



Economic Outlook for Canada's Atlantic Commercial Fisheries **2012**



Economic Analysis and Statistics
Strategic Policy Sector



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ECONOMIC OUTLOOK FOR CANADA'S ATLANTIC COMMERCIAL FISHERIES 2012

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Preface

The following document, prepared in May 2012 by Economic Analysis and Statistics, Strategic Policy, presents the economic outlook for Canada's Atlantic fisheries in 2012. It includes forecasts of landed prices and a brief analysis for snow crab, lobster, shrimp and cod. The document also includes a summary of factors that may affect Canadian fisheries in 2012, as well as economic indicators for Canada's key markets.

Acknowledgments

This report was prepared by Nikolas Savard-Duquet, economist, under the supervision of Alejandro De-Maio-Sukic, Manager, Economic Analysis and Statistics, Strategic Policy Sector.

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1 2012 Economic Outlook Summary

The following table summarizes the general trends anticipated in the average landed price for Canadian snow crab, lobster, shrimp and Atlantic cod for the 2012 fishing season. Estimates were developed using statistical modelling of factors influencing the landed price received by Canadian fishers (Table 4). The “Landed Quantities,” “Exchange Rates” and “Economic Growth” columns provide the prospects for each variable, all things otherwise being equal. The expected combined effect is presented in the “Total” column. The final column to the right presents the variation of wholesale prices in the US market since the beginning of 2012 (Table 3).

Table 1: 2012 Outlook for Landed Prices (in relation to 2011)

	Supply		Demand		Total ¹	US Market Price ²
	Landed Quantities	Exchange Rate	Economic Growth			
Snow Crab					- 9%	- 5%
Lobster					+ 6%	+ 10%
Shrimp					+ 17%	+ 29%
Cod					+ 2%	+ 3%
Outlook	Positive		Neutral	Negative		

As shown in Table 1, preliminary forecasts generated by the model are clearly on par with the trends observed in the American market price. The following is a summary description of each species specific outlook:

- **Snow crab:** Increased landings from Alaska and a slight expected depreciation of the Japanese yen will exert downward pressure on the price for Canadian snow crab. However, the expected return to growth of the Japanese economy should partly counterbalance this effect.
- **Lobster:** The strength of the U.S. economy’s recovery combined with a slightly weaker Canadian dollar (in comparison to the American dollar over last year) should have a positive effect on the

1. Econometric model forecast based on the hypothesis that: i) supply will remain in line with that of 2011, with the exception of the increase in the Alaskan snow crab quota and the estimated decrease for Northern shrimp, and ii) Canadian bank exchange rate and growth forecasts are accurate.

2. Represents the January to April, year-over-year variation (i.e. for 2011/2012).

price of Canadian lobster. However, the model results indicate a large degree of uncertainty associated with changes in the North American supply of lobster. The results shown in Table 1 are based on the assumption of stable North American landings.

- **Shrimp:** Economic growth in the United States and the expected decrease in Greenland’s landings should have a positive influence on the price of Canadian shrimp. However, the anticipated rise in the cost of fuel in 2012 could have a significant impact on shrimpers’ operating costs³.
- **Cod:** Although the impact is modest, the combination of economic growth in the U.S. and a slightly weaker Canadian dollar in comparison to the American dollar presents positive prospects for the price of Canadian cod.

2 Outlook for Key Markets

- The economic situation is improving in the United States as shown by the main economic and financial indicators in recent months. The unemployment rate has fallen 0.8 percentage points since last September to 8.2%. The upturn in the American economy should be reflected in the Canadian economy and help exporters relative to the strength of the loonie. The U.S. remains the principal export market for Canadian seafood with 62% of the total value of exports in 2011.
- In terms of the Euro zone, it is expected that several economies will contract this year, although the European recession is proving to be more moderate than expected. For the U.K., forecasts call for almost zero growth in 2012 because of the Euro zone problems and the imposition of austerity measures in its

3 Fuel costs are not integrated into the econometric model presented in Table 1.

budget. The European Union represents the main export market for Canadian shrimp.

- Japan, a major market for snow crab, will return to a growth position in 2012, with production resuming and reconstruction getting underway following last year's earthquake. In China, although the economy has begun to slow, robust growth above 8% is nonetheless expected for this year. China is an expanding market for Canadian seafood, with exports reaching a record \$355 million in 2011.
- Analysts predict that the Canadian dollar will remain close to parity with respect to the US dollar during 2012. The strength of the Canadian dollar is a determining factor of demand and the price received by Canadian fishers, particularly for species for which the price is set in international markets.

