Chapter 3
Estimates of Historic Net Economic Returns

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3.0 Introduction

The purpose of this chapter is to provide estimates of how average net economic returns in the Bristol Bay salmon drift gillnet fishery have varied historically as harvests, ex-vessel prices, gross earnings, and the numbers of permits fished have varied. The first optimum number standard in Alaska's limited entry law (AS 16.43.290(1)) seeks the number of entry permits sufficient to maintain an economically healthy fishery. The standard reads as follows:

> *(1) the number of entry permits sufficient to maintain an economically healthy fishery that will result in a reasonable average rate of economic return to the fishermen participating in that fishery, considering time fished and necessary investments in vessel and gear.*

"Economically healthy fishery" is defined in AS 16.43.990(2) as follows:

> *(2) "economically healthy fishery" means a fishery that yields a sufficient rate of economic return to the fishermen participating in it to provide for, among other things, the following:*
>
> > *(A) maintenance of vessels and gear in satisfactory and safe operating condition; and*
> >
> > *(B) ability and opportunity to improve vessels, gear and fishing techniques, including, when permissible, experimentation with new vessels, new gear, and new techniques.*

This chapter provides estimates on how average rates of economic return have varied in the fishery over the 1983 to 2003 time period.

3.1 The Evidence of Permit Values

The market value of a limited entry permit theoretically represents the present value of the future expected economic profit stream to the marginal fishermen from the fishery, where the economic profit stream is defined to *exclude* the opportunity cost of the permit. As such, the permit's value should provide direct market evidence of the anticipated future profitability of a fishery, and the rise and fall of permit values should reflect changing expectations about the future.[1]

[1] It is possible that some fishermen would also value the "psychic income" from participating in the fishery and would be willing to pay more for the permit for the satisfaction of participating in the fishery.

In a certain world, fishermen would be able to precisely measure what a permit was worth to them. A fisherman would purchase (or continue to hold a permit) or would sell an entry permit depending upon whether the market price of the permit was below or above their personal valuation. The market price would be determined by the interaction of these individual valuations.

However, in the real world the future is always uncertain. This is true in the Bristol Bay salmon drift gillnet fishery where ex-vessel prices and average harvests can vary greatly over time. Table 3.1.a provides data on how estimated permit values have changed over time as average pounds per permit, ex-vessel sockeye prices, and average gross earnings per permit have changed. Chart 3.1.a provides some similar data in graphical form. Note that the dollar-denominated variables in Table 3.1.a and Chart 3.1.a are measured in the "nominal" dollars of the respective year, as opposed to "constant-value" or "real" dollars.[2]

Expectations of future gross and net earnings in the fishery are likely related to expectations of salmon run size, ex-vessel prices, and the number of permit holders who will participate. The data in the table reflect a generally positive association between the permit's market value and average gross earnings over time. This is likely due to the fact that average gross earnings and average economic profits are positively related.

However, the contemporaneous relationships are far from exact due to uncertainty about the future and constantly changing expectations about harvests and ex-vessel prices. Individual expectations are likely impacted by each additional year of experience in the fishery, as well as by sundry forecasts for the future.

Table 3.1.a provides time series data on permits fished, average pounds per permit, estimated average sockeye price, estimated average gross earnings per permit, and estimated permit market value for the years 1975 through 2003. The table demonstrates that average gross earnings per permit are impacted by both average pounds harvested per permit and average ex-vessel prices.[3] Years of high average pounds per permit have sometimes been partially offset by lower Bristol Bay sockeye ex-vessel prices, whereas years of low average pounds per permit have sometimes been partially offset by higher sockeye ex-vessel prices.

Table 3.1.a also shows the variation in the fishery performance since it was first limited in 1975. The 1975 through 1977 period had relatively low total harvests, low numbers of permits fished, and low average pounds per permit. Average pounds per permit fished were less than 50,000 pounds in all three years. However, harvests and fishery conditions began to improve substantially in the late 1970's.

[2] In this report, "nominal" will refer to the actual dollars in the year in question. Because of general price inflation, nominal dollars from different years may represent different amounts of purchasing power. "Real" dollars in this report will refer to a constant-value dollar with respect to purchasing power. Real dollars are dollars that have been corrected for inflation.

[3] Note that all species harvested are included in average pounds per permit but the ex-vessel price per pound shown is for sockeye salmon only. The average gross earnings per permit include earnings from all species harvested.

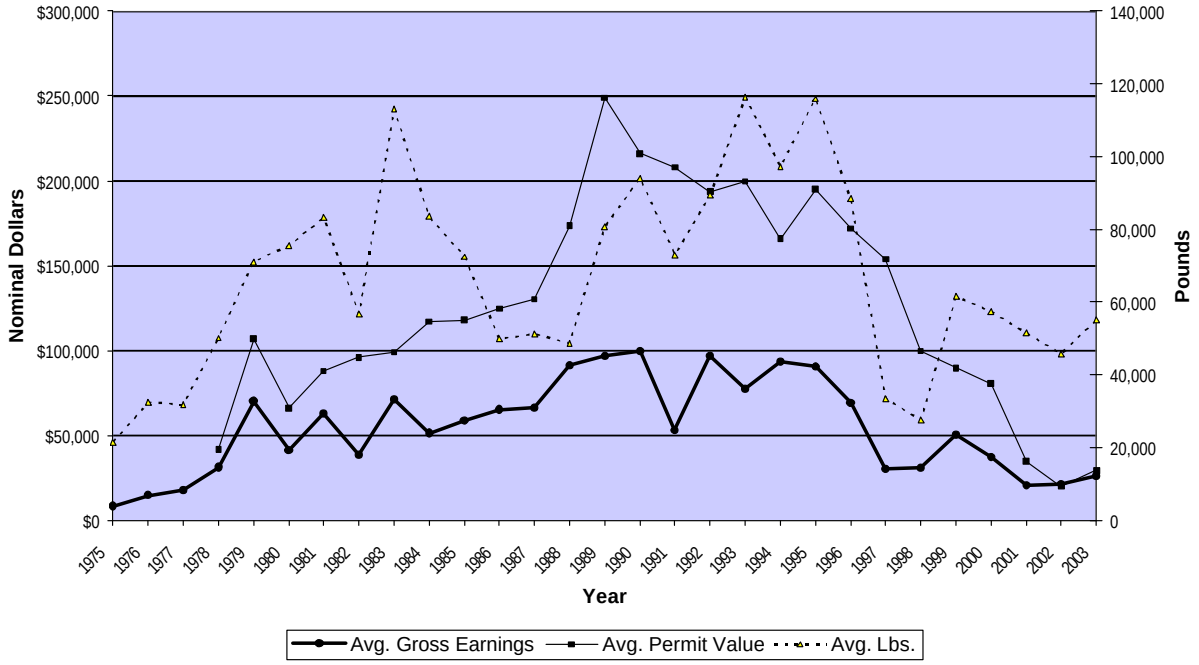
Over the 26 years from 1978 through 2003, average pounds per permit fished exceeded 50,000 pounds in all years except 1986, 1988, 1997, 1998, and 2002. Average pounds per permit fished exceeded 100,000 pounds in 1983, 1993, and 1995.

