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Alberta's and Canada's China Trade: A Review

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Executive Summary:

1. The report selectively reviews recent academic research, macro-economic reports, and resulting implications for managers. One noteworthy, if not entirely surprising, empirical finding is that multinational firms in the People's Republic of China (PRC) seem to prefer sourcing from their home country rather than importing from the cheapest foreign supplier of the required input components or materials.
2. DFAIT's macro-based "Canada-China Economic Complementarities Study" points out the need to improve the clarity and predictability of the regulatory environment in both countries. A significant step has just been taken with the signing of the Canada-China Foreign Investment Promotion and Protection Agreement in Vladivostok (September 2012).
3. One Management literature finding, amongst others, is that simple manufacturing operations are increasingly pushed inland and that low cost labour is disappearing as a country-specific advantage of the PRC.
4. While Canada's merchandise exports to the PRC have nearly tripled between 2001 and 2011, such exports to Hong Kong and Taiwan have grown by much less, namely 140% and 72%, respectively. In terms of their share of total exports, Canada's PRC-destined exports grew by 256% during that decade.
5. For Alberta, the corresponding growth rate of exports to the PRC was 237%, with the growth rates of exports to Hong Kong and Taiwan being 45% and negative 10%, respectively. The proportion of total provincial exports to Hong Kong and Taiwan declined, while the percentage of exports to the PRC doubled. While the Alberta results are less positive in comparison those of Canada, they must be seen in the context of very rapidly growing energy exports from the province to the US during the decade under study.
6. In 2011, Alberta's top export product groups to the PRC were Mineral Fuels, Organic Chemicals, Fats, Oils and Waxes, Oil Seeds, and Wood-pulp. The top specific sellers were Ethylene Glycol, Crude Oil, Rape and Colza Oils and Seeds, as well as Nickel and Sulfur.
7. Substantially smaller in value, Alberta's top exports to Hong Kong consisted of Meat and Electrical Machinery. The top exports to Taiwan were Nickel and Wood-pulp.
8. Overall, most of Alberta's exports to the Greater China Region consisted of natural resource-based materials. As this region was growing very rapidly during the last decade, the report concludes that Alberta's export growth has not kept pace with regional growth – which was dominated by the PRC's annual 10%-or-better pace in real terms. The composition of exports from Alberta to Hong Kong was different from that to the PRC, inasmuch as no energy products were exported to Hong Kong.

9. Alberta's and Canada's market shares among the PRC's total imports are stagnant and small for the recent 2006 to 2010 period. The question arises, whether the globally increasing direct investment in natural resources by PRC-based enterprises will translate into intensified exports from Canada. And if it does not do so, the reasons and obstacles to export growth will need to be explored. The report raises this and other issues on which detailed case studies of Canadian exports to the Greater China region might shed light. An analysis of the role of middlemen in the trade of Canada's natural resources and processed materials would also prove beneficial.

Introduction:

This report is a review of Alberta's and Canada's merchandise exports to the Peoples' Republic of China, Hong Kong and Taiwan. It is topical because the Government of Canada is pondering its response to the offer of the Peoples' Republic of China to begin trade liberalization talks. In a broader context, the heavy reliance of Canadian and Albertan exporters on the slow-growing US economy encourages efforts to diversify markets, with a focus on faster growing areas of the world. There is little doubt that China is a fast-growing part of the world.

Greater China here is taken to consist of the Peoples' Republic of China (PRC), the Special Administrative Region Hong Kong, and Chinese Taipei (Taiwan). The economic growth of the PRC and its concomitant rise as an international trading partner have been well documented in recent years, with annual real GDP additions of nearly 10% the norm and exports growing even faster than that. Not surprisingly, the PRC has recently been identified by the Department of Foreign Affairs and International Trade (DFAIT) as Canada's second largest future merchandise export market after the US (DFAIT, 2012). While merchandise imports are the important 'other side' of the coin of trade, they are not the subject of investigation here. Merchandise imports to Alberta of products from greater China are typically landed in Vancouver, but their final destination tends to be less reliably documented. Though import data by province of destination do exist, they are believed to be less accurate than export statistics.

The emergence of global value chains, involving the delivery of products (and services) between related and unrelated firms by means of outsourcing and off-shoring, is a relatively new phenomenon. Re-export of 'transformed' goods then represents the next stage in the chain. Information on how much transformation occurs at each stage of the value chain is not readily available in the trade data. As goods are 'transformed', their description changes, and there does not exist a readily traceable link between the imported components and their subsequent re-export after transformation or further processing. Research on global value chains is still in its infancy, and the available data sources do not adequately capture the degree of transformation and value added in the various locations of such a value chain. For example, rapidly growing trade volumes – and values – can be consistent with the value added component of each export declining (R. Johnson and G. Noguera, cited by *The Economist*, August 4th, 2012, p. 68).

The present report is of necessity based on export data using the existing internationally agreed classification of the Harmonized System (HS) which consists of 99 "Chapters" or major headings. This system is also used by the PRC, by Hong Kong, and by Taiwan when reporting their imports. In consequence, a

measure of comparability results that makes possible the calculation and review of the market share of Alberta's exports in China, even though it is derived from two different national reporting entities. The development of the share in an important export market is, of course, a key indicator of export performance.

The merchandise export data capture Canada's and Alberta's contribution to GDP and job creation only in part because service exports are not included. Moreover, the contributions of Canadian firms' direct investments in China are captured only when profits are repatriated or payments are received for services provided by the Canadian parent. In recent years, service exports and foreign direct investment have grown at a faster pace than merchandise exports. Ignoring the former in this report will, therefore, result in an incomplete picture of the economic relationship with greater China.

Part 1 of this report reviews recent research on Canada-China trade and sets the stage for detailing Alberta's exports to greater China during the last decade. Several recent studies are summarized and analyzed for their relevance to and implications for Alberta's present and future exports to the greater China region.

Part 2 presents details of the products Alberta-based companies exported to greater China and addresses questions regarding the nature of the products to the three different destinations, as well the market share of the three destinations in Alberta's total merchandise exports. The focus is on the top 25 product groups (2-digit HS-classification) as they account for nearly 100% of Alberta's exports to the region.

Inquiries determined that the data available do not include a breakdown of Alberta's exports to specific destinations, such as municipalities or provinces within China. The Chinese sources advised that source countries of imports into provinces in the PRC are available in some cases but, in the few instances where the source country could be identified, the province of origin in Canada could not, nor could the HS-classification be ascertained. Another Chinese speaking researcher of our team (Dr. Yanqing Chan of St. Francis Xavier University) was also unable to locate destinations of Alberta exports by sub-unit within the PRC. However, some insights into the sourcing decisions of PRC-importers are found in the literature review of Part 1.

