

CAPITAL AND LABOR INTERESTS UNDER ITQ FISHERIES MANAGEMENT: LESSONS FOR POLICY-MAKERS

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ABSTRACT

The introduction of Individual Transferable Quota (ITQ) fisheries management is controversial as it typically results in fewer active vessels, fewer vessel jobs, and the remaining vessel crew earning a lower share of vessel revenues with capital interests, including the new interest "quota ownership", increasing their revenue share. However, the move to ITQs can also increase fish catches, fish prices, and fleet revenues so that the actual compensation to the crew can increase. There are other important, more subtle shifts in the role and power of capital and labor under ITQs including the unbundling of capital and labor interests, a weakening of the influence of broad-based fishing organizations such as unions, and a deskilling and/or reskilling of the fishing workforce. This paper draws on the experience of Pacific Canada fisheries in identifying several aspects of the shift in capital-labor balances under ITQ fisheries management. The paper also compares ITQ business practices to those of farming, taxicab fleets, housing markets and other business endeavours. These "lessons learned" can help policy-makers navigate and interpret the labyrinth of rhetoric that often accompanies the discussion of ITQs.

Keywords:

ITQs, capital, labor, share system, unions, agriculture, taxicabs

INTRODUCTION

Fisheries management under Individual Transferable Quota or ITQ systems results in shifts in the role, influence, and compensation of capital and labor interests (ITQ systems also are called catch share systems). Our view is that much of the controversy and debate surrounding ITQs actually emanates from this change in capital-labor balances.

In this paper we explore this premise, drawing on experience and insight from fisheries in Pacific Canada (the Province of British Columbia or BC). We also compare and benchmark fisheries business practices under ITQs to those in other economic sectors such as agriculture, taxicab fleets and housing markets.

ITQs VS STRICT PROPERTY RIGHTS

Under ITQ fisheries management, licence holders receive predetermined shares of the Total Allowable Catch or TAC. ITQ licence holders have strengthened and more clearly defined access rights to the fish harvest than do participants managed under open access or limited entry derby management regimes.

- open access - any individual can compete for the available catch
- limited entry - a limited number of licenced individuals compete for the available catch
- individual transferable quotas - licenced individuals are allocated a predetermined share of the Total Allowable Catch (TAC) and shares are transferable

The management regime defines who has access, and the terms and conditions of such access, but does not confer strict property rights.

ITQ rights are not property rights per se as the rights do not entail all the attributes of pure property such as security, permanence, exclusivity and transferability (Scott 1999). Fish are subject to the "rule of capture" whereby one does not have ownership of fish until the fish are caught.

There is a continuum of rights regimes with open access at one end and pure property at the other. The introduction of a limited entry program moves the fishing sector away from the open access end and towards the other end of the spectrum. An ITQ fisheries management regime pushes the bundle of rights still further, but not all the way, towards the pure property end.

The position of the Canada Department of Fisheries and Oceans (DFO) has always been that a commercial fishing licence is a privilege, granted annually, not a property right. The absolute right to issue, suspend, cancel and refuse issuance or reissuance of any licence is at the sole discretion of the federal Minister of Fisheries and Oceans.

ITQ EXPERIENCE IN PACIFIC CANADA

ITQs were first introduced to commercial fisheries in Pacific Canada in the 1970s for the herring spawn-on-kelp fishery. ITQs have been adopted by the majority of BC commercial fisheries since that time (the major exceptions being salmon, prawn and tuna fisheries).

Case Study Fisheries

The author recently analyzed the employment, job and wage impacts - on fishing vessels and in processing plants - from the introduction of ITQ fisheries management to five Pacific Canada Fisheries (GSGislason 2008). The fisheries differ in terms of harvest technology, species focus and product forms and value.

Fishery Description	BC Case Study Fisheries				
	Halibut	Sablefish	GF Trawl	Geoduck	Red Urchin
Fishing Technology	longline	longline & trap	trawl	dive	dive
Number of Licences	435	48	142	55	110
IQ Implementation Year	1991	1990	1997	1989	1995
Main Product Form	fresh whole	frozen whole	fresh fillets	live	roe
Type of Fishery	low volume/ high value	low volume/ high value	high volume/ low value	low volume/ high value	low volume/ low value

The impetus to moving to ITQs for the case study fisheries generally had several common features:

- an inability to fish within fleet-wide TACs, overages occurred year after year
- issues related to compromised crew safety & poor working conditions
- poor quality product, the inability to serve lucrative year-round markets since TACs were caught or exceeded early in the year
- increasing incentives to misreport on logbooks & sales (transaction) slips
- excess amount of capital, labor and operating costs e.g., boats, crew, fuel, gear
- inability to monitor & enforce fisheries regulations
- an inherently unstable industry

These symptoms of poor conservation, business and people practices all resulted from the “race for the fish” under the derby fishery management format. A common theme was that the status quo was not acceptable.

