Economic Outlook for Canada's Atlantic Commercial Fisheries

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Preface

The following document, prepared in November 2012 by Economic Analysis and Statistics, Strategic Policy, presents the economic outlook for selected Atlantic Canadian fisheries in 2013. 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 2013, as well as economic indicators for Canada's key markets.

Acknowledgments

Table of Contents

1 2013 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 2013 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[1].

Table 1: 2013 Outlook for Landed Prices (percentage change from 2012) - Preliminary

	Supply	Demand		Total[1]
	Landed Quantities	Exchange Rate	Economic Growth	
Snow Crab				1%
Lobster				3%
Shrimp				1%
Cod				- 3%

Outlook	> +2.5%	-2.5% > < +2.5%	< -2.5%

The following is a summary description of each species-specific outlook:

Snow crab

The outlook for Snow crab prices indicates a slight increase for 2013, mainly influenced by the announced 25% reduction in the Alaskan snow crab total allowable catch (TAC) for 2012-13. The expected depreciation of the Japanese Yen is a potential source of uncertainty, as there is considerable variation in the forecasts ranging from no change to a 10% weakening of the Yen in relation to the Canadian dollar in 2013[2]. While Japan is a relatively small export market for Canada, Japanese consumption of snow crab is high and is an important factor in determining the

world price of crab. The current Snow crab outlook is based on the average forecast of six major Canadian banks of a 5% depreciation of the Yen in relation to the Canadian dollar.[3]

Lobster

Lobster's landed prices are heavily influenced by changes in North American supply of lobster.[4] The 2012 lobster season has clearly demonstrated this, as supply gluts caused landed prices to plummet in the US and Canada (see section on Key Markets). Assuming that lobster supply remains stable relative to 2012, the forecasting model suggests that lobster landed prices could increase 3% in 2013 (i.e. relative to 2012 prices). These results must be used with extreme caution, as a sensitivity analysis suggests that an increase in Canadian landings of 10% could instead reduce prices by 9% in 2013. In addition, uncertainty surrounding the fiscal challenges faced by the US could affect the economic growth forecasts for the US economy, which could have a negative impact on the demand for Canadian lobster.

Shrimp

Despite a 38% reduction in the North Atlantic Fisheries Organization (NAFO) Division 3L quota in 2012, wholesale prices for northern shrimp have fallen slightly throughout 2012. A further 22% TAC reduction planned for 2013[5] is expected to lower supply and put upward pressure on Northern shrimp landed prices[6]. The economic growth forecasts for EU economies, one of Canada's major shrimp markets, suggest a potentially negative impact on demand for shrimp, which could counterbalance supply side effects. Overall, the outlook suggests little change for 2013.

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1 The fishery outlook is based on the hypotheses that the exchange rate and gross domestic product (GDP) growth forecasts are accurate, and that supply will remain constant in relation to 2012, with the exception of the decrease in the Alaskan snow crab quota and the estimated decrease for Northern shrimp.
2 The forecast for snow crab assumes Canadian landings are in line with 2012 levels.

3 The model predicts a variance in landed prices from -11% to +14% over the range of bank forecasts.
4 The results reported on table 4 indicate that a 1% change in lobster supply could lead to a 2.08% change in lobster landed prices
5 NAFO Quota table, note 27 http://www.nafo.int/fisheries/frames/tac.html
6 The forecast assumes landings in other shrimp fishing areas in Canada and in Greenland are in line with 2012 levels.

Cod

The model indicates a decline in landed prices for Atlantic cod. While TACs in the Gulf of Maine are expected to fall, model results indicate that even significant shifts in the North American supply are unlikely to substantially affect the price. Rather, the expected depreciation of the US dollar and the Euro with respect to the Canadian dollar are the most significant factors. The risk of weaker than expected US GDP growth resulting from measures to tackle fiscal challenges could negatively affect the Canadian landed price of Atlantic cod.