In Part 3 we pursue how the export products differ for the three Chinese markets, in an attempt to identify a possibly special role that Hong Kong may play as an intermediary for Canadian exporters to China. As well, the pattern of export growth to the China markets will be re-visited in this section to enable inferences about Canada's role as a supplier to the region. For these reasons, Part 3 will draw on the data analysis of Part 2. Part 3 will also review the development of the shares in total merchandise imports from Canada and Alberta. The evolution of these market shares represents a gauge for the export performance in the three China markets.

Part 4 will summarize the findings of the earlier sections and provide some insights that Alberta exporters may find useful in their pursuit of the fast-growing but complex China markets. In addition to the findings of the earlier sections this part relies on interviews with Alberta-based exporters or investors in China and on recent literature that has a direct bearing on how exporters should proceed (Peng, 2012). Part 4 will also address limitations of the study and provide direction for future research.

1. Literature Review

We distinguish three strands of research when we scan the recent literature on Canada's and Alberta's trade with China. These can be delineated into macro data-based reports, such as the "Canada's State of Trade: Trade and Investment Update 2011" (DFAIT, 2012), academic inquiries based on theoretical frameworks subjected to empirical testing (Head, Jing and Ries, 2012), and advisory reports that draw on the experience of experts and synthesize knowledge from various sources (Peng, 2012).

Macro Data-based Findings

The DFAIT study notes that, in 2011, the PRC has retained its rank as Canada's third largest merchandise export market, after the US and the UK. Hong Kong and Taiwan together absorbed less than one third as many Canadian exports as the PRC. DFAIT's report resorts to the gravity model of trade to estimate the future importance of China as a trading partner for Canada. The gravity model views trade between any two countries as a function of their respective sizes and the distance between them, with culture/language, membership in the World Trade Organization (WTO), and accessibility also contributing to the explanation of observed trade.

When the DFAIT researchers applied third party forecasts for GDP-growth to 2040, they found that China would be moving from being Canada's third largest merchandise export market to its second largest, after the US (DFAIT, 2012, p.19).

A more specific report on Alberta-China relations was published by the China Institute of the University of Alberta (2011). "Building a Long Term Economic Energy Relationship between Alberta and China" starts from the premise that China represents an opportunity for Alberta to engage in a mutually beneficial economic relationship based on energy exports, investment, processed intermediate materials, and technical cooperation.

The report observes that Canada's and Alberta's profiles as energy exporters to China and the rest of Asia are "microscopic". It then proceeds to outline a strategy that, in several steps, would lead to the institution of an economic cooperation framework for the energy sector between China and Alberta, as well as the other Western provinces.

Among other background material, the report reviews the recent energy trade and Chinese investments in Alberta's energy sector, as well as the total of Alberta's exports to the PRC during 2008 and 2009. It notes the dramatic increase in Alberta's energy exports during these two years and observes the increasing gap between demand for oil and domestic production in the PRC. As a result, it predicts and seeks to encourage further Chinese investment in Alberta's energy sector, recommending a stronger dialogue and an ambitious and outcome-

focused agenda for consultations, with the goal of moving Alberta from its present role as a residual supplier to a strategic partnership with the PRC.

Most recently, a bilateral study group explored the possible mutual benefits that would result from closer trading ties based on complementarities in seven specific sectors: agriculture, clean technologies, machinery, natural resources, services, textiles, and transportation infrastructure and aerospace.

The "Canada-China Economic Complementarities Study", by the Economic Partnership Working Group (DFAIT, 2012) covers several industry sectors in which Alberta has specific skills or interests, including agriculture, natural resources, services, and clean technologies. Its policy recommendations are obviously relevant to the province, namely to embark on a closer (and freer) trade relationship with the PRC on a sector-by-sector basis. Identifying opportunities and challenges, it points out potential benefits for Canada from Chinese inputs for advanced materials and equipment, helping Canadian firms to remain competitive. In addition, through global value chains, the joint pursuit of opportunities in third markets holds promise.

Among the challenges referred to by the study is the need to improve the clarity and predictability of the regulatory environment in both countries, including the passage of a Canada-China Foreign Investment Promotion and Protection Agreement on which substantive negotiations have recently been concluded.

Academic Literature

One ambitious study seeks to validate several theoretical trade models by means of a unique data set on imports of municipalities in the PRC. Head, Jing, and Ries (2011) to our knowledge are the first to explore the sourcing decisions of importing firms. This is a new and important direction in academic research that can only be pursued with firm-level import data. For example, Ricardian trade theory (i.e. comparative advantage) suggests that the exporter with the lowest cost should be the *sole* supplier to a given export market, yet importing countries and regions were found to be relying on several sources. Similar conclusions result for trade models that use 'love of variety' as a motivation and for models based on the assumption of heterogeneous firms. The authors' use of detailed Chinese customs data for 2006 allows them to show that in practice Chinese cities do not rely on a single (low cost) source. One contribution of the paper then is its evidence that, even for homogeneous products, single sourcing by cities is rare. This then raises the question of how to explain observed reliance on multiple sources. By constructing a random sourcing model and introducing fixed market entry costs to heterogeneous preferences of importing firms, i.e. preferences based on different tastes, the additional contribution of this paper is that it sheds some light on the observed importer behavior in the huge market of the PRC.

One key inference of Head, Jing, and Ries is that in China, multinational production networks imply that foreign-owned firms handle the majority of imports. About two thirds of these foreign firms seem to "exhibit strong orientations towards countries that we infer to be their home bases." (p.34) In addition, their research helps focus future theoretical and empirical research on the preferences of importing firms. In sum, academic research has included the growth of global value chains and directs attention to the advent of 'pre-ordained' suppliers of imported components and other inputs.

Management Literature

Several Canadian researchers have contributed to an emerging literature that aims to help Canadian firms, especially the small and medium-sized enterprises (SMEs), enter China's market. Much of this advice is based on empirical studies originally published in academic journals. Starting with the opportunity offered by a fast-growing economy, this management-focused literature covers several aspects of market entry. Not only can Canadian SMEs export successfully by becoming a link in a supply chain, they can increasingly invest directly, via joint ventures or wholly owned subsidiaries. In this way Canadian firms can partake in the transformation of China's economy from a focus on export processing (manufacturing) to an orientation towards internal demand, a transformation encouraged by the Government of the PRC.

What types of firms should go to China, where should they locate, what entry mode should they choose, and how should they implement their strategy? Answers to such questions are provided by George Z. Peng (2012) and in the form of a new international business textbook with an Asia Pacific perspective by A. Delios, Paul W. Beamish and Jane W. Lu (2010).