Table 3.1.a. Bristol Bay Salmon Drift Gillnet Fishery, 1975-2003: Permits Fished, Average Pounds, Average Sockeye Price, Average Gross Earnings, and Average Permit Value (nominal dollars for each year)

Year	No. of Permits Fished	Average Pounds Per Permit	Est. Avg. Sockeye Price	Est. Avg. Gross Earnings Per Permit	Est. Permit Market Value
1975	1,249	21,501	$ 0.40	$ 8,430	n.a.
1976	1,356	32,456	$ 0.50	$ 14,642	n.a.
1977	1,359	31,779	$ 0.60	$ 17,703	n.a.
1978	1,575	50,090	$ 0.73	$ 31,227	$ 41,867
1979	1,714	71,010	$ 1.01	$ 70,126	$ 106,875
1980	1,764	75,464	$ 0.57	$ 41,147	$ 66,140
1981	1,785	83,216	$ 0.77	$ 63,018	$ 87,820
1982	1,792	56,681	$ 0.69	$ 38,546	$ 95,936
1983	1,797	113,001	$ 0.64	$ 71,012	$ 98,923
1984	1,804	83,564	$ 0.66	$ 51,418	$ 116,905
1985	1,815	72,463	$ 0.83	$ 58,785	$ 117,983
1986	1,823	49,832	$ 1.42	$ 65,238	$ 124,605
1987	1,824	51,242	$ 1.40	$ 65,990	$ 130,137
1988	1,837	48,647	$ 2.10	$ 91,150	$ 173,406
1989	1,855	80,573	$ 1.25	$ 96,747	$ 248,802
1990	1,869	94,070	$ 1.09	$ 99,564	$ 216,033
1991	1,873	73,026	$ 0.75	$ 52,979	$ 207,800
1992	1,879	89,362	$ 1.12	$ 96,976	$ 193,500
1993	1,875	116,342	$ 0.68	$ 77,534	$ 199,600
1994	1,865	97,168	$ 0.99	$ 93,591	$ 165,700
1995	1,882	115,835	$ 0.80	$ 90,345	$ 195,000
1996	1,884	88,440	$ 0.81	$ 69,327	$ 171,800
1997	1,875	33,380	$ 0.94	$ 30,235	$ 153,800
1998	1,858	27,431	$ 1.21	$ 30,787	$ 99,500
1999	1,847	61,480	$ 0.84	$ 50,296	$ 89,700
2000	1,823	57,408	$ 0.67	$ 37,527	$ 80,500
2001	1,566	51,491	$ 0.42	$ 20,699	$ 34,700
2002	1,184	45,751	$ 0.49	$ 21,482	$ 19,700
2003	1,424	55,099	$ 0.50	$ 25,989	$ 29,300

Notes: Most of these data, except estimates of permit values, are derived from CFEC gross earnings files.
Average pounds per permit include landings of all species on the permit.
Estimates of average sockeye price per pound are provided in each year because sockeye salmon is the predominant species caught in the fishery.
Estimates of average sockeye price per pound, average gross earnings per permit, and average permit market value are in nominal dollars of the respective year - not in "constant-value" or "real" dollars.

Chart 3.1a
Bristol Bay Salmon Drift Gill Net Fishery, 1975-2003:
Average Gross Earnings per Permit, Average Permit Value, and Average Lbs. per Permit
$ Estimates are in Nominal Dollars



The highest nominal ex-vessel price for sockeye over the 1975 through 2003 time period was $2.10 per pound in 1988. This was a year when the average pounds per permit were less than 50,000 pounds. From 2001 to 2003, nominal sockeye ex-vessel prices were as low as they had been since 1975 and 1976. In "constant-value" or "real dollars" the 2001 average ex-vessel price was the lowest over the entire time period (Table 3.1.b, below.) The low prices from 2001 to 2003 occurred even though harvests were relatively small. The recent decline in sockeye ex-vessel prices is due in part to the tremendous growth of farmed salmon production, which competes directly and indirectly with Bristol Bay sockeye products.[4]

Average nominal gross earnings per permit tended to rise over the 1980's, reaching a peak of $99,564 per permit in 1990. From 1990 though 1996, average gross earnings per permit stayed relatively robust and exceeded $50,000 per permit in all years. Beginning in 1997, conditions deteriorated and gross earnings per permit fell well below $50,000 in all years except 1999. The $20,699 average nominal gross earnings per permit in 2001 was the lowest seen since the mid-1970's and in real terms it was the lowest seen over the entire 1975 through 2003 time period (Table 3.1.b.) As can be seen, the poor average gross earnings per permit fished in 2001 through 2003 occurred despite a dramatic decline in the number of permits fished.

[4] See Knapp, Gunnar. *Projections of Future Bristol Bay Salmon Prices.* Anchorage: Institute of Social and Economic Research, University of Alaska Anchorage, (forthcoming, 2004).

As noted previously, the permit market value at any point in time should be a good estimate of the present value of the future expected profit stream to a marginal permit holder. Expectations about the future are changing constantly based upon past experience, current experience, and future forecasts. Changes in harvests and ex-vessel values can each have an impact on future expectations.

The data in Table 3.1.a indicate that nominal market values of Bristol Bay salmon drift gillnet permits tended to rise throughout the 1980's before peaking in 1989 at $248,802.[5] Permit market values then tended to decline slowly in the 1990's before beginning to drop sharply in 1997. A precipitous drop occurred in 2001, and by 2002 the estimated average market value of an entry permit had fallen to $19,700. In 2003, estimated average permit values recovered slightly to $29,300. This dramatic decline has impacted many permit holders who purchased their permit in the late 1980's and early to mid-1990's. Some of these persons may now owe more for their permit than it is worth.

Table 3.1.b provides similar data on the Bristol Bay salmon drift gillnet fishery. However, all dollars have been converted to constant-value or "real" 2003 dollars.[6] As can be seen, even with the conversion the pattern is somewhat similar. The peak in the estimated permit value measured in real 2003 dollars also occurred in 1989. However, conversion to constant-value dollars also puts the recent years of the fishery into perspective. In real terms, the 2001, 2002, and 2003 average ex-vessel sockeye prices were the lowest prices over the entire 1975-2003 period, and the estimated average gross earnings in 2001 and 2002 were also the lowest over the time period - even lower than in 1975. The dramatic decline in the estimated market value of the permit shows that expectations of future profitability have declined sharply.

Chart 3.1.b provides some of the data from Table 3.1.b in graphical form. The changes in real permit values that occurred over the time period follow a somewhat similar pattern to the changes in average gross earnings per permit. Again, the decline in permit values likely reflects a decline in expectations about the future profitability of the fishery.

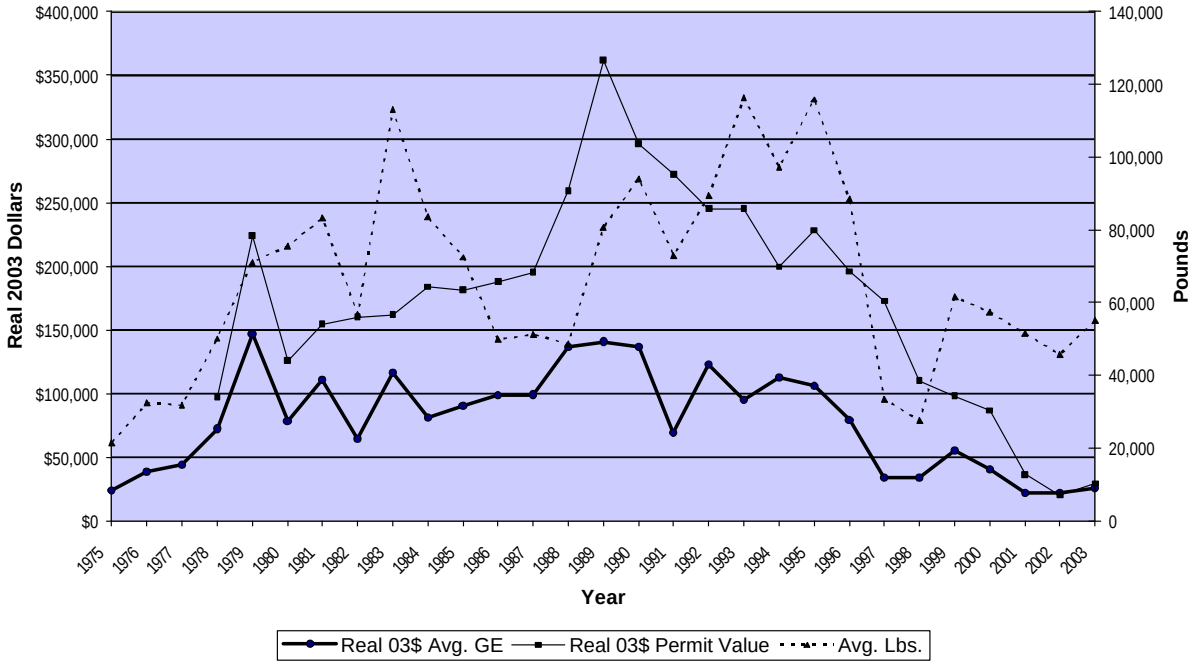
[5] Estimates of average permit values herein come from data collected on CFEC's permit transfer survey.
[6] This conversion to "real" 2003 dollars was done using the Anchorage Consumer Price Index. If a different index had been used for the conversion, the estimates of real, "inflation adjusted," or "constant-value," dollars would have been slightly different.