2 Key Markets

United States (US)

Economic growth in the US following the 2008-09 recession has been slow, and in good part attributable to government spending. US gross domestic product (GDP) is expected to grow 2% in 2013, and accelerating thereafter[7]. Fiscal measures passed on the eve of the New Year, which are intended to address the structural fiscal deficit, may have an impact on consumer demand (i.e. expiry of the 2% payroll-tax cut, which will reduce the purchasing power of workers). In addition, further austerity measures will need to be reconsidered within two months by the US government, including spending cuts and other measures that could have a bearing on GDP growth. The US remains Canada's largest market for fish and seafood products, representing 61% ($2.2B) of total Canadian fish and seafood exports in 2012 (Jan.-Oct.)[8]. The US was Canada's largest export market for snow crab (74%), lobster (80%), and Atlantic cod (74%) in 2012.

Asia

China is Canada's second-largest fish and seafood export market overall, accounting for 11% of total fish and seafood exports in 2012 (Jan.-Oct.) for a value of $387M[9]. Total Canadian exports to China are expected to grow rapidly in the coming decade as trade with China increases.[10] The prospects for China in 2013 are marked by slower economic growth, political leadership changes[11] and strained relations with its main fish and seafood trade partner, Japan.[12] The International Monetary Fund (IMF) forecasts that real GDP of newly industrialized Asian economies [13]

will grow at an average rate of 3-4% during 2013-2017, while developing Asian countries (including China)[14] will grow at an average of 7-8% over the same period.

Japan

Following the Tōhoku earthquake and tsunami in March 2011, significant infrastructure and property were destroyed in Japan. While disaster recovery spending helped to stimulate real GDP growth to 1.6% in 2012, growth is expected to fall to 0.7% in 2013.[15] Japanese unemployment remains low compared to other advanced economies at 5% (second quarter, Q2 2012). Japan is Canada's third largest market for snow crab accounting for 9% of exports in 2012. Canada exported $233M of seafood products to Japan in 2012 (Jan.-Oct.)[16].

European Union (EU)

The EU economy continues to worsen. In the third quarter (Q3) of 2012, unemployment in the Eurozone[17] reached a record high of 11.6%. In addition, real GDP in the Eurozone is expected to decrease 0.4% in 2012, shrink by 0.1% in 2013, and return to a tepid growth of 1.3% in 2014.[18] The OECD observes that the "main risk is a lack of sufficient progress by policy makers in resolving the crisis". Ratification of the Canada-EU Trade Agreement (CETA) could improve Canadian exports of seafood products, as tariffs charged by the EU on seafood imported from Canada would decline significantly. The average tariff charged on all Canadian exports of fish products to the EU is 11%, and the tariff rates for the major species considered in this report are 7-20%[19]. Separately from CETA, the

7 OECD Economic Outlook 92, November 2012.
8 Statistics Canada – International Trade Division, latest available data as of December 28, 2012.
9 Statistics Canada – International Trade Division, latest available data as of December 28, 2012.
10 Conference Board of Canada: What Might Canada's Future Exports Look Like? http://www.conferenceboard.ca/e-library/abstract.aspx?did=5151
11 http://www.ft.com/intl/cms/s/0/306eaf46-229c-11e2-b606-00144feabdc0.html#axzz2AzWsQav1
12 In 2012 , China was the largest market for Japanese seafood exports, and Japan was China's largest seafood export market. Source: Global Trade Atlas 2012, latest available data as of December 2012. http://www.gtis.com/GTA/
13 Hong Kong SAR, Korea, Singapore, and Taiwan.

14 Afghanistan, Bangladesh, Bhutan, Brunei, Burma, Cambodia, China, Fiji, India, Indonesia, Kiribati, Laos, Malaysia, Maldives, Nepal, Pakistan, Papua New Guinea, Philippines, Samoa, Solomon Islands, Sri Lanka, Thailand, Timor-Leste, Tonga, Tuvalu, Vanuatu, and Vietnam.
15 OECD Economic Outlook 92, November 2012
16 Statistics Canada – International Trade Division, latest available data as of December 28, 2012.
17 Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain
18 OECD Economic Outlook 92, November 2012/
19 http://tariffanalysis.wto.org/

EU has introduced a tariff-free import quota for cooked and peeled Northern shrimp of 30,000 tonnes.[20] The European Union represented 39% of Canadian shrimp exports and 7% of Canadian lobster exports in 2012.[21] Canada exported $296M of seafood products to the EU in 2012 (Jan.-Oct.) .[22]

20 http://www.undercurrentnews.com/2012/12/05/eu-tariffs-relief-for-pollock-less-so-for-canners./
21 Statistics Canada – International Trade Division, latest available data as of December 28, 2012
22 Statistics Canada – International Trade Division, latest available data as of December 28, 2012.

