.00	Other fresh-refrigerated salmon	434	7	0	0	0	0	3	444
0303.10.00	Frozen Pacific salmon, excluding livers, roes, and "lechas"	45,455	66,228	103,104	84,520	96,611	149,735	147,317	692,970
0303.21.00	Frozen trout	12,999	22,358	48,485	67,897	89,786	91,681	96,872	430,077
0303.22.00	Frozen Atlantic and Danube salmon	4,573	7,847	20,545	21,303	13,929	15,565	13,008	96,770
0303.29.00	Other frozen salmonids	0	327	0	0	0	0	11	338
0304.10.50	Fresh-refrigerated salmon fillets and other salmon meats	1,551	2,842	8,024	18,890	34,059	54,807	93,219	213,392
0304.10.60	Fresh-refrigerated trout fillets and other salmon meats	239	11	419	791	2,947	2,347	2,967	9,721
0304.20.50	Frozen salmon fillets	137	1,290	6,778	15,972	16,463	27,846	36,095	104,581
0304.20.60	Frozen trout fillets	25	81	859	3,032	7,452	21,595	22,737	55,780
0304.90.50	Other frozen salmon meats	3	43	247	306	4,355	5,570	5,771	16,295
0304.90.60	Other frozen trout meats	0	0	7	19	1,484	2,855	8,029	12,393
0305.41.00	Smoked Pacific and Atlantic salmon	897	734	1,857	1,822	5,181	8,763	8,466	27,720
1604.11.00	Salmon pieces or whole, excluding chopped, canned, and other salmon prep.	815	753	915	1,147	2,141	2,346	2,620	10,737
1604.20.30	Canned salmon and other salmon prep.	485	332	1,046	771	943	508	260	4,346
<b>Total</b>		<b>115,628</b>	<b>161,430</b>	<b>259,859</b>	<b>286,285</b>	<b>339,928</b>	<b>469,788</b>	<b>535,330</b>	<b>2,168,247</b>

Source: Central Bank of Chile, 1990–96.

**Table 4**  
Simplified Tax Reimbursement (STR) Rates (percent) for the Chilean Salmon Industry, 1990-96

Customs Category		Year <sup>1,2</sup>									
NAB	SACH	Item	1989	1990	1991	1992	1993	1994	1995	1996	
03.01.02.00	0301.91.10	Live trout for reproduction or farming	10	10	10	10	10	10	10	10	
03.01.02.00	0301.91.90	Other live trout	10	10	10	10	10	10	10	10	
03.01.01.06	0302.11.00	Fresh-refrigerated trout	10	10	10	10	10	10	10	10	
03.01.01.05	0302.12.00	Fresh-refrigerated Pacific, Atlantic, and Danube salmon	0	0	0	0	0	0	0	0	
03.01.01.05	0302.19.00	Other fresh-refrigerated salmon	0	0	10	10	10	10	10	10	
03.01.01.05	0303.10.00	Frozen Pacific salmon, excluding livers, roes, and "lechas"	0	0	0	0	0	0	0	0	
03.01.01.06	0303.21.00	Frozen trout	10	10	5	0	0	0	0	0	
03.01.01.05	0303.22.00	Frozen Atlantic and Danube salmon	0	0	10	10	0	0	0	0	
03.01.01.05	0303.29.00	Other frozen salmonids	0	0	10	10	10	10	10	10	
03.01.01.05	0304.10.50	Fresh-refrigerated salmon fillets and other salmon meats	0	0	10	10	10	0	0	0	
03.01.01.06	0304.10.60	Fresh-refrigerated trout fillets and other salmon meats	10	10	10	10	10	10	10	10	
03.01.01.05	0304.20.50	Frozen salmon fillets	0	0	10	10	10	3	3	0	
03.01.01.06	0304.20.60	Frozen trout fillets	10	10	10	10	10	10	10	3	
03.01.01.05	0304.90.50	Other frozen salmon meats	0	0	10	10	10	10	10	10	
03.01.01.06	0304.90.60	Other frozen trout meats	10	10	10	10	10	10	10	10	
03.01.01.05	0305.41.00	Smoked Pacific and Atlantic salmon	10	10	10	10	10	10	10	10	
16.04.03.00	1604.11.00	Salmon pieces or whole, excluding chopped, canned, and other salmon prep.	10	10	10	10	10	10	10	10	
16.04.03.00	1604.20.30	Canned salmon and other salmon prep.	10	10	10	10	10	10	10	10	

Note: Article 420 of Law No. 18,768 established January 10, 1990, the replacement of Armonized Brussels Catalogue used by the Chilean Custom Service, for that of the International Agreement on the Armonized System of Commodity Designation and Encoding.