Table 3.1.b. Bristol Bay Salmon Drift Gillnet Fishery, 1975-2003: Permits Fished, Average Pounds, Average Sockeye Price, Average Gross Earnings, and Average Permit Value (dollars are constant-value, "real 2003" dollars for each year)

Year	No. of Permits Fished	Average Pounds Per Permit	Real 2003 Est. Avg. Sockeye Price	Real 2003 Est. Avg. Gross Earnings Per Permit	Real 2003 Est. Permit Market Value
1975	1,249	21,501	$ 1.14	$ 23,992	n.a.
1976	1,356	32,456	$ 1.32	$ 38,689	n.a.
1977	1,359	31,779	$ 1.49	$ 43,853	n.a.
1978	1,575	50,090	$ 1.69	$ 72,285	$ 96,914
1979	1,714	71,010	$ 2.12	$ 146,850	$ 223,804
1980	1,764	75,464	$ 1.08	$ 78,204	$ 125,705
1981	1,785	83,216	$ 1.35	$ 110,827	$ 154,445
1982	1,792	56,681	$ 1.14	$ 64,310	$ 160,057
1983	1,797	113,001	$ 1.05	$ 116,325	$ 162,046
1984	1,804	83,564	$ 1.04	$ 80,884	$ 183,902
1985	1,815	72,463	$ 1.28	$ 90,289	$ 181,212
1986	1,823	49,832	$ 2.15	$ 98,341	$ 187,832
1987	1,824	51,242	$ 2.10	$ 99,107	$ 195,446
1988	1,837	48,647	$ 3.15	$ 136,390	$ 259,470
1989	1,855	80,573	$ 1.82	$ 140,747	$ 361,955
1990	1,869	94,070	$ 1.50	$ 136,418	$ 295,998
1991	1,873	73,026	$ 0.99	$ 69,429	$ 272,319
1992	1,879	89,362	$ 1.42	$ 122,921	$ 245,271
1993	1,875	116,342	$ 0.83	$ 95,304	$ 245,348
1994	1,865	97,168	$ 1.20	$ 112,656	$ 199,454
1995	1,882	115,835	$ 0.93	$ 105,695	$ 228,132
1996	1,884	88,440	$ 0.92	$ 78,946	$ 195,638
1997	1,875	33,380	$ 1.05	$ 33,931	$ 172,600
1998	1,858	27,431	$ 1.34	$ 34,057	$ 110,066
1999	1,847	61,480	$ 0.92	$ 55,074	$ 98,223
2000	1,823	57,408	$ 0.72	$ 40,412	$ 86,688
2001	1,566	51,491	$ 0.44	$ 21,673	$ 36,332
2002	1,184	45,751	$ 0.50	$ 22,066	$ 20,235
2003	1,424	55,099	$ 0.50	$ 25,989	$ 29,300

Notes: Most of these data, except estimates of permit values, are derived from CFEC gross earnings files.
Average pounds per permit include landings of all species on the permit.
Estimates of average sockeye price per pound are provided in each year because sockeye salmon is the predominant species caught in the fishery.
The dollars in this table have been converted to a constant-value or "real" 2003 dollar using the Anchorage Consumer Price Index. Use of a different price index could have resulted in slightly different estimates of real 2003 dollars.

Chart 3.1.b.
Bristol Bay Salmon Drift Gill Net Fishery, 1975-2003:
Average Gross Earnings per Permit, Average Permit Value, and Average Pounds per Permit
$ Estimates in Real 2003 (Constant-Value) Dollars



3.2 Estimates of Net Economic Returns

This section provides estimates of historical average net economic returns in the Bristol Bay salmon drift gillnet fishery over the 1983 through 2003 time period. An objective of optimum number Standard One in Alaska's Limited Entry Law is a reasonable average rate of economic return to the fishermen, considering time fished and necessary investments in vessels and gear.[7] The purpose of this section is to provide estimates of how average net economic returns in the fishery have varied historically as harvests, ex-vessel prices, gross earnings, and the number of permits fished has changed.

Estimates of net economic returns require estimates of gross earnings (i.e., gross receipts or gross returns), costs, and value of investments. CFEC routinely calculates estimates of ex-vessel gross earnings on an annual basis. However, data on harvesting costs and investments in vessels and gear are not systematically collected.

In 2002, CFEC conducted a survey of permit holders in the Bristol Bay salmon drift gillnet fishery. While the survey had multiple purposes, a key objective was to obtain data from

[7] See AS 16.43.290 (1).

respondents on their costs, gross earnings, and investments in fishing vessels, which would allow the commission to make estimates of historical rates of net economic return.[8]

Permit holders in the sample were asked to provide data for two years. The first year was the most recent year they had participated in the fishery; the second year was the earliest year they had participated for which they still had accurate cost and investment information. Since approximately 8% of the entry permits in the fishery are permanently transferred each year, the commission hoped to obtain data on fishing operations from multiple years using this procedure.

Since it was anticipated it would be more difficult for the respondents to provide data from the more distant past, and therefore the data might be less accurate, respondents were asked to provide information no earlier than 1983. The survey successfully obtained observations on costs and earnings for all years over the 1983 through 2001 time period.[9]

Identification codes on the survey allowed the authors to link the survey data with other CFEC data for each fishing operation. In particular, data on vessel attributes, permit holders' attributes, harvests, gross earnings, and effort measures could be compiled from the CFEC vessel license, permit, and gross earnings files.[10] These ancillary data were then used as explanatory variables in models developed to estimate costs for each operation.[11] The estimates of average costs and net returns in this chapter are based upon the models developed from these data.

3.3 Measures of Net Returns Used in the Study

There are several different measures of net economic returns that could be defined, all of which involve subtracting different costs from gross earnings.[12] Two measures of net economic returns will be used in this report. The first measure is "returns to labor, management, and investment." The second measure is "economic profits."[13] These two measures are defined in the following sections.

[8] Details on the survey methodology, the survey instrument, the sample, the response rate, and a summary of survey results can be found in two CFEC reports; see: (1) Stefanie Carlson, *2002 Survey of Bristol Bay Salmon Drift Gillnet Permit Holders: Preliminary Summary of Responses.* CFEC Report No. 02-4C, Juneau: Alaska Commercial Fisheries Entry Commission (2002); and (2) Carlson, S and K. Schelle: *2002 Survey of Bristol Bay Salmon Drift Gillnet Permit Holders: A Review of Survey Methodology and Implementation Procedures.* CFEC Report No. 02-5C. Juneau: Alaska Commercial Fisheries Entry Commission (2002).

[9] A few respondents provided data for years prior to 1983; however, the authors confined projections of net returns to the 1983-2003 timeframe.

[10] CFEC gross earnings files contain ADFG fish ticket observations, IPHC fish ticket observations, and additional data derived from other CFEC licensing files.

[11] Costs and net returns were estimated for each permit fished in each year. Because some permits were fished by more than one person in a year, or were used on multiple vessels in a year, the data used to estimate the models was confined to surveys that matched to permits that had only one person and one vessel involved during the year. The vast majority of permits were used in these single individual – single vessel (SISV) operations. The authors felt that SISV operations tended to provide the most reliable data.

[12] In this report, gross earnings refer to the gross revenues received from the sale of the fish at the ex-vessel level.

[13] These definitions for the measures used in this report follow closely those used by Dr. Frederick J. Smith in the *Fisherman's Business Guide*, Chapter 5, pages 32-41. See Smith, Frederick J. *The Fisherman's Business Guide*. International Marine Publishing Company, Camden, Maine (1975).

3.4 Returns to Labor, Management, and Investment

Returns to labor, management, and investment are calculated by subtracting payments for variable and fixed costs and an estimate for the vessel depreciation expense from gross earnings. Returns to labor, management, and investment do not include deductions for interest on loans to purchase fishing capital, or costs associated with the opportunity cost of the investment in fishing capital, or the opportunity cost associated with the permit holder's time.