SMEs from Germany, Japan and many other countries, including Canada, have been active and successful in China. Two Canadian firms interviewed for this report started, respectively, with exporting (pulp) and importing (outsourcing) activities. The knowledge gained and the shifts in market demand enabled both to adapt to new opportunities, with the result that both operate as wholly owned Canadian firms (a joint venture between two Canadian firms in one case) in the PRC, increasingly addressing the needs of the local market from local facilities. This means that their former exports from Canada to China no longer show in the Canadian trade statistics. In turn, their experience emphasizes that exports are not the only indication of successful international business involvement. Similarly, an Austrian SME interviewed for this report had located in a German industrial park near a coastal metropolis. It had initially produced parts for European car manufacturers, benefiting from lower cost of skilled Chinese labour and the services provided by the industrial park. With time this firm became a producer of similar, albeit less complex components, for the emerging Chinese auto manufacturers and the Chinese subsidiaries of their

original European customers. In the Austrian trade statistics, this firm's China activities are captured as imports of specialty car parts, yet the greater part of its business consists of production for the China market, with profits reinvested locally.

Peng (2012) describes the PRC's changing policy with respect to where firms should locate: simple manufacturing operations are increasingly pushed inland, while innovation and research-intensive activities are taking their place in the coastal regions of the PRC ("teng long huan niao" or empty the cage to switch birds). Low cost labour is now found in the West of China -- or in Bangladesh!

Staffing of operations in China is another issue the management literature addresses. The findings of the literature are summarized in Peng (2012) and confirmed by our interviews. Canadian SMEs tend to rely on Mandarin speakers. For the most part, this means newly naturalized Chinese Canadians who can manage local employees, are proficient in English, have familiarity with both cultures, and are comfortable in the particular local environment in China. As China's regions differ significantly from each other, local culture influences the relationship with local officials and cooperation with the officials has been a key success factor for foreign SMEs (Peng, 2012, p.32).

2. Canada and Alberta: Merchandise Exports to the PRC, Hong Kong, and Taiwan

Overall Exports[1]

The aggregate exports to the greater China region, shown in Table 2.1 below, provide a dimensional backdrop. In terms of the nominal value of total Canadian merchandise exports in 2011 amounted to $21.5 billion, comprised of $16.8 billion to the PRC, $3 billion to Hong Kong and $1.8 billion to Taiwan. Not surprisingly, over the last ten years Canadian exports to the PRC grew by 295%, while those to Hong Kong and Taiwan increased by 140% and 72%, respectively. In absolute amounts and in terms of actual and potential growth, the greater China market has major significance for Canada. Interestingly, Taiwan has not grown as much as Hong Kong or as the PRC in terms of the share of Canadian exports it absorbs. The PRC, by contrast, has more than doubled its share of Canada's world exports between 2001 and 2011.

Table 2.1. Total Canadian Exports by Country of Destination and Shares of Canada's World Exports (Can$ billions)

	Total Exports			Share of World Exports(based on US$)		
Year	PRC	Hong Kong	Taiwan	PRC	Hong Kong	Taiwan
2001	4.26	1.24	1.02	1.06%	0.31%	0.25%
2002	4.13	1.21	1.13	1.04%	0.30%	0.28%
2003	4.81	1.18	1.24	1.26%	0.31%	0.33%
2004	6.77	1.39	1.24	1.64%	0.34%	0.30%
2005	7.21	1.45	1.36	1.65%	0.33%	0.31%
2006	7.80	1.61	1.40	1.77%	0.37%	0.32%
2007	9.51	1.55	1.55	2.11%	0.34%	0.34%
2008	10.47	1.77	1.56	2.17%	0.37%	0.32%
2009	11.15	1.49	1.10	3.10%	0.42%	0.31%
2010	13.23	1.88	1.29	3.31%	0.47%	0.32%
2011	16.81	2.97	1.79	3.76%	0.66%	0.39%
Growth 2001-2011	**294.6%**	**139.5%**	**71.6%**	**255%**	**113%**	**56%**

Alberta exported merchandise in the value of $3 billion to the PRC in 2011, representing 18% of Canada's total (Table 2.2 below), with a growth of 237% in nominal value over ten years, i.e. slower than Canada's total exports to that destination. Similarly, Alberta's export values to Hong Kong and Taiwan grew more slowly than Canada's total to these destinations. While the PRC's share of Alberta's exports more than doubled since 2001, Hong Kong and, in particular, Taiwan decreased in importance as export markets for the province. Closer

[1] All Canadian merchandise export data in this report are from Trade Data Online, accessed July, 2012 www.ic.gc.ca/eic/site/tdo-dcd.nsf/eng/home

scrutiny of the products exported to the three China markets hopefully will provide at least a partial explanation of these divergent trends.

Analogous to Table 2.1 for total Canadian exports to the region, Table 2.2 summarizes the values of Alberta's exports to the PRC, Hong Kong, and Taiwan, as well as their respective shares in Alberta's total exports. It is noteworthy that while Canada has increased its share of exports to all three destinations, this was not the case for Alberta's exports to Hong Kong and Taiwan. Even for the PRC, the share of Alberta's exports merely doubled while Canada's grew by more than 250%. Seen in this context, Alberta was not a star export performer. But this conclusion has to be tempered by the fact that large increases in the value of fuel exports from Alberta to the US may be the cause of the smaller share of exports going to Hong Kong and Taiwan. When Alberta's total exports are examined in more detail in the following, we will return to this point.

Table 2.2. Total Alberta Exports by Country of Destination and Shares of Alberta's World Exports (Can$ billions)

Year	Total Exports			Share of Alberta's Exports to the World		
	PRC	Hong Kong	Taiwan	PRC	Hong Kong	Taiwan
2001	0.90	0.11	0.21	1.56%	0.19%	0.37%
2002	0.85	0.13	0.29	1.71%	0.27%	0.59%
2003	0.97	0.11	0.29	1.68%	0.20%	0.50%
2004	1.92	0.13	0.19	2.98%	0.20%	0.30%
2005	2.05	0.14	0.20	2.65%	0.19%	0.26%
2006	2.19	0.12	0.19	2.78%	0.16%	0.24%
2007	2.84	0.14	0.25	3.45%	0.17%	0.31%
2008	3.14	0.12	0.24	2.83%	0.11%	0.22%
2009	2.72	0.10	0.16	3.86%	0.15%	0.22%
2010	2.87	0.15	0.19	3.63%	0.19%	0.24%
2011	3.03	0.16	0.19	3.24%	0.17%	0.20%
Growth 2001-2011	**236.7%**	**45.5%**	**-10.0%**	**108%**	**-11%**	**-45%**

The Top 25 Export Products

In Table 2.3 below, Canada's top 25 exports to the PRC are shown according to Chapter (two digits) of the HS classification. The PRC's average tariff rate on agricultural imports was 15.6%, while non-agricultural imports faced an average tariff rate of 8.7%. The PRC is still a high tariff country for Canadian exports: Canada's average tariffs, by contrast, are 11.3% and 2.6%, for agricultural and non-agricultural imports respectively. (DFAIT, 2012) In addition, the PRC currently still is subject to the more favorable General Preferential Tariff that applies to developing economies. Consequently, its products face lower than average tariffs in Canada.