3   Outlook for Commercial Fisheries

Snow Crab

Illegal, unreported, and unregulated (IUU) fishing for snow crab in Russian waters has significantly affected the world snow crab price, and is believed to be a major factor in the observed declines of 15-20% (year over year) in monthly wholesale prices during the period May-September 2012.[23] In Japan and the US, approximately 4.5 million kg of snow crab imported from Russia in January-September 2012 was not accounted for.[24] However, low Japanese landings were an important factor in the recovery of the Canadian wholesale price in October and November 2012. For 2013, the Alaska Department of Fish and Game has set the 2013 TAC for snow crab at 66 million lbs. (30 million kg), a reduction of 25% compared to 2012. The Japanese Yen is expected to weaken against the Canadian dollar, negatively impacting on the Canadian landed price. From a market access and retention perspective, the Nova Scotia snow crab fishery, which accounted for 19% of Canadian landed quantity in 2011, has been certified sustainable by the Marine Stewardship Council (MSC).[25]

Lobster

The year 2012 has been characterized by lobster supply gluts and exceptionally low prices. After seeing a small increase in the spring of 2012, a glut of lobster landed in Maine caused prices to fall dramatically in the month of July, which had important repercussions for the Gulf of Saint Lawrence lobster fishery. Average wholesale prices for live American lobster were under $4.00/lb in July 2012, well below the 10-year low recorded in 2010 for the month of July of $6.34/lb. The Scotia-Fundy fall lobster fishery has also seen very low landed prices, as landed quantities have remained strong in the face of a weaker demand. Lobster supply exerts an important influence on landed prices and will likely remain an important factor in determining the economic outlook for the 2013 fishing season.

Shrimp

The wholesale price of Northern shrimp has settled near $4.75/lb through 2012, following a 25% increase in 2011.[26] NAFO is continuing to decrease quotas for Northern shrimp in Division 3L (i.e. 38% in 2011 and 22% planned for 2013). This division accounted for 9% of Canadian landings in 2011, and would reduce the overall Canadian TAC by 2%. This quota reduction is likely to put upward pressure on the landed price. In 2013, fuel costs are expected to fall slightly as crude oil prices decrease, which could potentially contribute to better margins for shrimp harvesters.

Cod

Cod stocks have fallen in Europe's Baltic and North Seas. As a result, the European Union agreed to an 8% reduction in the Baltic Sea TAC for 2013.[27] Meanwhile, cod stocks in the Barents Sea are increasing and the Joint Norwegian-Russian Fisheries Commission increased their 2013 TAC for cod by 36% to a record 1 billion kg (i.e. a million tonnes).[28] In 2010, this fishery represented 68% of worldwide Atlantic cod production.[29] Wholesale prices have increased throughout 2012, with monthly averages increasing 20-60% year over year, setting a record high of $4.31/lb. in July 2012[30].

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23 Urner Barry's Comtell: UB Crab, Snow, Cluster, Newfoundland, 5-8 oz., FOB Mid-Atlantic
24 Seafood News: Crab mafia accelerates activities in Russia, Oct. 10, Eugene Gerden
25 http://www.msc.org/track-a-fishery/certified/north-west-atlantic/scotian_shelf_gulf_st_lawrence_snow_crab_trap http://www.msc.org/track-a-fishery/certified/north-west-atlantic/gulf_of_st_lawrence_snow_crab_trap

26 Urner Barry's Comtell: UB Shrimp, Pandalus Borealis, Imported, 250/350 Count, FOB East Coast
27 http://www.consilium.europa.eu/homepage/highlights/management-of-fisheries-in-the-baltic-sea-for-2013-in-place?lang=en
28 Statistical tests showed that landings from Norway and Russia, and world landings of cod are not statistically significant in explaining changes in the Canadian cod landed price. Therefore, the final model only includes North American supply of cod as an explanatory variable.
29 http://www.jointfish.no/nno/content/download/325/5288/file/fangst-torsk.pdf
30 Urner Barry's Comtell: UB Cod, Market, Whole, FOB NY Fulton Market