Variable costs are expenditures that vary with the amount of fishing effort, while fixed costs do not vary with effort. In reality, many costs do not fit entirely into one classification or another, because they have both variable and fixed components. For example, some maintenance and repairs expenses would occur irrespective of how much a vessel is used, while other maintenance and repair costs are positively related to the amount of use the vessel receives.

The expenses listed under variable expenses and fixed expenses in Table 3.2.a include categories of expenses used in the 2002 survey. The costs in Table 3.2.a are measured in "nominal" dollars of the year they were incurred.

Costs classified as generally variable expenses include food, crew shares (excluding the skipper), fuel, maintenance and repairs, gillnets, miscellaneous gear, and fish taxes paid to cities, boroughs, and the Alaska Seafood Marketing Institute. Of these, fish taxes were estimated from auxiliary sources, while all other estimates are based upon models developed from a data set that combined survey information with ancillary data on the operation.

Costs classified as generally fixed expenses include transportation, moorage and storage, insurance, administrative costs, permit fees, vessel license fees, property taxes, and depreciation. The permit fees and vessel license fees were derived exclusively from CFEC administrative data.[14]

3.5 Profits

The profit measure used in this study is calculated by subtracting two other costs: the opportunity cost of the skipper's time during the fishery, and the opportunity cost of the investment in vessel and equipment.[15] These costs are in addition to those used to calculate returns to labor, management, and investment. This profit measure is intended to represent a reasonable approximation of the economic profits resulting from the operation. It is also the net return measure that best meets the legislative direction for optimum number Standard

[14] The majority of Bristol Bay vessels were used exclusively in the Bristol Bay salmon drift gillnet fishery. If a vessel was used in multiple fisheries, some costs were prorated to the Bristol Bay fishery. These included vessel license fees, depreciation, and the opportunity cost of the investment in the vessel. The allocation of cost to the Bristol Bay fishery was determined by the ratio of the vessel's gross earnings in the Bristol Bay salmon drift gillnet fishery to the vessel's total gross earnings in all fisheries. Most of the cost data obtained from the CFEC survey were specific to the Bristol Bay fishery and did not need to be prorated.

[15] Use of this definition of profits can be found in *Maine Sea Grant Information Leaflet 8;* Cooperative Extension Service – Maine Sea Grant Project, March 1975, by Dr. Frederick J. Smith.

One to consider "time fished and necessary investments in vessel and gear" in determining a reasonable average rate of economic return for participants.

The opportunity cost of a skipper's time is a measure of the earnings a permit holder gives up during the time that s/he is working in order to participate in the Bristol Bay salmon drift gillnet fishery. CFEC's survey collected data on the combined total amount of time the permit holder spent preparing for the fishery; it also collected information on the actual time they spent in the fishery, and the time associated with storing and maintaining their vessel and gear after the season. In addition, the survey collected information on the income foregone by permit holders by their participation in the fishery.[16] Measures of the opportunity cost of time derived from survey responses were used to model the opportunity cost of a permit holder's time as a function of their residency and the number of weeks the permit holder recorded landings during the fishery.[17] This skipper opportunity cost model was used to generate the estimates shown in the table.

The opportunity cost of a vessel (as equipped) is a measure of an annual fixed cost resulting from the investment in the vessel used in the fishery. These are foregone earnings resulting from keeping money tied up in the vessel. A way to interpret this measure is: "If someone sold their vessel and invested the proceeds in something else, what could they earn in a year from their best alternative investment?" For this study, to estimate the opportunity cost of the investment in a vessel, the authors first estimated the value of a vessel in a year using an econometric model, then multiplied that estimate by the average prime interest rate in the year. Prime interest rate was chosen as an interest rate for an investment in a comparable risk category.[18] The opportunity costs were then apportioned to the Bristol Bay salmon drift gillnet fishing operation based on the percentage of the vessel's gross earnings that were derived from the fishery.[19]

It should be noted that the profit measure used in this study is not the same as the profit calculation that would be used for income tax purposes. The definition used herein abstracts from business debt, equity position, and interest payments, and instead substitutes a measure for the opportunity cost for the investment in vessel and gear used in the fishing operation. An additional amount is also subtracted for the opportunity cost of the skipper's labor and management. The authors feel the profit definition used herein is a measure of net returns that provides a better comparison across years and across fishing operations.

[16] Survey data indicated that the vast majority of permit holders were the vessel owner and the skipper of the operation. However, other situations existed where the permit holder did not own the vessel and/or where the permit holder was not the skipper of the operation. Moreover, some permits had multiple holders during the year and some permits were used on multiple vessels during the year. To simplify these complexities, the estimates herein treat all operations as if they were standard operations where the permit holder was the vessel owner and the skipper of the operation. This procedure again allowed for a more uniform comparison of operations.

[17] These skipper opportunity cost estimates were based upon 2001 data. For other years, estimates were put into the nominal dollars of the year using the ratio of the average Anchorage CPI index in the year, divided by the Anchorage CPI index in 2001. Other price indices would result in slightly different results.

[18] Prime could be an underestimate of the actual risk class of an average fishing loan. Prime is the lowest rate that a commercial bank will loan to its best customers. Many fishing operations may be in a higher risk class and any loans to such operations would be issued at a higher rate than prime.

[19] CFEC data indicate that many of the vessels are used exclusively in the Bristol Bay salmon drift gillnet fishery. Apportionments of the vessel's opportunity costs were somewhat more complicated when multiple permit holders used a single vessel during a year, and when a person used multiple vessels during a year. The authors note that there is no theoretically correct way to apportion fixed costs.

3.6 Payments Excluded from Net Return Measures

The two definitions of net returns used in this study are: a) returns to labor, management, and investment, and b) economic profits. These measures have been defined above.

Neither of these measures includes payments of principle and interest on vessel loans. The repayment of principle on a loan is not normally considered a cost for any net return measure. It represents the return of something borrowed. While principle payments can impact cash flow, balance sheets, and management decisions, such payments are not normally considered a cost.

Interest on the loan is considered a cost. It represents the rent paid for someone else's capital. Interest payments are included in some measures of net returns, but are not included in the two measures used in this study. Instead, an estimate of the opportunity cost of the investment in the vessel is deducted as a cost (as opposed to interest payments on fishing loans) in the definition of profits used herein.

CFEC's survey of Bristol Bay salmon drift gillnet permit holders in 2002 attempted to gather information on principle and interest payments on vessel loans, so additional measures of net returns that deduct interest payments could be calculated. However, the data collected on the survey were considered to be inadequate for projections of interest payments to all operations. Thus, this study relies on the measures of net returns defined herein, which do not include interest payments. Again, the authors feel that the measures used herein are more suitable for comparisons across years and across fishing operations.

For example, consider three identical operations that differ only in when the vessel was purchased. Assume that these operations are using identical vessels: they are expending the same amount of effort, harvesting the same number and mix of fish, obtaining the same gross earnings from fish sales, and absorbing identical costs. The only difference among the operations is when the vessel was purchased and where the operations are with respect to their loan repayment schedules.

Operation 1 has completely finished paying off a vessel loan and has no further interest payments. Operation 2 has recently purchased the vessel, and the current payment on the vessel loan is largely an interest payment. Operation 3 is in the middle of the repayment schedule on a vessel loan, and the current payment is a mix of principle and interest.

If a net return measure was used that subtracted vessel loan interest payments, then these three identical operations would appear to have different net returns. Using the net return measures adopted for this study, these three operations will have identical returns to labor, management, and investment, and identical profits.[20]

Finally, the opportunity cost of the entry permit has not been included in the net return measures used in this study. In theory, the market value of an entry permit should reflect the

[20] For tax purposes these vessels could also have different deductions for depreciation. The method of calculating depreciation herein provides an identical estimate of depreciation expense for each of the identical vessels.

perceived present value of the future net returns (profits) from the fishery, excluding the opportunity cost of the permit. The market value of an entry permit should rise and fall as expectations about future profits from the fishery change; therefore, leaving the opportunity costs of the entry permit out of the calculation of profits is appropriate. In addition, the Alaska Supreme Court in *Johns* indicated that maintaining the market value of the entry permit should not be a consideration for optimum number determinations.[21]

Table 3.2 provides a summary of the two definitions of net returns used in this study.