Impacts of ITQs on Case Study Fisheries

True impact analysis requires explicit recognition as to what is the alternative for comparison purposes i.e., to focus on incremental effects and to compare conduct of the fishery “with ITQs” to the likely conduct “without ITQs”.

This is not simply a case of comparing the present ITQ situation to the situation immediately preceding ITQs. We live in a much more precautionary fisheries management world today as compared to many years ago when ITQs were implemented. There could have been substantial changes to fisheries management, including reduction in TACs and closed seasons/areas, if ITQs had not been adopted. In addition, ITQs in some cases have allowed new products and new markets to be developed.

Based on interviews with fisheries managers, industry associations and individual fishermen and based on prior assessments, we developed a scenario for each fishery as to its conduct if it was still managed under a derby or competitive fishing format. Then we compared the “with ITQ” fishery actual performance to the “without ITQ” (derby) fishery projected performance - Appendix 1 gives the results.

Impacts from moving to ITQ fisheries management obviously vary by fishery. Nevertheless, the following general conclusions from the case study analysis apply.

1. TACs and catches under ITQ management have been higher than they would have been under derby fisheries management. Science research has increased as industry has launched and paid for stock assessment surveys and other science initiatives. The chronic problem of catch overages has been eliminated under ITQs, largely due to the comprehensive catch monitoring programs implemented.
2. Revenues to both the fishing fleet and processors have increased substantially under ITQs due to higher catches and due to higher prices (higher prices from improved product quality and, in some cases, from shifts to higher valued product forms).
3. The number of active vessels and the number of crew jobs on vessels have decreased through fleet consolidation. But the smaller number of crew jobs are longer in duration with the result that vessel weeks of fishing activity and crew employment, on a full time equivalent basis, actually can increase.
4. The share of fleet revenues going to the crew declined by 5 to 10 percentage points e.g., for halibut the effective crew share under ITQs is 20% whereas it would have been 30% under a derby competitive fishery format. However, the actual dollar wage compensation can increase since the fleet revenue pie is larger.
5. Leasing of ITQ privileges has occurred with the going 1-year lease rate, exclusive of monitoring and economic rent fees, being 20% to 75% of the ex-vessel price (low end of range for groundfish trawl, high end of range for halibut, sablefish and geoduck).
6. The economic viability and returns to capital for all ITQ fleets are much higher than under a derby fishery format since revenues are higher and tangible fishing costs are lower. The Balance Sheets for fishing fleets as well as their Income Statements have improved under ITQs - the selling price of fishing privileges is 5 to 10 times the annual gross revenue stream whereas prior to ITQs it was 1 to 2 times the annual revenues. Processing sector margins and viability also have increased under ITQs.
7. Crew safety has improved under ITQ management. Vessels are no longer forced to “race for the fish” and compromise safety. In addition, on bad weather days the vessel operator can decide not to fish without incurring a revenue penalty.
8. Comanagement and rent collection to the crown have been enhanced (e.g., see Gislason 2000, Gislason 2007, GSGislason 2008).

9. There has been no significant migration of fishing licences from individuals living in rural communities to individuals living in large urban centers under ITQ fisheries management. There has been no significant increase in concentration of ITQ privileges in processors' hands.

The strong conclusion is that, in aggregate, fisheries performance under ITQs has improved for all three Canadian fisheries policy pillars - sustainability/conservation, economic viability, and social considerations including employment. These conclusions generally are consistent with other analyses e.g., Jones 2003.

Why is There Angst Concerning ITQs?

In spite of the laudable performance on environmental, economic and social fronts, there has been considerable angst, concern and mistrust expressed about ITQs for Pacific Canada fisheries (e.g., Cruickshank 1991, Senate Standing Committee 1998, Ecotrust Canada 2003).