Table 2 : Average of the Most Recent Forecasts of Six Major Canadian Banks in 2012⁴

	Growth in real GDP		Exchange rates (to CAD\$)	
	2011	2012f	2011	2012f
Canada	2.2%	2.2%	-	-
United States	1.7%	2.4%	1.01	1.00
Euro zone	1.6%	-0.7%	0.73	0.78
United Kingdom	0.9%	0.6%	0.63	0.64
Japan	-0.3%	1.6%	80.7	82.0
China	9.3%	8.0%	6.5	6.3

f: forecasts as of April 2012

3 Outlook for Commercial Fisheries

- The total allowable catch (TAC) for snow crab in Alaska has been set at 40 322 tonnes for the 2012 season, up 64% over 2011. However, given that fishing was suspended in early February due to

the significant presence of ice, there is still some uncertainty as to whether fishers will succeed in catching the entire TAC. In the last decade, landings from Alaska have represented about 15% of North American landings and 8% of worldwide supply. For shrimp, Greenland's NAFO quota has been reduced by 38% for 2012.

- With regard to the lobster fishery in Nova Scotia, some fish harvesters received up to \$6.00/lb at the end of March, while the current price is \$5.00/lb (*Seafood.com News*, 26/04/2012). In Quebec, lobster fishers in Gaspésie expect prices to be in the order of \$5.00-5.50/lb for the beginning of the season, compared to \$4.50 /lb in 2011 (*Le Soleil*, 28/04/2012).
- Current wholesale prices for lobster, shrimp and Atlantic cod on the American market are up in relation to the same period last year (10%, 29% and 3% respectively). For snow crab, prices in January-March are 5% lower than in 2011.

Table 3: Wholesale Price on the American Market for Snow Crab, Lobster, Shrimp and Cod (US\$/lb)⁵

	Average Price April 2012	Average Price April 2011	Variation vs. 2011
Snow crab (5-8 oz.) [*]	\$5.63	\$5.91	-5%
Lobster (live, 1¼ lb.)	\$7.47	\$6.45	16%
Northern shrimp (250/350)	\$5.00	\$3.98	26%
Atlantic cod (whole)	\$4.38	\$3.42	28%

*: Prices only available until March 2012.

- According to forecasts by the U.S. Energy Information Administration (EIA), the price per barrel of West Texas Intermediate (WTI) crude oil is expected to reach US\$105.72 in 2012, an increase of 11% in comparison to 2011. Fuel is a significant expense for Canadian fishers and in the next season could represent about 28% of the operating costs for

⁴ Royal Bank of Canada (RBC), Toronto-Dominion Bank (TD), Scotiabank (BNS), Bank of Montreal (BMO), Canadian Imperial Bank of Commerce (CIBC), National Bank of Canada (NBC).

⁵ Urner Barry's seafood price current: UB Crab, Snow, Cluster, Gulf Lawrence, 5-8 oz., FOB Mid-Atlantic; UB Lobster, American Live, FOB New England, 1 1/4 Pound; UB Shrimp, Pandalus Borealis, Imported, 250/350 Count; UB Cod, Market, Whole, FOB NY Fulton Market.

shrimp, 21% for cod, 12% for lobster and 9% for snow crab.⁶

- According to the Food and Agriculture Organization of the United Nations (FAO) and Organisation for Economic Co-operation and Development (OECD), world prices for fishery and aquaculture products should continue to rise in the coming years. This trend is explained by the progression in revenues and demographic growth, the stagnation of production in the fisheries sector, the increased costs of animal feed, the weakening of the American dollar and the increase in prices for crude oil.⁷

4 Statistical Modelling of the Landing Price

The following table shows the **preliminary results** of the econometric analysis of factors influencing the landing price of Canadian snow crab, lobster, shrimp and Atlantic cod. The data are expressed in logarithmic form; the coefficients can thus be interpreted as the expected variation in price as a percentage following a 1% increase in the value of the explanatory variable, all things being otherwise equal.

⁶ Estimated based on the DFO "2004 Costs and Earnings Survey," forecast oil prices, exchange rates and the Canadian Consumer Price Index (CPI).
⁷ Agricultural Outlook of the OECD and the FAO for 2011-2020.

Document sources: Alaska Department of Fish and Game, Bank of Canada, RBC, TD, BNS, BMO, CIBC and NBC banks, The Economist, Food and Agriculture Organization of the United Nations (FAO), National Marine Fisheries Service, Northwest Atlantic Fisheries Organization, Organisation for Economic Co-operation and Development (OECD), Fisheries and Oceans Canada (DFO), Statistics Canada, Seafood.com News, Urner Barry, U.S. Bureau of Labor Statistics, U.S. Energy Information Administration.