Table 2: Wholesale Price on the American Market for Snow Crab, Lobster, Shrimp and Cod (CAD$/ lb) [31]

	Average Price October 2011	Average Price October 2012	Change vs. 2011
Snow crab (5–8 oz.)	$5.83	$4.87	-17%
Lobster (live, 1¼ lb.)	$4.46	$4.02	-10%
Northern shrimp (250/350)	$4.95	$4.74	-4%
Atlantic cod (whole)	$2.91	$3.59	24%

31 Urner Barry's Comtell. Prices converted to Canadian dollars using Bank of Canada monthly average rates.

4 Macroeconomic Trends

World

Five years after the beginning of the world economic downturn, a hesitant and uneven recovery is projected over the next two years, with a modest overall global economic expansion expected in 2013, though risks from Europe could slow expansion considerably. The Organization for Economic Co-operation and Development (OECD) predicts 3.4% growth in world real GDP for 2013[32] .

A recession is ongoing in the Euro area and will remain until well into 2013. The US economy is growing but performance remains below what was expected earlier last year. Uncertainty remains with respect to the potential impact of measures to combat the fiscal challenges faced by the US, which could have a negative impact on economic performance. Asian economies are shifting from output for export to output for domestic consumption. The emerging Asian economies in particular have fairly high savings rates, but their income growth is so strong that they can increase spending by a substantial amount. Spending increases and continued productivity gains will propel these emerging economies.[33] Inflation had been a concern in several countries, but slightly slower growth has been observed. Latin America has benefited from the global commodities boom, but there is also plenty of domestic consumption fueling economic activity.[34]

Canada

The Bank of Canada forecasts real GDP growth of 2.3% in 2013, while the OECD Economic Outlook predicts real GDP growth for Canada of 1.8%. Total Canadian exports are expected to continue their recovery from the 2008-09 recession, although they are not expected to reach pre-recession levels

until 2014.[35]   Nevertheless, exports of Canadian fish and seafood products increased to $4.1 billion dollars in 2011, exceeding pre-recession levels (i.e. 2008) by 7%[36] . The total value of seafood exports for the period January-October in 2012 ($3.6B) is keeping pace with the levels observed in the same period of 2011 [37].

Table 3: Key macroeconomic indicators, estimates for 2012 and forecasts for 2013

	Growth in real GDP *		Exchange rates (per $1 CAD **)	
	2012[f]	2013[p]	2012[f]	2013[p]
Canada	2.0%	**1.8%**	-	-
United States	2.2%	**2.0%**	1.00	**1.01**
Euro zone	-0.4%	**-0.1%**	0.78	**0.81**
United Kingdom	-0.1%	**0.9%**	0.63	**0.63**
Japan	1.6%	**0.7%**	80.7	**83.0**
China	8.5%	**7.5%**	6.31	**6.15**

* OECD Economic Outlook, Volume 2012 Issue 2 - No. 92 - © OECD 2012, Statistical annex, Annex Table 1. Real GDP: http://www.oecd.org/eco/economicoutlook.htm
** Average of the exchange rate forecasts of the following Canadian banks: RBC, TD, Scotiabank, BMO, CIBC, BNC.
f: Forecasted
p: Preliminary
Note: The 2012 exchange rate forecasts are a blend of available historical data and the six banks' forecasts for the fourth quarter.

Fuel Costs

Brent crude oil prices fell 14% from USD $110/barrel to USD $95/barrel between May and June 2012, a 16% decline year/year from 2011. Prices then steadily increased through the summer to USD $112/barrel in September 2012 and fell slightly to USD $109/barrel in October 2012.