Table 3.2. Definitions of Net Return Measures

Gross Revenues

Minus Variable Costs:
- Food
- Fuel, oil, filter, and lubricant expenses
- Crew shares (excluding skipper)
- Maintenance and repair expenses (routine and extraordinary/unexpected)
- Nets (net hanging, net repair, and web)
- Miscellaneous gear and supplies
- Fish Taxes

Minus Fixed Costs:
- Transportation (includes airfares to and from the fishery, taxi / shuttle, lodging, miscellaneous travel expenses, and freight)
- Moorage, gear storage, and haul out fees
- Insurance (P&I, hull, and layup)
- Administrative (bookkeeping, bank fees, legal fees, dues)
- Permit Renewal Fee
- Vessel License Fee
- Property Tax (on vessel)
- Depreciation

Equals: Returns to Labor, Management, and Investment

Minus:
- Opportunity Cost of Skipper (permit holder's time spent on the fishery)
- Opportunity Cost of Investment in Vessel and Gear

Equals: Economic Profits

[21] See *Johns (*1988).

3.7 Nominal Net Return Estimates, 1983-2003

Table 3.2.a provides data on the number of permits fished and average pounds harvested over the 1983-2003 time period. The table also provides estimates of average costs, earnings, and average entry permit values over the time period in "nominal" dollars.[22] Nominal dollars represent estimates of the dollar values that were incurred during the year, as contrasted to "real" or constant-value dollars, which are adjusted for general price inflation. Since the data in Table 3.2.a reflect nominal dollars, the gross earnings and permit value data agree with estimates in other CFEC reports.[23]

Average gross earnings, average costs, average returns to labor, management, and investment, and average profits were estimated for each permit fished in a year. The estimates were derived from CFEC data and econometric models that used vessel attributes, measures of fishing effort, and permit holder attributes as explanatory variables. Individual returns to each permit were then averaged over all permits to produce the figures in Table 3.2.a. Given the nature of the models, the reader should regard the estimates in the table as very rough approximations only. However, the authors feel that they do provide a reasonable index of how net returns have changed over the time period.

The table indicates that average gross earnings per permit fished rose over the 1984 through 1990 time period, from $51,418 in 1984 to $99,564 in 1990. Average gross earnings fluctuated in the 1990s, but tended to decline in the years from 1994 through 2003. Estimated average gross earnings were $93,591 in 1994 and $25,989 in 2003.

The estimates of returns to labor, management, and investment per permit fished remained positive over the entire 1983 through 2003 time period. The estimates tended to roughly follow the estimated average gross earnings in the fishery. For example, average returns to labor, management, and investment tended to rise over the 1984 through 1990 time period, from $24,599 in 1984 to $59,551 in 1990. Average returns to labor, management, and investment fluctuated in the 1990's, but tended to decline in the years from 1994 through 2003. Average estimated returns to labor, management, and investment were $47,718 in 1994 but only $4,107 in 2003. The lowest estimate of nominal average returns to labor, management, and investment was in 2001, at $929 per permit.

The estimates of profits per permit include deductions for the opportunity cost of the skipper's time and the opportunity cost of the investment in the vessel. Again, average profits tended to roughly follow the estimates of average gross earnings in the fishery. Estimated average profits per permit tended to rise over the 1984 through 1990 time period, from $13,127 in 1984 to $47,300 in 1990. Average profits fluctuated in the 1990's, but tended to decline over the 1994 through 2003 time period. Average estimated profits per permit were $35,889 in 1994 but were a -$3,819 per permit in 2003.

[22] The reader should note that all dollar-denominated figures in these tables are estimates. They are estimated averages: some operations would have done worse than average and some operations would have done better than average. Likewise, some operations would have been unprofitable even when average profits were positive, whereas other operations would have been profitable even when average profits were negative.

[23] The data agree as of this writing. Retroactive changes to fish ticket files at a later date could lead to minor discrepancies with these tables.

Over the 1997 to 2003 period, estimated average profits per permit were negative in all years except 1999. Estimated average profits per permit were negative for the first time in 1997, at -$6,662. Permit participation rates began to fall in 1997 when 1,875 permits were fished. In 2001, the number of permits fished declined to 1,566, and in 2002 only 1,184 permits were fished. Even with these declines in permits fished, estimated average profits per fished permit remained negative in these years.

So while average returns to labor, management, and investment remained positive over the entire 1983-2003 time period, the average returns became so low in recent years they were no longer sufficient to cover the opportunity cost of the skipper's time and the opportunity cost of the investment in the vessel. It is likely that many individual permit holders were also experiencing negative returns to labor, management, and investment over the latter part of this time period. For these reasons, many permit holders opted not to participate. They were losing less by not participating.

Chart 3.2.a provides some of the same information as Table 3.2 in graphical form. The chart shows average gross earnings per permit, average returns to labor, management, and investment per permit, average profits per permit, and estimated permit value over the 1983 through 2003 time period. Changes in average gross earnings per permit fished can be caused by changes in the total harvest, changes in ex-vessel prices, and changes in the number of permits fished. Average net returns are impacted by these factors, as well as by changes in costs.

For example, in 1987 there were 1,824 permits fished in the drift gill net fishery, and a harvest of about 93.5 million pounds of salmon, for an average harvest of 51,242 pounds per permit fished. The average ex-vessel price for sockeye (the bulk of the harvest) was $1.40 per pound. This combination of price and average harvest per permit resulted in average gross earnings of $65,990 and average estimated profits of $28,335 per permit fished.

In contrast, in 2001 there were only 1,566 permits fished, and a total harvest of about 80.6 million pounds of salmon, for an average harvest of 51,491 pounds per permit fished. While the average pounds were similar to 1987, the average ex-vessel price for sockeye was only $.42 per pound. As a result, this combination of prices and average harvest per permit resulted in average gross earnings of only $20,699, and an average estimated loss of -$7,832 per permit.

Thus, the same number of pounds per permit could result in either a profitable or unprofitable year, depending upon the ex-vessel prices received by the fishermen. This means that an important question in determining an optimum number is whether future ex-vessel prices will tend to vary as widely as they have in the past, or whether the future ex-vessel price variation will be in a much lower range.

Table 3.2.a. Bristol Bay Salmon Drift Gillnet Fishery, 1983-2003: Estimated (nominal $) Average Gross Earnings, Costs, and Net Returns (page 1 of 3)

Year	1983	1984	1985	1986	1987	1988	1989	1990
Number of Permits Fished	1,797	1,804	1,815	1,823	1,824	1,837	1,855	1,869
Average lbs. per permit	113,001	83,564	72,463	49,832	51,242	48,647	80,573	94,070
Sockeye ex-vessel price $/lb	$0.64	$0.66	$0.83	$1.42	$1.40	$2.10	$1.25	$1.09
Average permit value	$98,923	$116,905	$117,983	$124,605	$130,137	$173,406	$248,802	$216,033
Avg. gross earnings per permit	**$71,012**	**$51,418**	**$58,785**	**$65,238**	**$65,990**	**$91,150**	**$96,747**	**$99,564**
Minus Average Expenses								
Food	$1,542	$1,563	$1,416	$1,257	$1,303	$1,383	$1,510	$1,543
Fuel, oil, & lubricants	$1,002	$1,032	$1,241	$1,268	$1,398	$1,921	$1,523	$1,499
Crew shares (excluding skipper)	$15,276	$10,940	$12,571	$13,999	$14,165	$19,732	$20,971	$21,594
Maintenance (routine & unexpected)	$2,024	$2,094	$1,695	$679	$657	$1,144	$1,942	$2,104
Nets (hanging, repair, and web)	$1,539	$1,717	$1,717	$1,575	$1,547	$2,263	$1,952	$1,884
Miscellaneous gear & supplies	$1,034	$1,294	$1,107	$978	$552	$806	$1,035	$1,153
Raw fish tax	$1,182	$804	$562	$296	$586	$774	$1,422	$1,567
Transportation	$1,459	$1,843	$1,714	$1,430	$1,316	$1,630	$1,709	$1,647
Moorage, storage, and haul-out	$1,010	$964	$1,015	$1,063	$1,088	$1,198	$1,237	$1,273
Insurance (P&I, hull, lay-up)	$1,610	$1,620	$1,829	$2,087	$2,087	$2,552	$2,139	$2,195
Administrative services	$403	$532	$471	$382	$387	$613	$663	$634
Annual permit fee	$136	$137	$271	$272	$274	$461	$468	$466
Annual vessel license fee	$20	$20	$20	$20	$20	$20	$20	$20
Property Tax	$152	$158	$169	$179	$213	$199	$225	$237
Depreciation	$2,068	$2,100	$2,131	$2,191	$2,175	$2,170	$2,213	$2,198
Avg. Returns to Labor, Management, and Investment	**$40,556**	**$24,599**	**$30,856**	**$37,563**	**$38,222**	**$54,284**	**$57,719**	**$59,551**
Minus Average Opportunity Costs								
Skipper Opportunity Cost	$4,498	$4,739	$4,826	$4,089	$4,715	$5,422	$5,355	$4,736
Vessel Opportunity Cost	$5,879	$6,734	$5,746	$5,171	$5,172	$6,267	$7,795	$7,515
Average Profits per permit	**$30,179**	**$13,127**	**$20,285**	**$28,303**	**$28,335**	**$42,594**	**$44,569**	**$47,300**