The HS classification system contains Agricultural and Agri-food products in Chapters 01-14, Minerals and Metals in Chapters 25, 26, and 68-83 (except 77), Energy products in Chapter 27, Chemicals, Plastics and Rubber in Chapters 28-40, Wood, Pulp and Paper in Chapters 44-49, Textiles, Clothing and Leather in Chapters 41-43 and 50-65, Consumer Goods and Miscellaneous Manufactured products in Chapters 66, 67, and 91-99, Mechanical and Electrical Machinery in Chapters 84 and 85, Vehicles and Parts in Chapters 86-89, and Scientific Instruments in Chapter 90. It is readily apparent from Table 2.3 that exports to the PRC region consist significantly of natural resources, with Ores, Pulp, Wood, Mineral Fuels, and Oil Seeds taking the top five positions, all in excess of, or near, the billion dollar level in 2011. Energy exports show a persistent and strong upward trend, as do Nickel, Copper, and Aluminum. Overall Canada's exports to the PRC quadrupled between 2001 and 2011.

Table 2.3. Top Canadian Exports to PRC by HS-2 Chapter (Can$ millions)

HS	Description	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
26	Ores, Slag and Ash	136.86	119.06	147.62	161.13	440.53	558.23	538.44	610.10	1400.50	1347.54	2603.22
47	Woodpulp	590.91	677.52	849.52	1050.88	893.47	1136.82	1499.21	1405.94	1462.29	2129.41	2588.74
44	Wood	32.03	58.86	81.15	104.79	108.73	116.82	166.90	233.83	384.47	835.58	1456.26
27	Mineral Fuels	1.33	3.07	67.94	119.41	80.10	44.87	184.59	254.75	876.09	1270.96	1308.83
12	Oil Seeds and Oleaginous Fruits	403.19	45.23	142.49	134.61	127.78	190.94	381.73	899.29	1566.68	848.33	924.07
84	Machinery	279.07	236.46	289.43	365.28	455.41	519.73	593.88	709.57	917.74	639.50	839.29
75	Nickel	23.37	55.29	92.63	232.55	357.99	783.44	1135.73	955.76	699.06	732.60	742.49
15	Fats, Oils, and Waxes	18.84	45.58	91.46	254.63	94.51	52.03	237.94	277.99	401.75	960.28	700.68
29	Organic Chemicals	268.42	342.06	422.04	869.02	943.27	881.22	1083.04	889.80	374.83	451.69	538.67
31	Fertilizers	332.15	377.86	255.56	274.80	436.11	244.35	414.77	536.24	121.61	326.63	505.16
74	Copper	13.48	17.65	32.38	89.32	113.93	229.63	251.00	259.32	293.58	424.89	375.56
3	Fish	112.96	209.96	254.10	298.14	312.04	271.33	235.29	257.72	220.47	291.01	371.47
85	Electrical Machinery	312.43	248.69	368.72	342.73	369.15	429.42	403.71	320.98	299.16	370.39	343.60
88	Aircrafts and Spacecrafts	401.95	286.40	85.80	68.89	198.43	66.88	82.94	77.88	80.63	143.72	338.99
7	Edible Vegetables	28.95	20.03	7.07	15.11	52.07	59.53	77.67	71.12	107.18	175.07	269.33
39	Plastics	116.87	102.98	95.27	147.37	219.07	332.17	326.62	362.87	322.80	248.72	261.24
90	Scientific and Technical Instrumentation	42.33	69.66	99.58	112.30	138.33	154.60	163.94	218.34	225.32	214.20	240.49
76	Aluminum	16.94	26.03	37.60	49.49	78.03	136.96	153.73	141.63	123.75	195.10	234.57
28	Inorganic Chemicals	156.41	106.38	5.80	26.69	63.32	44.89	55.17	224.96	66.28	141.11	227.46
2	Meat	22.73	30.44	26.49	39.53	54.31	44.78	49.58	45.08	31.73	58.48	204.18
25	Salt, Sulfur, Earths, Lime, Stone, and Cement	52.53	73.32	69.33	140.06	304.87	229.98	266.69	694.55	143.39	186.43	179.80
71	Precious Metals and Stones	0.18	0.45	0.83	6.98	1.47	2.78	5.85	26.34	10.07	10.38	168.70
41	Raw Hides, Skins and Leather	47.93	35.29	37.98	53.18	96.52	87.33	68.22	74.00	84.66	100.99	147.73
43	Furskins and Artificial Fur	1.91	9.72	12.10	18.90	21.59	51.07	58.45	75.75	69.30	96.51	146.92
23	Food Industry Residues and Waste	1.86	4.70	7.33	2.80	1.55	0.65	4.19	1.38	21.87	195.02	142.82
Top 25 Total		**3415.62**	**3202.68**	**3580.20**	**4978.59**	**5962.57**	**6670.45**	**8439.29**	**9625.18**	**10305.24**	**12394.55**	**15860.25**
Total Exports		**4265.24**	**4132.24**	**4807.63**	**6768.48**	**7212.72**	**7804.45**	**9505.39**	**10479.19**	**11147.59**	**13235.27**	**16821.54**

HS Chapters 84, 85, 88, and 90 represent manufacturing exports, like Machinery, Aircraft and Parts, and Scientific Instruments. In 2001, these involved $1.036 billion of $4.265 billion total exports (24.3%). For 2011, the corresponding export values were $1.763 billion of $16.822 billion in total exports to the PRC from Canada (10.5%). Manufactured exports experienced a relative decrease in their importance. This is explained by the strong pull-effect of the PRC's economic growth on exports of primary and processed products from Canada.

Tables 2.4 and 2.5, below, show how Canada's top 25 exports to Hong Kong and Taiwan developed during 2001 to 2011. For Hong Kong, Precious Metals, Electrical Machinery, Aircraft and Parts, as well as Meat and Nickel are the top five products, while for Taiwan the top five are all natural resource- or agriculture-based: Fuels, Nickel, Ores, Pulp, and Meat. Overall, exports to these destinations grew by 139% and 71%, respectively, significantly more slowly than those to the PRC.