<sup>1</sup> Publication numbers and dates of Supreme Decrees from the Chilean Ministry of Economy establishing total or partial exclusion from STR benefits are: No. 208, July 16, 1990; No. 102, May 11, 1991; No. 166, May 23, 1992; No. 131, April 19, 1993; No. 97, April 20, 1994; No. 130, April 27, 1995; No. 109, May 7, 1996; and No. 123, May 12, 1997.

<sup>2</sup> Law No. 19,024, published on December 31, 1990, changed the base year and increased the reference export volume for export exclusion from the STR. Additionally, this law established a 3%, 5%, and 10% reimbursement step system.

## VAT Reimbursement Estimates Under STR

The estimate of VAT reimbursement for the period 1990 through 1996 when applying STR, yields a probable, annual average industry reimbursement of approximately US\$3.5 million.

Table 5 shows the maximum amount of annual reimbursement (thousands of US\$) the industry could have applied for during the period 1990 through 1996. Comparison of these results with export values and volumes reveals that only 14% of the industry (in value) was eligible to use the STR mechanism and that only 10.3% of the industry (in volume) was eligible to use it (tables 2 and 3).

Table 5 also shows that the most relevant export commodities for STR use are, in order of importance: frozen trout fillets (0304.20.60); frozen salmon fillets (0304.20.50); fresh-refrigerated salmon meats (0304.10.50); frozen Atlantic and Danube salmon (0303.22.00); and smoked Pacific and Atlantic salmon (0305.41.00), representing 66% of the total reimbursed value during the period analyzed. These products represent only 23% of the total and average export value during 1990 through 1996. On the other hand, the industry's most important and traditional products, frozen Pacific salmon (0303.10.00), fresh-refrigerated Pacific, Atlantic, and Danube salmon (0302.12.00); and frozen trout (0303.21.00), representing 74% of industry export value during 1990 through 1996, accounted for only 10% of the estimated STR. Furthermore, of these products, only frozen trout was eligible for STR reimbursement.

Results also show that, even though annual changes in the total reimbursement amount have a high variability, on average, there has been an increasing tendency in the probable STR annually requested. This is reflected by an average increase of approximately 22% in annual, probable requested STR (table 5). Products with a higher contribution to this increase in requested STR are: other frozen trout meats (0304.90.60), frozen trout fillets (0304.20.20), fresh-refrigerated trout fillets and other meats (0304.10.60), and other frozen salmon meats (0304.90.50).

Notice that products with a higher contribution to estimated annual STR reimbursement have a per-unit weighted average gross value of 6.11 US\$/kg and, that products with a higher contribution to STR increase have a per-unit gross value of 7.56 US\$/kg. Also, the industry's most important and traditional products have a lower per-unit weighted average gross value, \$4.49/kg. These results indicate that nontraditional, higher-valued products (presumably with a high degree of value added) are those involved in STR use.

Table 6 shows the relative importance (percentage) of total intermediate consumption (national and imported) *vis-à-vis* the gross value of production, evaluated at "s" = 10% for the period 1990 through 1996. Results show that for 1992 and 1993, the STR mechanism should be preferred over GTR, since in those years, intermediate consumption represented less than 55.6% of total export value. For all other years in the period (1990, 1991, 1994, 1995, and 1996), the relative importance (percentage) of intermediate consumption was greater than 55.6% of FOB export value and, therefore, GTR was preferred over STR. An analysis of the average difference between the relative importance (percentage) of intermediate consumption and the decision limit (*i.e.*, 55.6%) shows that this is 1.1% for the period 1990 through 1996. This implies that, although exporters should use GTR, the marginal difference makes them indifferent. Therefore, actual use of STR should be based mostly on the grounds of its incentive nature to develop nontraditional export growth through lower transaction and/or financial costs, and not on additional reimbursement grounds (subsidies).