These concerns include the following:

- a decrease in jobs and employment
- a lower share of fishing revenues to crew
- the leasing of ITQs
- “windfall gains” to first owners of ITQs, lack of rent collection
- high quota values, high entry costs to fishing
- devaluation of traditional fishing skills
- the vulnerability of small scale operators and coastal communities
- the creation of private property rights to a public resource

There has been some misinformation about certain of these issues (for example, see the exchange on leasing between Pinkerton and Edwards 2009 and Turriss 2009, see Nelson Bros Fisheries 2006). Some of the concerns have little substance to them. And some of the expressed concerns ignore the fact that there was too much capital and labor devoted to fisheries operations - change was mandated.

The view has been expressed that ITQs are “communist” in nature because one’s catch is limited, and that competitive or derby fisheries are more compatible with the free enterprise system (Senate of Canada, 1998). However, one could argue that the output of a grain farmer operating on say 65 hectares also is limited. Both the ITQ rights holder and the grain farmer are free to acquire more rights on a willing seller-willing buyer basis to expand production. The ITQ system is consistent with free enterprise principles.

In our opinion, much of the debate about ITQs concerns the changing roles and influence of capital and labor. Undoubtedly, ITQ fisheries management increases the power of capital and reduces the power of labor (see Anderson 1995, McCay 1995, Palsson and Helgason 1995, Le Gallic 2003). And some interests are against this on philosophical grounds. The remainder of this paper explores these capital-labor issues.

STEP BACK - CAPITAL VS LABOR IN SOCIETY AT LARGE

At one time all human endeavour was 100% labor intensive e.g., food, shelter, clothing, and fuel production. Family units both produced and consumed basic goods and services. Gradually the production or business sector separated from the consumption or household sector and trade occurred.

Over the centuries and millennia, innovation and technology generally has been capital-using and labor-saving. Work activities have become more capital intensive, and less labor-intensive. A separation of

capital and labor interests have occurred. Specialization of labor has occurred. The result is that the modern workforce contains many fewer owner-operators or self-employed and more wage employees in business. This trend is strikingly clear from US Census Data (as reported by Russell 1985 p.5).

Year	% Self Employed in US Labor Force
1780	80%
1880	37%
1980	9%

Commercial fishermen of the late 20th century were essentially the last of the hunter-gatherers in society and one of the last vestiges of an industrial past in many communities. Commercial fisheries also are special because they still are characterized by many owner-operators, by many family operations, by strong ethnic ties and by a strong rural-based sense of “community”. There is a romanticism and special affection for any food-producing group, including farmers as well as fishermen.

Nevertheless, the fishery is not immune from the relentless trends of advancing technology and globalization. Moreover, the world’s oceans are finite in their ability to provide food. Adjustments to both the amount and type of capital and labor allocated to fishing must occur to ensure that fish, and the socio-economic benefits derived therefrom, continue for present and future generations.

The capital-labor adjustment process for farming, forestry and other land-based resource sectors occurred many years ago. The adjustment process and the introduction of new rights regimes for agriculture and these other sectors involved considerable conflict (for Western Canadian agriculture see Lind 1995, for BC forestry see Hak 2007).

...in the 19th-century U.S. West, the cattlemen, sheepmen, and farmers all despised each other. Similarly, throughout human history farmers have tended to despise hunter-gatherers as primitive, hunter-gatherers have despised farmers as ignorant, and herders have despised both (Diamond 1999 p.108).

A compelling question is: “Why should the fishery be immune from the types of adjustments and practices that other business sectors were forced to undergo?”

CHANGES IN CAPITAL AND LABOR UNDER ITQs

We discuss five (5) aspects of the changing roles of capital and labor under ITQ fisheries management..

ITQs Typically are Granted at Zero Cost

Typically the initial holders are granted the ITQs at zero cost (Environmental Defense Fund 2009). The original ITQ recipients then are free to sell their ITQ rights at market rates thereby reaping so called “windfall gains”.

However, it is important to note that access rights for a wide variety of resources and endeavours typically are “grandfathered” to incumbent users at zero cost. Auctions and lotteries typically are reserved for access to new unutilized resources e.g., a new oil or natural gas exploration field (Libecap 2007). For example, under the 1862 Homestead Act in the United States, individuals received 65 hectares (160 acres) of farmland for free. The initial taxicab licences in Boston, New York and Los Angeles were allocated to existing taxi operators for free. Today farmland and taxicab licences sell at significant values.

The point is that first possessors and/or users usually receive the initial access rights for free. The more important policy issue, in the case of natural resources owned by the crown, is the collection of annual economic rent from such access. The economic rent policy should be articulated at the launch of the initial access rights regime.

ITQ fishermen in British Columbia pay an economic rent charge to the crown, as well as dockside and at-sea monitoring costs, and certain science and other costs.