Table 2.4. Top Canadian Exports to Hong Kong by HS-2 Chapter (Can$ millions)

HS	Description	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
71	Precious Metals and Stones	1.80	8.00	8.64	6.84	23.54	15.95	31.49	209.76	28.85	227.39	1081.94
85	Electrical Machinery	249.25	210.06	223.11	233.79	273.97	311.16	283.02	231.14	172.86	214.81	260.93
88	Aircrafts and Spacecrafts	2.58	19.01	3.07	1.69	8.03	45.71	19.33	9.61	95.64	29.56	192.44
2	Meat	22.56	12.55	17.54	20.12	59.94	51.75	73.29	173.63	167.87	176.69	151.38
75	Nickel	127.84	107.82	131.02	199.22	172.89	249.75	333.70	241.85	165.44	157.95	150.13
43	Furskins and Artificial Fur	81.17	76.16	88.18	109.18	121.87	150.53	100.03	150.75	99.29	154.44	148.77
3	Fish	76.68	84.87	86.35	98.47	97.27	107.27	91.70	92.06	108.10	120.30	133.45
84	Machinery	84.31	147.04	113.39	108.39	121.61	115.83	88.28	105.89	70.74	85.73	90.29
12	Oil Seeds and Oleaginous Fruits	62.70	76.54	65.54	58.69	74.16	80.71	97.62	77.84	107.33	129.10	81.34
90	Scientific and Technical Instrumentation	31.76	24.58	29.41	33.79	41.82	46.78	43.90	41.85	48.09	69.38	74.12
39	Plastics	37.71	40.18	38.58	37.47	50.00	60.20	70.27	76.99	69.56	74.89	61.82
48	Paper and Paperboard	98.57	62.42	51.69	59.88	59.71	49.11	30.70	62.51	36.74	59.35	56.53
26	Ores, Slag and Ash	0.00	0.03	0.00	0.00	0.00	0.00	0.17	0.00	0.15	0.00	49.04
15	Fats, Oils and Waxes	48.41	7.44	14.06	6.09	16.23	16.23	25.89	17.26	31.01	27.14	33.09
47	Woodpulp	23.72	13.03	17.03	21.10	9.68	0.14	1.19	38.12	35.21	11.50	33.02
44	Wood	42.36	51.88	51.33	35.06	25.81	29.77	22.34	17.36	14.60	24.85	32.62
30	Pharmaceutical Products	5.49	7.74	11.41	19.53	20.25	11.40	11.60	8.87	16.20	32.55	30.78
79	Zinc	19.24	18.73	15.54	38.10	20.85	45.67	31.11	12.61	14.43	21.62	28.06
40	Rubber	10.90	9.32	6.70	7.57	5.67	4.10	5.07	5.91	11.90	8.02	17.85
41	Raw Hides, Skins and Leather	11.61	18.67	21.04	47.56	40.26	25.60	20.43	22.22	11.49	31.66	16.92
33	Essential Oils, Perfumes, Cosmetics and Toilet Preparations	13.17	11.53	12.90	13.39	14.22	13.78	13.40	15.97	15.99	14.50	16.49
5	Products of Animal Origin Not Elsewhere Classified	3.99	4.49	1.87	2.88	2.30	1.66	4.12	7.42	13.12	13.50	11.81
37	Photographic or Cinematographic Goods	0.10	0.10	0.18	0.15	0.18	2.08	6.28	5.49	6.16	12.90	10.66
72	Iron and Steel	7.59	8.07	7.71	10.11	14.94	8.80	11.52	10.58	8.81	7.60	10.35
8	Edible Fruits and Nuts	0.15	0.43	0.80	0.61	0.68	0.52	1.09	0.76	4.37	5.32	10.31
Top 25 Total		**1063.68**	**1020.72**	**1017.11**	**1169.68**	**1275.91**	**1444.51**	**1417.52**	**1636.46**	**1353.94**	**1710.75**	**2784.13**
Total Exports		**1241.83**	**1206.32**	**1175.41**	**1389.10**	**1450.04**	**1609.47**	**1550.08**	**1772.86**	**1493.20**	**1880.34**	**2966.99**

Table 2.5. Top Canadian Exports to Taiwan by HS-2 Chapter (Can$ millions)

HS	Description	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
27	Mineral Fuels	63.03	68.63	68.34	64.44	158.48	160.29	119.65	251.95	193.56	142.12	306.75
75	Nickel	66.75	81.32	85.13	120.45	94.10	143.22	338.55	236.32	70.80	122.73	290.81
26	Ores, Slag and Ash	31.42	33.71	37.92	27.76	59.75	74.25	86.98	54.11	38.54	85.68	164.36
47	Woodpulp	164.51	157.37	154.15	172.67	143.60	213.64	222.16	197.55	121.62	134.66	136.68
2	Meat and Edible Meat Offal	17.62	34.09	34.62	31.61	31.79	17.92	27.96	64.44	86.25	75.61	81.52
44	Woodpulp	45.95	52.92	65.81	71.09	53.26	48.83	66.63	44.86	37.96	64.70	81.47
85	Electrical Machinery	113.16	181.86	209.42	96.20	125.40	91.00	80.88	74.54	58.27	67.88	73.55
79	Zinc	7.43	13.84	31.81	39.44	25.25	55.19	12.26	13.51	17.03	55.57	59.32
48	Paper and paperboard	59.28	43.33	81.69	84.63	84.36	78.75	56.35	78.86	40.43	47.75	57.44
31	Fertilizers	46.29	41.43	13.64	19.07	11.94	10.16	21.76	35.37	12.06	20.08	50.60
84	Machinery	46.49	45.21	65.87	77.80	109.64	87.65	51.61	49.00	53.27	44.99	46.91
72	Iron and Steel	9.42	9.47	10.46	8.81	9.66	13.54	22.14	43.33	28.72	33.42	44.99
90	Scientific and Technical Instrumentation	26.87	13.75	17.56	29.83	39.19	35.50	36.79	38.01	29.43	42.47	34.08
41	Raw Hides, Skins and Leather	48.78	64.11	93.37	94.55	70.16	66.07	55.65	47.53	32.26	44.11	30.62
3	Fish	29.14	23.28	25.18	27.81	37.41	28.11	15.59	21.86	21.68	26.60	28.03
81	Other Base Metals and Cermets	0.50	5.62	9.22	16.54	6.29	5.87	18.11	27.13	14.31	36.81	23.46
39	Plastics	17.46	12.45	12.64	20.66	34.33	58.88	72.67	58.40	31.68	17.20	17.45
15	Fats, Oils and Waxes	16.47	17.10	11.06	17.23	29.60	18.57	21.52	10.67	18.02	17.78	16.96
33	Essential Oils, Perfumes, Cosmetics and Toilet Preparations	9.01	11.20	7.08	9.44	12.34	9.53	11.53	13.57	11.01	13.90	14.42
21	Miscellaneous Edible Preparations	7.96	8.63	6.58	9.42	16.24	19.97	19.44	19.39	16.29	14.64	14.24
78	Lead	0.00	0.20	0.99	0.01	0.01	0.01	0.00	0.00	12.37	6.71	13.98
8	Edible Fruits and Nuts	1.07	1.50	1.66	3.99	9.42	8.03	5.14	3.08	9.33	8.53	11.25
30	Pharmaceutical Products	5.66	6.10	4.15	5.50	8.75	10.17	10.66	12.01	14.63	19.31	10.64
88	Aircrafts and Spacecrafts	1.30	0.70	15.51	8.04	30.29	16.09	13.35	15.71	9.61	10.90	10.59
28	Inorganic Chemicals	9.08	16.89	9.94	8.36	9.76	10.94	10.29	16.40	7.68	8.27	8.76
Top 25 Total		**844.65**	**944.71**	**1073.80**	**1065.38**	**1211.03**	**1282.18**	**1397.68**	**1427.62**	**986.81**	**1162.44**	**1628.91**
Total Exports		**1020.18**	**1126.58**	**1242.72**	**1238.09**	**1357.49**	**1401.03**	**1546.26**	**1558.33**	**1103.74**	**1287.63**	**1746.68**