Table 7 shows the industry's gross revenue and cost structures, value-added net returns before tax reimbursement, estimated GTR and STR, and net revenue after

**Table 5**  
Maximum Value-added Tax (VAT) Reimbursement (thousand US\$) Probably  
Requested by the Chilean Salmon Industry Using STR Mechanisms, 1990-96

SACH	Item	1990	1991	1992	1993	1994	1995	1996	TOTAL
0302.11.00	Fresh or refrigerated trout	167	61	38	20	13	26	136	460
0302.12.00	Fresh-refrigerated Pacific, Atlantic, and Danube salmon	0	0	0	0	0	0	0	0
0302.19.00	Other fresh-refrigerated salmonids	0	1	0	0	0	0	0	1
0303.10.00	Frozen Pacific salmon, excluding livers, roes, and "lechas"	0	0	0	0	0	0	0	0
0303.21.00	Frozen trout	1,300	1,118	0	0	0	0	0	2,418
0303.22.00	Frozen Atlantic and Danube salmon	0	785	2,055	0	0	0	0	2,839
0303.29.00	Other frozen salmonids	0	33	0	0	0	0	1	34
0304.10.50	Filletts and other salmon meats, fresh-refrigerated	0	284	802	1,889	0	0	0	2,976
0304.10.60	Filletts and other trout meats, fresh-refrigerated	24	1	42	79	295	235	297	972
0304.20.50	Frozen salmon filletts	0	129	678	1,597	494	835	0	3,733
0304.20.60	Frozen trout filletts	3	8	86	303	745	2,159	682	3,986
0304.90.50	Other frozen salmon meats	0	4	25	31	435	557	577	1,629
0304.90.60	Other frozen trout meats	0	0	1	2	148	285	803	1,239
0305.41.00	Smoked Pacific and Atlantic salmon	90	73	186	182	518	876	847	2,772
1604.11.00	Salmon pieces or whole, excluding chopped, canned, and other salmon preparations	82	75	92	115	214	235	262	1,074
1604.20.30	Canned salmon and other salmon prep.	49	33	105	77	94	51	26	435
<b>Total</b>		<b>1,713</b>	<b>2,606</b>	<b>4,107</b>	<b>4,295</b>	<b>2,957</b>	<b>5,260</b>	<b>3,631</b>	<b>24,568</b>

Source: Chilean Ministry of Economics, various years.

**Table 6**  
Relative Importance (percentage) of Intermediate Consumption  
With Respect to FOB Gross Value of Production, 1990–96

	1990	1991	1992	1993	1994	1995	1996
Intermediate consumption subject to VAT (thousand US\$)	61,280	76,438	113,897	126,628	172,518	266,366	292,821
Gross value of production (thousand US\$ FOB)	100,993	134,743	226,939	243,833	300,737	457,563	503,008
Percentage	60.68	56.73	50.19	51.93	57.37	58.21	58.21

Note: Proportion of intermediate consumption is evaluated at  $s = 10\%$ .

tax reimbursement, for the period 1990–96. The structure of table 7 does not imply that exporters may simultaneously apply for both the GTR and STR mechanisms on a particular shipment lot at a given point in time. It only reflects the potential weight or proportion, at the industry level, that both reimbursement mechanisms may have on industry revenues.

Although STR estimates show that probable reimbursement requests have increased in nominal terms, their relative importance has declined from 20% of total reimbursement (STR plus GTR) in 1991, to only a 6% in 1996. It also shows that the relative importance of STR with respect to the industry's net revenue (after tax reimbursement) may have declined from approximately 9% in 1991, to only 2.7% in 1996. These results show a tendency for an increasingly lower incidence of probable STR requested on the industry's net revenues.

Table 7 also shows that the relative importance of probable GTR requested has increased from 80% in 1991, to 94% in 1996. The incidence of GTR on the industry's net revenues, however, has not increased. In fact, after experiencing a tendency to decrease from 47% (1990) to 18% (1992), it recovered its original relative importance in 1996 (44%).

In summary, in spite of the nominal increase in both total and STR reimbursement during the period analyzed, the relative importance of the later has clearly decreased. This may be an indication that this mechanism is not that attractive as an additional source of income, but as an incentive to facilitate the development of nontraditional products.