The ITQ Takes a Revenue Share

The ITQ privilege has a separate identity, market and value from the vessel. The ITQ owner therefore demands a share of vessel revenue just as owners of farmland takes a share of farm revenue.

The returns to labor, the vessel and the ITQ privilege become unbundled. The various factor returns no longer are “confounded” to use a term Adam Smith invoked 200 years ago in describing farm owner-operator returns (Smith 1909 Abridged Version, Chapter VI).

The practice whereby the resource or resource access has a distinct value and the resource owner takes a share of revenue is common not only in agriculture but also in forestry, mining, oil & gas extraction and other business endeavours. For example, taxi licence owners take a share of taxi revenues even though they may not drive the taxi themselves (Russell 1985, Schaller 2006).

In the case of the fishery operating under a share system, the lease cost of ITQs typically is subtracted from gross revenues, as well as certain operating costs such as fuel, before distributing shares of the residual to the crew and the vessel owner. The result is that the percentage share going as crew settlement is lower than in a derby fishery (but as noted earlier, the actual dollar compensation to the crew can increase).

In many cases, the ITQ holder who was allocated the ITQ initially at zero cost will still charge the fishing enterprise an imputed, opportunity lease cost. This practice is sometimes seen as unfair - but to do otherwise would create an incentive for the ITQ holder to actually lease out the quota and create business instability (Wilén and Casey 1997).

We note that an individual who inherits a house will rent or sell the house at market rates even though he or she did not actually pay for the asset.

We also note some nuances to crew payment formula under ITQs in Pacific Canada:

- several vessel/ITQ owners ask the crew whether they want to lease quota i.e., the crew is part of the decision as to whether to lease or not to lease
- some ITQ holders will not deduct the opportunity lease cost of owned quota in crew settlements if they have longstanding crew (often family members)
- the groundfish trawl fishery, through the Groundfish Development Authority or GDA, has disincentives and penalties to trawl enterprises who charge crew for the opportunity cost of ITQ not actually purchased or leased (GSGislason 2008, GSGislason 2010)

Some Interests are Weakened Under ITQs

Although society at large may benefit from ITQ management, there can be some individuals and organizations that are worse off.

One such organization is a fisheries union, specifically the United Fishermen and Allied Workers' Union (UFAWU) which represents many fishermen and plant workers in British Columbia. Under ITQs, the UFAWU has fewer members, receives less money in dues, and has less influence.

ITQ fisheries management tends to separate or isolate the interests of boat owners, quota owners, and crew. And ITQ management has tended to highlight the inherent conflicts of interest between owners and crew and between vessel crew and processing plant workers that, in the past, had been less evident.

The diminished influence of unions in ITQ fisheries has been noted in other countries such as Norway (Brox 1997) - this can explain why unions almost universally oppose ITQ programs. Other broad-based organizations such as environmental and community groups also can see their influence erode.

The Fisheries Council of British Columbia (FCBC), an organization representing large fish processors, disbanded in the late 1990s. ITQ fisheries can have less need for large assembly line processing plants and for the capability to freeze large quantities of fish. The product shift from frozen to fresh for some fisheries such as halibut has created opportunities for smaller processors to emerge (see Hackett et al 2005). Barriers to entry for fresh fish processing are lower than for frozen fish processing.

The decline of the UFAWU and the FCBC also were exacerbated by several large licence buyback programs and the introduction of area licensing for the commercial salmon fleet in the late 1990s (still managed as a competitive or derby fishery). In essence, the launch of ITQs and salmon fleet area licensing eliminated the possibility of strike action over prices and the need for peak organizations to negotiate minimum prices.

With the advent of ITQs, fisheries-specific organizations such as the Pacific Halibut Management Association and the Underwater Harvesters Association representing geoduck fishermen have emerged.

Some "highliner" fishermen can be worse off under ITQs if all licence holders receive an equal quota - a common mantra in derby fisheries is that 20% of the fishermen catch 80% of the total catch.

Moreover, you can have the "latent fishermen" situation whereby a significant share of fishing licences are inactive. If all licence holders receive an equal allocation under ITQ management, then the allocation could be substantially less than what an active fishermen typically caught. The British Columbia and Alaskan commercial salmon fisheries have significant numbers of inactive licences.

It has been argued that, under ITQ management, government and fisheries managers tend to give greater weight to the views of quota holders. The argument continues that the views of communities and other stakeholders have less weight. A contributing factor to this perceived shift in influence is that quota holders pay a large portion of monitoring, science and other fisheries management costs whereas other stakeholders do not (Senate of Canada 1998).