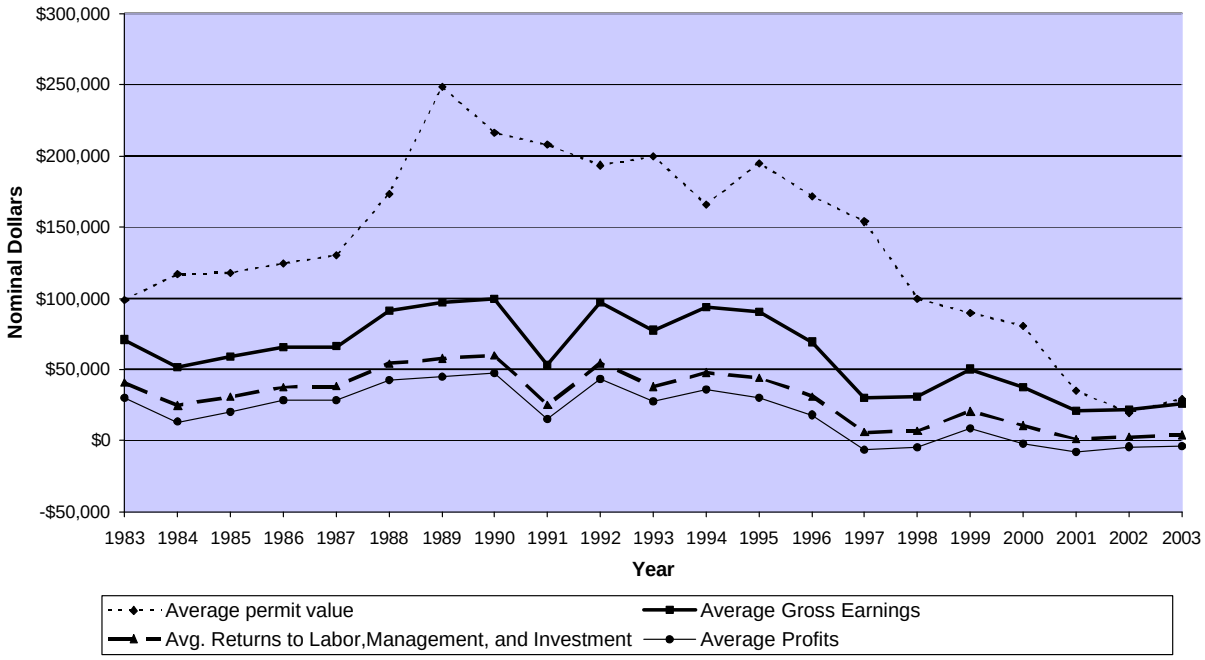
Table 3.2.a. Bristol Bay Salmon Drift Gillnet Fishery, 1983-2003: Estimated (nominal $) Average Gross Earnings, Costs, and Net Returns (page 2 of 3)

Year	1991	1992	1993	1994	1995	1996	1997	1998
Number of Permits Fished	1,873	1,879	1,875	1,865	1,882	1,884	1,875	1,858
Average pounds per permit	73,026	89,362	116,342	97,168	115,835	88,440	33,380	27,431
Sockeye ex-vessel price $/lb	$0.75	$1.12	$0.68	$0.99	$0.80	$0.81	$0.94	$1.21
Average permit value	$207,800	$193,500	$199,600	$165,700	$195,000	$171,800	$153,800	$99,500
Avg. gross earnings per permit	**$52,979**	**$96,976**	**$77,534**	**$93,591**	**$90,345**	**$69,327**	**$30,235**	**$30,787**
Minus Average Expenses								
Food	$1,198	$1,640	$1,713	$1,609	$1,777	$1,692	$1,404	$1,366
Fuel, oil, & lubricants	$1,073	$1,845	$1,625	$1,879	$1,943	$1,849	$1,658	$1,725
Crew shares (excluding skipper)	$11,286	$21,022	$16,719	$20,273	$19,554	$14,903	$6,254	$6,376
Maintenance (routine & unexpected)	$1,728	$3,101	$3,852	$4,018	$4,734	$3,758	$2,163	$1,767
Nets (hanging, repair, and web)	$1,582	$2,360	$2,292	$2,711	$2,763	$2,407	$1,867	$1,845
Miscellaneous gear & supplies	$2,022	$1,293	$1,531	$2,002	$1,853	$1,521	$1,055	$1,086
Raw fish tax	$1,092	$2,079	$2,544	$3,423	$3,552	$2,611	$1,113	$1,016
Transportation	$1,805	$2,032	$2,200	$2,511	$2,614	$2,335	$2,090	$2,016
Moorage, storage, and haul-out	$1,138	$1,311	$1,274	$1,356	$1,373	$1,323	$1,208	$1,230
Insurance (P&I, hull, lay-up)	$1,930	$2,301	$2,144	$2,339	$2,345	$2,279	$2,209	$2,417
Administrative services	$385	$795	$770	$897	$966	$848	$646	$633
Annual permit fee	$467	$470	$475	$478	$481	$486	$487	$444
Annual vessel license fee	$19	$20	$20	$20	$19	$47	$48	$48
Property Tax	$236	$266	$364	$388	$397	$465	$401	$394
Depreciation	$2,117	$2,093	$2,053	$1,971	$1,868	$1,804	$1,770	$1,685
Avg. Returns to Labor, Management, and Investment	**$24,903**	**$54,348**	**$37,957**	**$47,718**	**$44,105**	**$30,998**	**$5,862**	**$6,740**
Minus Average Opportunity Costs								
Skipper Opportunity Cost	$3,696	$6,208	$5,775	$6,153	$6,682	$6,384	$5,987	$5,177
Vessel Opportunity Cost	$6,071	$4,917	$4,696	$5,676	$7,104	$6,598	$6,537	$6,353
Average Profits per permit	**$15,135**	**$43,222**	**$27,485**	**$35,889**	**$30,319**	**$18,017**	**-$6,662**	**-$4,790**

Table 3.2.a. Bristol Bay Salmon Drift Gillnet Fishery, 1983-2003: Estimated (nominal $) Average Gross Earnings, Costs, and Net Returns (page 3 of 3)