In 2011, Alberta's exports to the greater China region represented 15.7% of Canada's total exports to that region, a share that is not noticeably out of line with Alberta's share in Canada's GDP. Focus will logically shift to the composition and growth of Alberta's exports to the greater China region in order to determine how and to what extent the province's trade differs from the aggregate Canadian pattern.

Starting with the PRC as destination, Alberta's top 25 export products and their sales during the last decade are shown in Table 2.6, below. Mineral Fuels, consisting of Oil, Gas and Coal, climbed into the top spot from next to nothing in 2001, with export values in excess of $500 million. Total Canadian exports of mineral fuels to the PRC, in 2011, were $1.31 billion (Table 2.3). Alberta's exports were reported as $520 million, suggesting that less than 50% of Canada's energy exports originated in Alberta. In light of discussions about new and expanded pipelines to the B.C. coast and possibly increased Chinese ownership of oil production in Alberta, the issue of whether capacity constraints are holding back some such exports from Alberta will continue to be of interest.

While Chemicals had been the strongest Alberta export in 2001, their value grew by only 140% over the ensuing ten years, and with substantial variability in the intervening years, so that chemicals occupied the second rank in 2011. But Alberta was the source of 95% of Canada's exports of organic chemicals (HS 29). Given the fluctuations in export values, one is tempted to conclude that Alberta is a mere residual supplier of such chemicals for the PRC as the latter builds up its own capacity.

Table 2.6. Top Alberta Exports to PRC by HS 2 Chapter (Can$ millions)

HS	Product	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
27	Mineral Fuels	0.03	0.25	29.38	0.35	0.29	3.90	161.37	87.16	255.25	371.14	519.98
29	Organic Chemicals	212.73	318.49	378.32	810.75	907.71	859.23	1069.31	870.76	337.48	429.60	511.23
15	Fats, Oils and Waxes	0.26	1.93	18.28	122.42	82.00	38.89	211.25	225.84	367.57	622.60	383.18
12	Oil Seeds and Oleaginous Fruits	129.52	10.98	29.70	34.71	46.03	70.17	144.17	302.22	499.66	202.85	279.69
47	Woodpulp	74.50	100.23	146.90	177.40	105.10	111.14	103.03	171.64	238.91	246.36	273.87
75	Nickel	4.59	10.07	10.47	27.10	51.36	303.89	315.50	245.38	298.18	256.11	183.51
25	Salt, Sulfur, Earths, Lime, Stone and Cement	41.44	60.83	50.48	122.97	277.07	216.74	255.27	650.22	133.75	178.19	173.75
84	Machinery	36.56	29.87	35.66	55.38	43.37	57.56	49.14	88.19	79.74	66.41	157.59
41	Raw Hides, Skins and Leather	43.83	27.02	21.29	24.90	66.67	62.37	57.88	59.19	58.95	76.65	122.89
39	Plastics	100.54	82.18	72.72	102.40	176.77	264.31	255.16	257.85	235.40	121.22	95.41
23	Food Industry Residues and Waste	0.60	1.55	0.33	0.00	0.00	0.01	3.11	0.17	1.28	103.00	75.86
10	Cereals	97.67	25.21	20.45	253.00	131.43	40.08	33.13	25.32	60.05	44.89	44.63
7	Edible Vegetables	6.29	0.25	0.11	0.69	0.80	1.10	2.72	0.04	0.54	4.32	30.45
85	Electrical Machinery	26.57	44.30	36.20	47.38	37.89	28.47	30.80	33.98	19.25	23.45	25.14
90	Scientific and **Technical** Instrumentation	6.19	6.95	8.00	18.10	20.83	27.38	36.93	24.27	31.14	17.35	16.67
74	Copper	0.18	1.13	2.38	3.84	5.40	14.30	13.27	15.58	9.70	16.80	15.26
73	Articles of Iron or Steel	0.82	0.38	1.53	2.87	5.45	7.80	6.04	5.75	4.70	13.77	12.14
44	Wood	1.02	0.55	1.33	3.11	3.35	1.99	3.48	2.20	3.67	8.44	11.12
72	Iron and Steel	6.63	1.05	4.12	5.75	11.16	14.04	15.54	12.67	16.34	10.93	10.13
76	Aluminum	1.74	2.99	3.99	4.37	4.06	7.39	6.88	8.87	5.23	6.77	8.63
20	Preparations of Vegetables, Fruits and Nuts	0.06	0.56	0.79	6.79	12.83	12.70	13.29	6.15	3.43	1.99	6.10
28	Inorganic Chemicals	3.01	2.46	2.24	1.93	1.77	2.79	5.48	2.61	3.68	6.03	5.08
81	Other Base Metals and Cermets	0.64	0.34	1.71	3.02	1.80	5.25	14.60	6.11	21.27	6.44	4.97
5	Products of Animal Origin Not Elsewhere Classified	2.13	3.72	3.45	0.64	3.14	2.40	2.97	1.87	5.82	7.55	4.92
87	Vehicles	0.38	0.05	4.29	0.35	2.52	4.58	6.24	17.26	3.95	0.46	3.01
Top 25 Total		797.92	733.34	884.13	1830.22	1998.80	2158.47	2816.58	3121.29	2694.92	2843.32	2975.22
Total Exports		897.36	845.96	966.39	1923.40	2049.47	2194.83	2838.13	3144.08	2721.64	2874.09	3032.34

Exports of Oils and Fats show very strong growth on balance, albeit from a small base in 2001, but again they were also highly variable, with 2010 values more than 50% higher than the 2011 level. Alberta supplied 55% of such exports from Canada in 2011.

Oil Seeds were Alberta's fourth ranked export to the PRC, constituting 30% of Canada's total to the PRC. The PRC itself is a significant producer of oil seeds and therefore has substantial milling capacity, which may constrain exports of processed oils. Canada and Alberta appear to be supplementary suppliers to a fast growing market for vegetable oils.