The Share System can Change Under ITQs

The crew in commercial fisheries traditionally have been paid on a share or lay system whereby the crew receives a share of fishing revenues or fishing revenues less certain costs. It has been argued that the share arrangement, rather than a formal wage per hour or per day, creates an incentive for the crew to work diligently as an absentee boat owner can not ascertain whether a poor catch for a vessel is due to random effects i.e., bad luck or due to "labor shirking" (Wilén and Casey 1997, McConnell and Price 2006).

One effect of ITQs is to make the performance of the crew more observable as general industry benchmarks for catch per trip or day are less volatile. The rationale for the crew share payment system is weaker in an ITQ fishery than in a derby fishery.

Paying labor on hourly wage is the norm in modern business including other resource industries. And paying workers a lower wage when the work becomes observable also is the norm.

...when techniques become available for making work machine-paced, or otherwise easy to supervise, ...workplaces are most likely to begin substituting cheaper ...labor (Russell 1985 p.118).

Moreover, the marginal benefit of a “good crew” over a “poor crew” is less in an ITQ fishery. In an ITQ fishery, the “poor crew” will take longer to catch essentially the same amount of fish i.e., non-wage operating costs will be somewhat higher. In a derby fishery, the poor crew will catch substantially less fish i.e., revenues will be substantially less. The revenue penalty is much more severe than the operating cost penalty.

There has been downward pressure on ITQ crew wages from external forces as well. The commercial salmon licence buyback programs have eliminated thousands of salmon crew jobs with the result that there is much more competition for crew positions on non-salmon vessels.

In Pacific Canada, some ITQ enterprises have moved paying certain crew on a daily or trip basis rather than a share arrangement, or paying the crew a lower percentage crew share

The result has been a lowering of effective crew wages to 30% or less of fleet revenues, a percentage share more commensurate with other resource industries such as agriculture, logging, and mining.

Reskilling of the Fishing Workforce Under ITQs

Valued fishing skills in a derby fishery historically included: 1) finding fish quickly in part through knowing the tides, weather patterns, ocean floor contours, the behaviour of birds and sea mammals etc, 2) staying awake for days at a time, 3) the ability to operate a vessel in stormy weather, and 4) the ability to work hard in a challenging, strenuous environment. These abilities were honed over long periods of time at sea with knowledge passed from one generation of fishermen to the next.

Under ITQ management, the valued skillset has changed i.e., traditional fishing skills have been devalued (see McCay 1995). There is no longer an urgency to catch fish in a short period of time. The focus has shifted to: 1) managing trip catch levels to match the portfolio of quota entitlements, 2) avoiding bycatch and endangered species interactions, 3) better on-board fish handling skills (sometimes involving additional processing), 4) knowledge of sophisticated electronic equipment such as GPS, and 5) more marketing and business planning skills. As one fisheries business owner commented to us several years ago, *...we used to hire from the neck down, now we hire from the neck up.*

Fishermen also comment that under ITQs there is diminished prestige to the fishing occupation, there is less fun or enjoyment, and there is less comradery and sense of community among fellow fishermen.

Note however that reskilling of workforces occurred under the industrial revolution of the 18th and 19th centuries and in resource industries in more modern times (for a forestry example, see Hak 2007).

CONCLUSIONS

ITQ fisheries management fundamentally changes the role and influence of capital and labor. This explains much of the extreme angst and philosophical opposition to ITQs in some quarters. There also appears to be much confusion as to perceived problems with ITQ management - business practices that are not perceived as problems in other components of society are cited as problems with ITQ fisheries.

Therefore, it is instructive to assess ITQ fisheries management and practices in light of how other segments of society - agriculture, taxicab fleets, housing for example - operate. And it is important to ask what are the alternatives to ITQs for the many fisheries that are now at the “tipping point” in terms of poor environmental sustainability, economic and social performance.