Year	1999	2000	2001	2002	2003
Number of Permits Fished	1,847	1,823	1,566	1,184	1,424
Average lbs. per permit	61,480	57,408	51,491	45,751	55,099
Sockeye ex-vessel price $/lb	$0.84	$0.67	$0.42	$0.49	$0.50
Average permit value	$89,700	$80,500	$34,700	$19,700	$29,300
Avg. gross earnings per permit	**$50,296**	**$37,527**	**$20,699**	**$21,482**	**$25,989**
Minus Average Expenses					
Food	$1,434	$1,531	$1,280	$894	$1,214
Fuel, oil, & lubricants	$1,718	$1,637	$1,362	$1,496	$1,670
Crew shares (excluding skipper)	$10,692	$7,867	$4,144	$4,323	$5,317
Maintenance (routine & unexpected)	$2,392	$2,695	$2,133	$1,876	$2,541
Nets (hanging, repair, and web)	$1,809	$1,896	$1,349	$1,322	$1,629
Miscellaneous gear & supplies	$1,269	$1,100	$841	$683	$880
Raw fish tax	$1,771	$1,217	$617	$852	$748
Transportation	$1,890	$2,149	$1,872	$1,705	$1,922
Moorage, storage, and haul-out	$1,318	$1,301	$1,254	$1,275	$1,320
Insurance (P&I, hull, lay-up)	$2,266	$2,166	$2,016	$2,076	$2,161
Administrative services	$626	$744	$619	$573	$669
Annual permit fee	$460	$490	$387	$236	$120
Annual vessel license fee	$48	$48	$47	$47	$47
Property Tax	$522	$471	$461	$275	$405
Depreciation	$1,594	$1,509	$1,386	$1,356	$1,238
Avg. Returns to Labor, Management, and Investment	**$20,486**	**$10,706**	**$929**	**$2,492**	**$4,107**
Minus Average Opportunity Costs					
Skipper Opportunity Cost	$5,674	$5,726	$5,043	$5,480	$6,019
Vessel Opportunity Cost	$6,132	$6,867	$3,719	$1,428	$1,907
Average Profits per permit	**$8,680**	**-$1,887**	**-$7,832**	**-$4,415**	**-$3,819**

Chart 3.2.a
Bristol Bay Salmon Drift Gill Net Fishery, 1983-2003:
Average Gross Earnings per Permit, Average Net Returns per Permit, and Permit Values
$ Estimates in Nominal Dollars



3.8 Real Net Return Estimates, 1983-2003

Table 3.2.b provides estimates of average gross earnings per permit, average returns to labor, management, and investment per permit, average profits per permit, and average Bristol Bay salmon drift gillnet entry permit values in "real" or constant-value dollars over the 1983-2003 time period. These estimates are similar to those provided in Table 3.2.a, except the dollar values in all years have been converted to "real" 2003 dollars. Estimates in constant-value dollars provide measures of fishery performance over time in units of commensurate purchasing power.

This table indicates that the estimated average returns to labor, management, and investment per permit, measured in real dollars, were positive in all years over the entire 1983-2003 interval. The estimated average returns to labor, management, and investment increased from 1984 through 1989, peaking in 1989 at $83,969 real dollars per permit. These returns fluctuated in the early 1990's but then tended to decline from 1994 through 2003. The estimated average returns to labor, management, and investment per permit in reached a low of only $973 in 2001.

Estimates of average profits per permit, measured in real 2003 dollars, also tended to rise over the 1984 through 1990 time period, peaking in 1989 at $64,838 per permit. Profits

measured in real dollars fluctuated in the early 1990's, but then tended to fall from 1994 through 2003. Except for 1999, estimates of average profits per permit in real 2003 dollars were negative (losses) in each year from 1997 through 2003.

Chart 3.2.b provides some of the information in Table 3.2.b in graphical form. The chart shows the estimated average gross earnings per permit, average returns to labor, management, and investment per permit, average profits per permit, and estimated permit market value in real 2003 dollars over the 1983 through 2003 time period.

3.9 Summary

The estimates in this chapter show that the Bristol Bay salmon drift gillnet fishery was on average profitable over the 1983-1996 time period. However, average profits per permit turned negative in 1997 and remained negative through 2003 in all years except 1999.[24] Again, these declines in average profits per permit led to declines in participation rates.

How profitable the fishery will be in the future will depend critically on run sizes and ex-vessel prices. Chart 3.3 provides a view of sockeye ex-vessel prices over the 1975 through 2003 time period. Sockeye salmon ex-vessel prices are shown both in nominal and real 2003 dollars.

In nominal terms, the sockeye ex-vessel prices were as low from 2001 to 2003 as they had been since 1975 and 1976. However, when the data are converted to real 2003 dollars, the ex-value prices in real terms from 2000 through 2003 were the lowest of the entire time period.

Thus, the number of permits that will generate a reasonable average rate of economic return in the future depends critically upon the likely range of ex-vessel prices, as well as salmon harvests. Are the recent declines in ex-vessel prices a sign of the future, or will real ex-vessel prices vary in the same fashion as they have over the entire historic time period? Chapter 4 will examine the issue of likely future returns in more detail.

[24] Again, these are estimated averages. Some permit holders could have had negative profits in years where average profits per permit were positive, and some permit holders could have had positive profits in years where average profits per permit were negative.

Table 3.2.b. Bristol Bay Salmon Drift Gillnet Fishery, 1983-2003: "Real 2003 $$" Estimated Average Gross Earnings, Costs, and Net Returns (page 1 of 3)

Year	1983	1984	1985	1986	1987	1988	1989	1990
Number of Permits Fished	1,797	1,804	1,815	1,823	1,824	1,837	1,855	1,869
Average pounds per permit	113,001	83,564	72,463	49,832	51,242	48,647	80,573	94,070
Sockeye ex-vessel price $/lb (Real 03$)	$1.05	$1.04	$1.28	$2.15	$2.10	$3.15	$1.82	$1.50
Average permit value (Real 03$)	$162,046	$183,902	$181,212	$187,832	$195,446	$259,470	$361,955	$295,998
Average Gross Earnings per permit (Real 03$)	**$116,325**	**$80,884**	**$90,289**	**$98,341**	**$99,107**	**$136,390**	**$140,747**	**$136,418**
Minus Average Expenses per permit (Real 03$)								
Food	$2,526	$2,459	$2,175	$1,894	$1,957	$2,069	$2,197	$2,114
Fuel, oil, & lubricants	$1,642	$1,624	$1,906	$1,912	$2,100	$2,875	$2,216	$2,054
Crew shares (excluding skipper)	$25,024	$17,210	$19,308	$21,102	$21,273	$29,526	$30,508	$29,588
Maintenance (routine & unexpected)	$3,315	$3,295	$2,603	$1,023	$987	$1,712	$2,825	$2,883
Nets (hanging, repair, and web)	$2,521	$2,702	$2,637	$2,374	$2,323	$3,386	$2,840	$2,582
Miscellaneous gear & supplies	$1,694	$2,036	$1,701	$1,475	$829	$1,206	$1,505	$1,579
Raw fish tax	$1,936	$1,265	$863	$446	$880	$1,158	$2,068	$2,146
Transportation	$2,390	$2,899	$2,632	$2,156	$1,977	$2,439	$2,487	$2,257
Moorage, storage, and haul-out	$1,654	$1,516	$1,558	$1,602	$1,634	$1,792	$1,799	$1,744
Insurance (P&I, hull, lay-up)	$2,637	$2,548	$2,810	$3,145	$3,134	$3,819	$3,112	$3,007
Administrative services	$661	$836	$724	$576	$581	$917	$964	$869
Annual permit fee	$223	$215	$416	$410	$412	$689	$680	$638
Annual vessel license fee	$32	$32	$31	$30	$30	$30	$29	$27
Property Tax	$249	$248	$259	$270	$320	$298	$328	$325
Depreciation	$3,387	$3,303	$3,273	$3,303	$3,266	$3,248	$3,219	$3,011
Avg. Returns to Labor, Management, and Investment	**$66,435**	**$38,697**	**$47,393**	**$56,623**	**$57,404**	**$81,225**	**$83,969**	**$81,594**
Minus Average Opportunity Costs (Real 03$)								
Skipper Opportunity Cost	$7,368	$7,455	$7,412	$6,164	$7,081	$8,114	$7,790	$6,489
Vessel Opportunity Cost	$9,631	$10,593	$8,825	$7,795	$7,768	$9,378	$11,340	$10,297
Average Profits per permit (Real 2003 $)	**$49,436**	**$20,650**	**$31,156**	**$42,664**	**$42,555**	**$63,734**	**$64,838**	**$64,808**

Table 3.2.b. Bristol Bay Salmon Drift Gillnet Fishery, 1983-2003: "Real 2003 $$" Estimated Average Gross Earnings, Costs, and Net Returns (page 2 of 3)