Wood Pulp took rank five among Alberta's shipments to the PRC, growing 368% in value during the decade under observation. Alberta was the source of 10.5% of Canada's total exports of Wood Pulp.

Table 2.6 further shows very high growth rates for exports to the PRC of Nickel, refined in Alberta but likely mined elsewhere. Food Industry Waste exports jumped significantly in 2010; Copper and Iron and Steel grew by many multiples, but from very low initial values. It is noteworthy that several export values among the top 25 decreased during the decade: Cereals (HS 19), covering Wheat, Meslin (wheat mixed with other grains), Barley, Rye and Oats, Plastics (HS 39), and Electrical Machinery (HS 85).

Table 2.7, below, provides a closer look at the top 10 merchandise exports from Alberta to the PRC by showing the export revenue for products at the 6-digit level of detail for 2011. Ethylene Glycol (antifreeze), Crude Oil, Rape and Colza Oil are at the top of this list, with Rape and Colza Seeds, Nickel, and Sulfur also showing sales in the $150-300 million range. Together Coniferous and Non-Coniferous Pulp exports exceeded $200 million. Bituminous Coal exports were just short of $100 million and took 11th spot.

Table 2.7. Alberta's Top 10 Exports to the PRC, 2011, Details (Can$ millions)

HS-classification	Product Description	Export Revenue
290531	Ethylene Glycol	509.0
270900	Crude Petroleum Oil	407.2
151411	Rape/Colza Oil	383.1
120510	Rape/Colza Seeds	277.1
750210	Nickel	174.3
250300	Sulfur	172.9
479321	Coniferous Wood Pulp	119.3
841480	Air/Gas Recycling Hoods	115.3
410150	Hides and Skins	104.4
470329	Non-Coniferous Wood Pulp	100.2

Alberta's top 25 exports to Hong Kong are summarized in Table 2.8, below. Total exports to this market amounted to $159 million in 2011. One finds very different products topping the list: Meat, Electrical Machinery, Plastics, Hides and Leather, as well as Machinery represent manufactured products and processed goods that are based on Alberta's energy and agricultural resources.

Meat exports have shown an upward trend, with significant growth over the decade, whereas Electrical Machinery exports remained fairly stagnant over the decade, actually declining in real value. Plastics, Leather and Hides, and Machinery exports to Hong Kong show growth rates of 194%, 127%, and 82%, respectively, for the observation period. With Meat exports approaching $100 million annually, it would appear that Alberta processors have established a solid position that holds promise for the future.

The other Alberta export products to Hong Kong do not involve significant aggregate revenue streams, so will not be commented upon here, with the possible exception of Precious Metals and Stones. Given the reputation of Hong Kong as a fashionable and wealthy city-state, the 675% growth in such exports over the decade is not entirely surprising and corroborates the high income elasticity of demand for such products.

Table 2.9, below, shows that total exports from Alberta to Taiwan were slightly higher than those to Hong Kong in 2011. Nickel is the single largest product category, followed by Pulp, Iron and Steel, as well as Other Base Metals, Leather and Hides, and Meat. All of their 2011-export values are in the $10 million to low $30 million range. As raw material prices fluctuate, this volatility is then reflected in export revenues from year to year. We observe just such a pattern for the top six exports from Alberta to Taiwan.

Table 2.8. Top Alberta Exports to Hong Kong by HS 2 Chapter (Can$ millions**)**

HS	Description	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2	Meat	5.32	2.51	1.23	2.06	37.32	30.43	28.95	35.32	34.90	67.91	83.74
85	Electrical Machinery	33.01	52.38	47.32	17.87	25.13	24.26	24.33	30.63	12.79	12.49	19.20
39	Plastics	4.21	6.57	2.90	2.43	3.15	8.25	13.35	15.47	19.77	22.30	12.37
41	Raw Hides, Skins and Leather	4.60	12.16	14.52	30.81	28.20	13.61	12.53	12.91	5.03	20.70	10.43
84	Machinery	3.95	3.45	1.43	3.67	3.32	3.20	4.96	3.69	2.48	3.56	7.20
5	Products of Animal Origin Not Elsewhere Classified	3.45	2.98	1.41	1.29	0.76	1.15	2.91	1.66	4.59	5.17	6.37
90	Scientific and Technical Instrumentation	2.33	0.79	1.92	2.53	2.20	3.30	5.03	2.92	6.04	4.90	4.66
23	Food Industry Residues and Waste	0.00	0.03	0.11	0.17	0.16	0.27	0.16	0.17	0.02	0.23	2.00
15	Fats, Oils and Waxes	11.46	4.75	5.57	5.04	13.18	15.37	23.25	14.58	9.04	0.00	1.28
29	Organic Chemicals	0.00	20.38	11.90	43.79	16.93	18.28	0.01	0.00	2.17	0.78	1.26
71	Precious Metals and Stones	0.16	0.43	1.11	0.43	0.29	0.46	0.47	0.69	0.60	0.59	1.24
47	Woodpulp	14.66	2.86	3.21	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.23
82	Tools, Implements, Cutlery, Spoons and Forks of Base Metals	0.00	0.00	0.00	0.18	0.02	0.12	0.00	0.00	0.06	0.89	0.95
81	Other Base Metals and Cermets	2.22	2.17	0.00	0.00	0.00	0.00	0.00	0.00	1.22	8.04	0.82
97	Works of Art, Collector's Pieces and Antiques	0.33	0.11	0.25	0.04	0.12	0.45	0.43	0.44	0.13	0.08	0.42
94	Furniture	1.20	0.48	0.30	0.17	2.16	0.25	0.07	0.00	0.00	0.00	0.38
20	Preparations of Vegetables, Fruits, or Nuts	0.32	0.43	0.32	0.38	0.55	0.46	0.92	0.64	0.62	0.46	0.27
33	Essential Oils, Perfumes, Cosmetics and Toilet Preparations	0.00	0.00	0.05	0.00	0.01	0.03	0.02	0.02	0.04	0.05	0.25
44	Wood	0.03	0.03	0.63	0.05	0.21	0.19	0.66	0.08	0.03	0.06	0.19
75	Nickel	0.03	0.02	5.47	0.05	0.07	0.04	16.65	0.30	0.45	0.15	0.18
74	Copper	0.00	0.04	0.17	0.00	0.00	0.00	0.10	0.07	0.11	0.01	0.15
11	Malt, Starches, Inulin and Wheat Gluten	2.23	2.13	2.56	3.86	3.07	2.16	1.44	1.30	1.25	0.91	0.14
76	Aluminum	0.04	0.00	0.00	0.00	0.03	0.00	0.10	0.22	0.40	0.14	0.12
30	Pharmaceutical Products	0.00	0.01	0.03	0.08	0.09	0.08	0.09	0.06	0.06	0.14	0.10
42	Articles of Leather	0.00	0.00	0.00	0.05	0.00	0.01	0.00	0.00	0.00	0.01	0.09
Top 25 Total		**89.54**	**114.71**	**102.40**	**114.94**	**136.97**	**122.36**	**136.43**	**121.15**	**101.80**	**149.58**	**155.03**
Total Exports		**109.82**	**132.40**	**113.59**	**128.09**	**144.01**	**124.44**	**140.23**	**122.80**	**102.88**	**150.80**	**158.58**