We offer the following ten “lessons learned” for policy-makers:

- Lesson #1: ITQs represent a fundamental change in how fisheries are managed. Change is controversial, especially in tradition-bound endeavours such as commercial fishing. But change to fisheries is mandated by several environmental, economic and social forces.
- Lesson #2: Change creates “winners” and “losers” - the losers complain more than the winners applaud. However, the evidence is compelling that ITQ fisheries, properly designed, can enhance broad environmental, economic and social performance.
- Lesson #3: Some large fisheries organizations such as unions see their membership, influence and power diminished under ITQ fisheries management. This can explain the almost universal condemnation of ITQs by fisheries unions.
- Lesson #4: ITQs increase the power of capital interests and reduce the power of labor interests. This power shift is an inevitable consequence of stronger access rights regimes regardless of whether they occur in fisheries, farming, taxicab licensing, housing markets and so on.
- Lesson #5: ITQs bring the conduct of the fishery closer to how other resource and business sectors operate in modern society i.e., ITQs are consistent with societal norms.
- Lessons #6: Leasing of ITQ rights will occur just as leasing of rights, and the separation of capital and labor interests, occur in other industries. For example, individuals can own farmland without becoming a farmer, can own mining stocks without becoming a miner, and can own a house or apartment and not actually live on the property.
- Lesson #7: ITQs typically result in a reduced share of fishing revenues going to crew labor. However, the actual compensation going to crew can increase since the fishing revenue pie is larger.
- Lesson #8: ITQs change the desired skill set for vessel crew. This change creates labor adjustment issues akin to those associated with the reskilling of industrial workforces over past centuries.
- Lesson #9: The economic rent policy for a fishery should be articulated at the ITQ implementation stage.
- Lesson #10: Ask the questions: Why should the fishery be immune from the adjustment processes that other business sectors were forced to undergo? What is the alternative to ITQs?

These lessons are broad and should apply to many fisheries around the world.

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Appendix 1: Summary of Employment-Related Impacts of Case Study ITQ Fisheries in BC

Indicator	Case Study Fisheries					
	Halibut	Sablefish	GF Trawl*	Geoduck	Red Urchin	Total
A. 2005 Situation w ITQs						
Catch tonnes round	7,400	3,815	47,600	1,560	3,873	64,248
Active Vessels	221	35	52	40	44	392
Weeks Fished per Vessel	5	8	20	12	16	NA
Fishing - Value \$000 CDN	52,040	26,510	39,980	32,600	5,810	156,940
- Wages \$000 CDN	10,410	5,300	13,990	8,150	2,320	40,170
- Employment PYs	155	67	166	58	84	530
- Crew Jobs	774	210	208	120	132	1,444
Processing - Value \$000 CDN	62,620	30,800	83,780	34,790	16,850	228,840
- Wages \$000 CDN	3,060	1,680	20,940	1,030	5,540	32,250
- Employment PYs	77	42	524	26	139	808
B. 2005 Projection w/o ITQs						
Catch tonnes round	7,180	3,150	23,800	780	2,443	37,353
Active Vessels	360	40	40	55	30	525
Weeks Fished per Vessel	2	2	13	4	12	NA
Fishing - Value \$000 CDN	35,640	17,960	14,760	6,830	2,440	77,630
- Wages \$000 CDN	10,690	5,390	5,900	2,390	1,100	25,470
- Employment PYs	115	38	83	35	58	329
- Crew Jobs	1,440	480	160	220	120	2,420
Processing - Value \$000 CDN	42,930	20,750	34,030	8,700	8,550	114,960
- Wages \$000 CDN	3,560	1,390	13,090	1,200	3,490	22,730
- Employment PYs	89	35	327	30	87	568
C. ITQ Impacts**						
Catch tonnes round	+220	+665	+23,800	+780	+1,430	+26,895
Active Vessels	-139	-5	+12	-15	+14	-133
Weeks Fished per Vessel	+3	+6	+7	+8	+4	NA
Fishing - Value \$000 CDN	+16,400	+8,550	+25,220	+25,770	+3,370	+79,310
- Wages \$000 CDN	-280	-90	+8,090	+5,760	+1,220	+14,700
- Employment PYs	+40	+29	+83	+23	+26	+201
- Crew Jobs	-666	-270	+48	-100	+12	-976
Processing - Value \$000 CDN	+19,690	+10,050	+49,750	+26,090	+8,300	+113,880
- Wages \$000 CDN	-500	+290	+7,850	-170	+2,050	+9,520
- Employment PYs	-12	+7	+197	-4	+52	+240

* Groundfish Trawl (GF Trawl) excludes hake or whiting and Option B operations

** Impact is "with ITQ" scenario less "without ITQ" (i.e., Derby) scenario

Source: GSGislason & Associates Ltd., 2008, *Employment Impacts of ITQ Fisheries in Pacific Canada, Report Prepared for Canada Fisheries & Oceans*

Note: Assumptions - 25 person weeks fished equals 1 person year (PY)
 - one person-year or PY of employment per \$40,000 plant wages & benefits