## Conclusions

Regarding our objective to determine whether special drawback mechanisms used in Chile play a subsidiary role or not, findings regarding the Chilean salmon industry seem to indicate that this would not be the case—at least when comparing and analyzing weighted average results at industry level (tables 5, 6, and 7).

First, the relatively low importance of the industry's imported inputs (vaccines, medications, and salmon eggs), especially when considering that some of them (vaccines and medications) may actually be considered national inputs, led us to dismiss CTR as an attractive mechanism for the salmon industry.

**Table 7**  
**Industry Average Weighted Revenue, Costs, and VAT Reimbursement for the Chilean Salmon Industry in the Xth Region (thousand US\$)**

	1990	1991	1992	1993	1994	1995	1996
Average FOB gross revenue	100,993	134,743	226,939	243,833	300,737	457,563	503,008
Cost of services and intermediate goods received in processing (CSIG)	57,272	70,978	109,547	120,044	165,425	251,160	276,105
Raw material (salmonids)	50,400	62,461	96,401	105,639	145,574	221,021	242,973
Cost of inputs (water, fuel, packing, etc.)	6,873	8,517	13,146	14,405	19,851	30,139	33,133
Cost of electricity	817	974	1,160	1,913	2,676	5,052	5,554
Cost of indirect services rendered by third parties (CSTP)	5,690	8,427	9,226	12,101	19,346	27,071	29,760
Financial costs	7,243	9,673	6,907	7,122	12,032	26,460	29,088
Total intermediate consumption in processing <sup>1</sup>	71,022	90,051	126,840	141,181	199,479	309,743	340,506
Added value in processing	29,971	44,692	100,099	102,652	101,258	147,820	162,502
Labor & salaries	12,348	16,035	25,005	28,337	39,352	63,613	69,932
Depreciation	5,148	5,625	7,995	8,154	12,216	19,011	20,899
Taxes	4,951	3,004	4,709	5,137	6,558	10,437	11,474
Net Revenue before tax reimbursement (US\$/kg)	7,524	20,028	62,391	61,025	43,132	54,759	60,197
GTR (D.L. No. 825 and D.S. No. 348)	7,969	8,963	14,659	17,668	25,283	39,437	50,251
STR (Law No. 18,480) <sup>2</sup>	1,560	2,240	3,523	3,620	2,473	4,487	3,090
Net Revenue	17,053	31,231	80,573	82,312	70,887	98,683	113,538

Source: INE and Fisheries Statistics (SERNAPESCA).

<sup>1</sup> Difference in intermediate consumption presented here and in table 6 arises only on an accounting basis. In fact, cost of raw material presented here (salmonids) includes costs that are not subject to VAT (*e.g.*, labor and salaries, depreciation, *etc.*) at the farm level. Nonetheless, estimates on net revenues before tax reimbursement are not affected by this breakdown.

<sup>2</sup> These figures are lower than the ones presented in table 5 because they represent reimbursements for the salmon industry located in the Xth region—not at the national level.



Second, the industry's importance of intermediate consumption with respect to gross revenue (table 6) indicates a marginal preference for the use of the GTR mechanism instead of STR. In turn, table 5 shows that although probable STR requested is increasing in nominal terms, this increase is mostly represented by non-traditional products. Thus, results from tables 5 and 6 seem to indicate the industry's use of STR as an incentive to increase growth in the export of nontraditional products, rather than to gain additional income (subsidiary role). Table 7 also shows that the relative importance of STR with respect to net revenues (after tax reimbursement) is decreasing. This may be explained by the fact that as the industry reaches maturity, the bulk of its export value is made up of the three most traditional products, which have a very low incidence of STR reimbursement (only 10%). Thus, although nontraditional exports are increasing in terms of volume and total value, their relative importance is decreasing. On the other hand, as the export of nontraditional products increases in total value, they may no longer be eligible for the STR mechanism. Therefore, this also indicates that the salmon industry may not be using STR on subsidiary grounds.

Finally, it is necessary to stress that results reported herein are a first approximation to this issue. Given the weighted average characteristics of official statistics on actual industry VAT reimbursement, as well as the industry's actual cost structure for different products, it may be necessary to conduct future analysis on a product-by-product basis in order to determine whether or not special drawback mechanisms may or may not have a subsidiary role on certain products.

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