Year	1991	1992	1993	1994	1995	1996	1997	1998
Number of Permits Fished	1,873	1,879	1,875	1,865	1,882	1,884	1,875	1,858
Average pounds per permit	73,026	89,362	116,342	97,168	115,835	88,440	33,380	27,431
Sockeye ex-vessel price $/lb (Real 03$)	$0.99	$1.42	$0.83	$1.20	$0.93	$0.92	$1.05	$1.34
Average permit value (Real 03$)	$272,319	$245,271	$245,348	$199,454	$228,132	$195,638	$172,600	$110,066
Average Gross Earnings per permit (Real 03$)	**$69,429**	**$122,921**	**$95,304**	**$112,656**	**$105,695**	**$78,946**	**$33,931**	**$34,057**
Minus Average Expenses per permit (Real 03$)								
Food	$1,570	$2,079	$2,106	$1,937	$2,079	$1,926	$1,576	$1,511
Fuel, oil, & lubricants	$1,406	$2,339	$1,997	$2,262	$2,273	$2,106	$1,860	$1,908
Crew shares (excluding skipper)	$14,790	$26,646	$20,551	$24,403	$22,877	$16,971	$7,018	$7,053
Maintenance (routine & unexpected)	$2,264	$3,930	$4,734	$4,837	$5,538	$4,279	$2,428	$1,955
Nets (hanging, repair, and web)	$2,073	$2,991	$2,818	$3,263	$3,233	$2,741	$2,095	$2,041
Miscellaneous gear & supplies	$2,649	$1,639	$1,882	$2,410	$2,168	$1,732	$1,184	$1,202
Raw fish tax	$1,431	$2,635	$3,128	$4,120	$4,156	$2,973	$1,249	$1,124
Transportation	$2,366	$2,576	$2,704	$3,022	$3,058	$2,659	$2,346	$2,230
Moorage, storage, and haul-out	$1,491	$1,662	$1,566	$1,632	$1,606	$1,506	$1,356	$1,361
Insurance (P&I, hull, lay-up)	$2,529	$2,917	$2,636	$2,815	$2,743	$2,596	$2,479	$2,674
Administrative services	$504	$1,007	$946	$1,079	$1,130	$966	$724	$700
Annual permit fee	$612	$596	$584	$575	$563	$553	$547	$491
Annual vessel license fee	$25	$25	$25	$24	$23	$54	$53	$53
Property Tax	$309	$337	$447	$467	$464	$530	$450	$436
Depreciation	$2,774	$2,653	$2,524	$2,373	$2,186	$2,054	$1,987	$1,864
Avg. Returns to Labor, Management, and Investment	**$32,635**	**$68,889**	**$46,657**	**$57,438**	**$51,599**	**$35,300**	**$6,578**	**$7,455**
Minus Average Opportunity Costs (Real 03$)								
Skipper Opportunity Cost	$4,844	$7,869	$7,099	$7,406	$7,817	$7,270	$6,719	$5,726
Vessel Opportunity Cost	$7,956	$6,233	$5,772	$6,833	$8,311	$7,513	$7,336	$7,028
Average Profits per permit (Real 2003 $)	**$19,835**	**$54,787**	**$33,785**	**$43,199**	**$35,471**	**$20,517**	**-$7,477**	**-$5,299**

Table 3.2.b. Bristol Bay Salmon Drift Gillnet Fishery, 1983-2003: "Real 2003 $$" Estimated Average Gross Earnings, Costs, and Net Returns (page 3 of 3)

Year	1999	2000	2001	2002	2003
Number of Permits Fished	1,847	1,823	1,566	1,184	1,424
Average pounds per permit	61,480	57,408	51,491	45,751	55,099
Sockeye ex-vessel price $/lb (Real 03$)	$0.92	$0.72	$0.44	$0.50	$0.50
Average permit value (Real 03$)	$98,223	$86,688	$36,332	$20,235	$29,300
Average Gross Earnings per permit (Real 03$)	**$55,074**	**$40,412**	**$21,673**	**$22,066**	**$25,989**
Minus Average Expenses per permit (Real 03$)					
Food	$1,570	$1,649	$1,340	$918	$1,214
Fuel, oil, & lubricants	$1,881	$1,763	$1,426	$1,536	$1,670
Crew shares (excluding skipper)	$11,708	$8,472	$4,339	$4,441	$5,317
Maintenance (routine & unexpected)	$2,620	$2,902	$2,234	$1,926	$2,541
Nets (hanging, repair, and web)	$1,981	$2,042	$1,412	$1,358	$1,629
Miscellaneous gear & supplies	$1,389	$1,184	$881	$702	$880
Raw fish tax	$1,939	$1,311	$646	$875	$748
Transportation	$2,070	$2,314	$1,960	$1,751	$1,922
Moorage, storage, and haul-out	$1,443	$1,401	$1,313	$1,309	$1,320
Insurance (P&I, hull, lay-up)	$2,481	$2,332	$2,111	$2,132	$2,161
Administrative services	$685	$801	$648	$589	$669
Annual permit fee	$504	$528	$405	$243	$120
Annual vessel license fee	$53	$52	$49	$48	$47
Property Tax	$572	$507	$483	$282	$405
Depreciation	$1,745	$1,625	$1,451	$1,393	$1,238
Avg. Returns to Labor, Management, and Investment	**$22,433**	**$11,529**	**$973**	**$2,560**	**$4,107**
Minus Average Opportunity Costs (Real 03$)					
Skipper Opportunity Cost	$6,213	$6,166	$5,280	$5,629	$6,019
Vessel Opportunity Cost	$6,715	$7,395	$3,894	$1,466	$1,907
Average Profits per permit (Real 2003 $)	**$9,505**	**-$2,032**	**-$8,201**	**-$4,535**	**-$3,819**

Chart 3.2.b.
Bristol Bay Salmon Drift Gill Net Fishery, 1983-2003:
Average Gross Earnings per Permit, Average Net Returns per Permit, and Permit Values
$ Estimates in Real 2003 (Constant-Value) Dollars

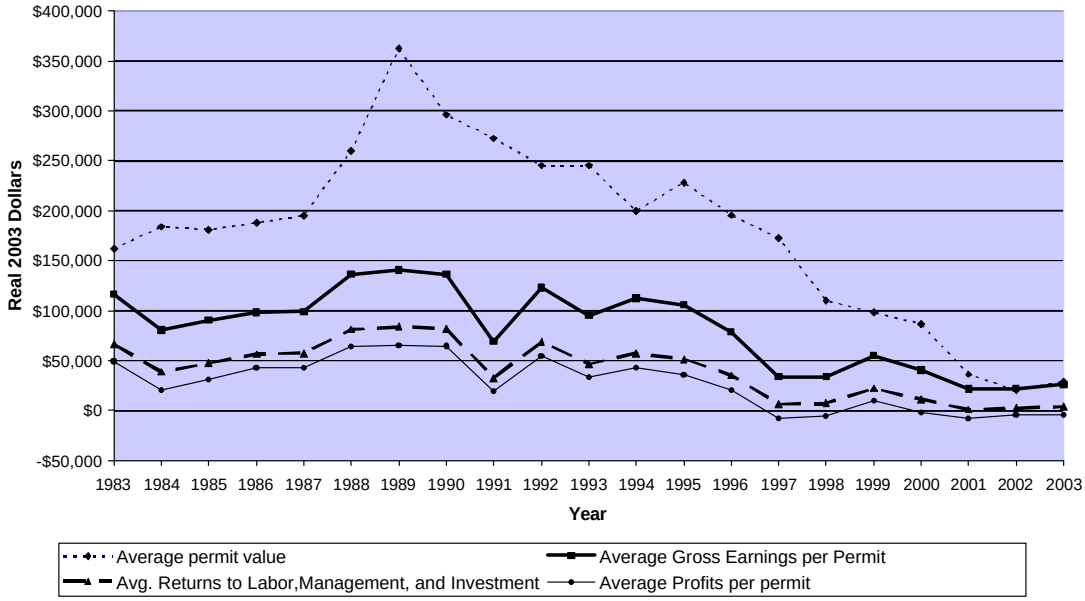


Chart 3.3
Bristol Bay Sockeye Salmon Ex-Vessel Price per Pound, 1975-2003:
Real 2003 Dollars and Nominal Dollars