Table 4: Results of the System of Equations, 1990-2010 (Seemingly Unrelated Regressions)

	Coefficient	Standard Deviation	Level of Significance
Price for snow crab			
North American landings	-0.64	0.19	1%
US\$/CAD\$	-0.25	0.47	N.S.
YEN\$/CAD\$	-1.53	0.35	1%
Japan GDP	1.42	0.78	10%
Constant	-1.60	13.53	N.S.
<i>Observations (annual)</i>	21		
<i>R</i> ²	0.7425		
Price for lobster			
Worldwide landings	-1.84	0.25	1%
US\$/CAD\$	-0.87	0.16	1%
United States GDP	2.38	0.19	1%
Constant	-2.88	2.67	N.S.
<i>Observations (annual)</i>	21		
<i>R</i> ²	0.9213		
Price for shrimp			
Canadian and Greenlandic landings	-0.82	0.19	1%
US\$/CAD\$	-0.74	0.16	1%
EUR€/CAD\$	-0.07	0.28	N.S.
United States GDP	1.11	0.44	5%
Constant	-1.84	3.77	N.S.
<i>Observations (annual)</i>	21		
<i>R</i> ²	0.8411		
Price for cod			
North American landings	-0.19	0.04	1%
US\$/CAD\$	-0.62	0.17	1%
EUR€/CAD\$	-0.18	0.36	N.S.
United States GDP	0.59	0.21	1%
Constant	-6.26	4.04	N.S.
<i>Observations (annual)</i>	21		
<i>R</i> ²	0.8645		

N.S.: Not Statistically Significant

Document sources: Alaska Department of Fish and Game, Bank of Canada, RBC, TD, BNS, BMO, CIBC and NBC banks, The Economist, Food and Agriculture Organization of the United Nations (FAO), National Marine Fisheries Service, Northwest Atlantic Fisheries Organization, Organisation for Economic Co-operation and Development (OECD), Fisheries and Oceans Canada (DFO), Statistics Canada, Seafood.com News, Urner Barry, U.S. Bureau of Labor Statistics, U.S. Energy Information Administration.

5 Methodological Annex

The landing price of fish products is generally determined by the interplay between supply from harvesters and demand from buyers and processors, which is itself determined by consumers' preferences and willingness to pay.

The aggregate supply of fish products can be estimated from available data on landings by the different producing countries. Due to the globalization of markets, supply is evaluated for Canada, North America, other major producing countries and worldwide. Information on demand for fish products is not readily available. Hence, changes in demand are approximated by evaluating the changes in some of the main factors influencing consumer demand in key markets. These factors include gross domestic product (GDP), income per capita, exchange rate, unemployment rate and consumer confidence index. After testing many combinations of variables, only the most relevant and robust specifications were kept (Table 4).

The statistical model explaining the average landing prices of snow crab, lobster, shrimp and cod in Atlantic Canada has the following form:

$$\begin{aligned} p_{it} &= f(\text{Supply}_{it}, \text{Demand}_{it}) \\ &= f(\text{Landed Quantities}_{it}, \text{Economic Indicators Affecting Demand}_{it}) \\ &= \alpha + \beta \text{LAN}_{it} + \delta \text{XR}_{it} + \lambda \text{GDP}_{it} + \varepsilon_{it} \end{aligned}$$

Where :

p_{it} : average landing price of species i during season t

LAN_{it} : landed quantities of species i during season t in the main producing countries

XR_{it} : average exchange rate during the season t between the Canadian dollar and the currencies of major export markets of species i

GDP_{it} : GDP of the main consumer markets of species i in season t

ε_{it} : the error term

A system of four equations explaining the price of the species under study was estimated. To control for correlation between the error terms of the four equations, a seemingly unrelated regression (SUR)⁸ was performed. The model is estimated in a double-logarithmic form, i.e. the natural logarithm was applied to landing prices as well as to the set of explanatory variables in each equation. In addition to simplifying the interpretation of results, this form of estimation seems appropriate to our analysis because it significantly increases the explanatory power of regressions. A Durbin-Watson test allowed ruling out serial correlation between equations residuals with a 95% confidence level. The R^2 of the equations, i.e. the percentage change in price that can be explained by the model, is 74.3% for snow crab, 92.1% for lobster, 84.1% for shrimp and 86.5% for cod.

8 Zellner, A. (1962). "An efficient method of estimating seemingly unrelated regression equations and tests for aggregation bias", *Journal of the American Statistical Association* V.57 N.298, pp. 348-368.