No major disturbances are projected that would affect world oil prices; however the ongoing geopolitical fragility of the Middle East continues to pose challenges in that region. The US Energy Information Administration (EIA) projects that the Brent spot price will fall to USD $103/barrel in 2013, while the Canadian dollar is expected to increase in

32 OECD Economic Outlook, Volume 2012 Issue 2.
33 http://www.forbes.com/sites/billconerly/2012/04/24/international-economic-forecast-2012-2013/
34 http://www.imf.org/external/pubs/ft/weo/2012/01/pdf/c2.pdf

35 http://www.bankofcanada.ca/wp-content/uploads/2012/10/opening-statement-241012.pdf
36 http://www.dfo-mpo.gc.ca/stats/trade-commerce/can/export/export-eng.htm
37 Statistics Canada – International Trade Division, latest available data as of December 28, 2012.

value in relation to the US dollar, modestly reducing operating costs for fish harvesters.[38] Fuel costs are not incorporated into the model as evidence suggests the supply of species is inelastic with respect to operating costs.

38 EIA November 2012 Short-term Energy Outlook, http://www.eia.gov/forecasts/steo/

5 Statistical Modelling of the Landing Price

The following table shows the preliminary results of the econometric analysis of factors influencing the landed 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% change in the value of the explanatory variable, all things being otherwise equal. The relative size of the coefficients for each species can be interpreted as a measure of the price elasticity of supply and demand for that factor and species.

Table 4: Results of the System of Equations, 1990-2011 (Seemingly Unrelated Regressions)

	Coefficient	Standard error	Level of Significance
Price for snow crab			
North American landings	-0.66	0.20	1%
US$/CAD$	-0.26	0.39	N.S.
YEN¥/CAD$	-1.37	0.33	1%
United States GDP	0.53	0.27	10%
Constant	11.05	6.78	N.S.
Observations (annual)	*22*		
Adjusted R^2	*68.4%*		
Price for lobster			
North American landings	-1.24	0.18	1%
US$/CAD$	-0.83	0.13	1%
United States GDP	2.08	0.15	1%
Constant	-8.96	2.03	1%
Observations (annual)	*22*		
Adjusted R^2	*92.1%*		
Price for shrimp			
Canadian and Greenlandic landings	-0.78	0.11	1%
US$/CAD$	-1.20	0.22	1%
EUR€/CAD$	0.34	0.29	N.S.
Denmark, Russia, and UK GDP	0.29	0.07	1%
Constant	11.91	1.50	1%
Observations (annual)	*22*		
Adjusted R^2	*73.1%*		
Price for cod			
North American landings	-0.10	0.05	5%
US$/CAD$	-0.82	0.17	1%
EUR€/CAD$	-0.75	0.38	5%
United States GDP	0.89	0.24	1%
Constant	-12.92	4.70	1%
Observations (annual)	*22*		
Adjusted R^2	*81.1%*		

N.S.: Not Statistically Significant

6   Methodological Annex

The landed 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 price used in the analysis is the average price received in that year for each species, and therefore may vary based on product, fleet and other characteristics or factors not considered in the model; investigation into the effect of these factors is an area for future research

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, oil prices, and consumer confidence index. The set of explanatory variables was chosen based on its potential to forecast prices, and therefore excludes some other factors that may affect demand (e.g. substitutes, costs of input, stock levels, domestic indicators, etc.). After testing many combinations of variables, only the most relevant and robust specifications were kept (as listed in Table 4).

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

$$p_{it} = f (Supply_{it}, Demand_{it})$$

$$= f (Landed\ Quantities_{it}, Economic\ Indicators\ Affecting\ Demand_{it})$$

$$= \alpha + \beta\ LAN_{it} + \delta\ XR_{it} + \lambda\ GDP_{it} + \varepsilon_{it}$$

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)[39] was performed using the iterative generalized least squares method. The model is estimated in a double-logarithmic form, i.e. the natural logarithm was applied to landed 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. Potential structural changes, trend variables, prices delayed (i.e. lags) and the first difference of variables were tested. Even though the model proved relatively robust in its actual form, potential stationarity issues should be examined more closely in future research. The adjusted R^2 of the equations, i.e. the percentage change in price that can be explained by the model, is 68.7% for snow crab, 92.1% for lobster, 73.6% for shrimp, and 81.0% for cod.

39 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.