Table 2.9. Top Alberta Exports to Taiwan by HS 2 Chapter (Can$ millions)

HS	Description	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
75	Nickel	4.78	12.65	16.68	27.03	25.41	17.71	30.92	22.52	10.66	28.93	33.15
47	Woodpulp	32.68	27.09	29.64	28.06	29.15	17.86	36.73	42.21	26.58	31.72	27.06
72	Iron and Steel	0.00	0.00	0.10	0.01	0.06	0.47	5.35	3.61	3.26	11.06	24.45
81	Other Base Metals and Cermets	0.00	4.25	5.68	13.26	5.27	5.27	17.78	25.98	13.67	34.02	22.07
41	Raw Hides, Skins and Leather	33.15	42.42	64.24	43.76	47.27	44.15	49.09	41.05	25.20	38.00	21.28
2	Meat	13.08	20.58	13.32	4.03	5.91	1.97	4.62	12.41	19.85	14.37	12.94
15	Fats, Oils and Waxes	3.10	4.65	4.61	10.59	22.05	16.88	20.62	6.09	8.30	4.26	8.46
27	Mineral Fuels	5.51	12.81	0.05	0.23	0.21	0.21	0.40	0.52	0.17	0.19	8.38
85	Electrical Machinery	57.83	109.36	98.03	14.17	21.11	13.99	9.61	9.98	4.56	5.45	8.04
39	Plastics	9.04	6.20	4.37	5.40	18.21	46.63	56.47	44.25	19.51	5.68	4.34
28	Inorganic Chemicals	2.65	2.98	2.78	2.90	2.79	2.79	2.83	2.47	2.04	3.50	3.01
20	Preparations of Vegetables, Fruits, or Nuts	0.72	1.20	1.69	4.49	5.11	2.72	3.35	4.74	4.40	3.27	2.87
23	Food Industry Residues and Waste	5.65	9.02	7.85	0.80	0.71	0.94	2.01	2.16	1.95	2.22	2.08
44	Wood	0.41	0.23	0.88	0.10	1.84	1.61	1.30	1.10	0.66	1.08	1.70
49	Printed Books and Newspapers	0.57	0.52	1.54	0.92	0.07	0.03	0.04	0.04	0.00	0.01	1.34
12	Oil Seeds and Oleaginous Fruits	4.30	6.14	3.95	2.27	1.74	3.61	2.60	2.02	1.35	0.22	1.32
90	Scientific and Technical Instrumentation	0.38	0.83	0.59	0.97	0.98	1.40	1.45	1.27	1.13	1.03	1.30
48	Paper and Paperboard	0.94	0.24	0.03	0.05	0.05	0.03	0.00	0.00	0.00	0.14	0.55
84	Machinery	1.01	1.71	0.72	2.00	1.79	1.87	0.79	5.93	0.33	0.49	0.49
10	Cereals	0.00	1.26	0.04	0.06	0.01	0.00	0.38	1.46	3.39	2.33	0.49
11	Malt, Starches, Inulin and Wheat Gluten	0.00	0.03	0.01	0.02	0.04	0.05	0.60	0.00	0.11	0.04	0.37
76	Aluminum	0.00	0.00	0.07	0.11	0.00	0.00	0.03	0.10	0.12	0.04	0.21
19	Preparations of Cereals	0.00	0.00	0.00	0.01	0.04	0.12	0.19	0.23	0.21	0.16	0.19
38	Miscellaneous Chemical Products	0.00	0.03	0.00	0.00	0.72	0.00	0.11	0.20	0.12	0.21	0.14
5	Products of Animal Origin Not Elsewhere Classified	0.05	0.07	0.00	0.32	0.41	0.08	0.09	0.15	0.00	0.13	0.11
Top 25 Total		**175.86**	**264.26**	**256.85**	**161.56**	**190.93**	**180.39**	**247.35**	**230.52**	**147.56**	**188.56**	**186.31**
Total Exports		**211.44**	**293.51**	**291.24**	**193.46**	**199.93**	**187.48**	**253.74**	**238.84**	**157.57**	**190.69**	**188.26**

Tables 2.1 and 2.2 had shown that for Alberta the share of exports going to the PRC had doubled during the decade while for all of Canada this share had more than tripled. This is but one possible benchmark for assessing Alberta's export success in the region. The judgment would not be flattering: Alberta's exports to the PRC, to Hong Kong, and to Taiwan have "underperformed", in the sense that they grew by less than did total Canadian exports to these destinations. This may, however, be a harsh verdict inasmuch as the commodity composition of the importers' demand may favor products that Alberta is less able or less well located to deliver. For example, coal exports may be more competitive from B.C. than from Alberta, and liquefied gas can not be exported from Alberta due to a lack of appropriate investment but may be exported from B.C. Breaking down Alberta's energy exports to greater China into their components may provide some insights regarding this point.

Our second benchmark for assessing Alberta's export performance to the region is whether the export value has kept pace with the growth of the greater China economy. Only a rough answer is provided by the following experiment. For the sake of simplicity, suppose that due to its size the PRC is taken as proxy for the entire region of greater China, i.e. is presumed to include Hong Kong and Taiwan. The PRC grew at roughly 10% per year in real terms during the decade 2001 to 2011. Let us assume further that import requirements have increased by the same percentage annually as GDP. In real terms, Alberta's exports to the PRC should then have increased by 10% annually to 236% of their 2001 level if they were to keep up with the growth of the market. The data in Table 2.2 show that Alberta's exports grew by 237% in nominal terms to 337% of their 2001 level. To keep pace with the 10% real annual growth of the region, the observed 10% nominal growth of Alberta's exports implies the assumption of a zero inflation rate for the products shipped from the province. But the decade was clearly one of increasing commodity prices. On that admittedly rough calculation, Alberta's exports have under-performed. The rise of the Canadian dollar during the decade, however, will have increased the purchasing power of export receipts.

Alberta's Energy Exports: Product Detail

Comparing Alberta's exports to the region with Canada's total such exports showed Alberta underperforming Canada in terms of growth during the decade. A closer look at Alberta's key export and probable future key export, namely energy products, may give additional insights into Alberta's export performance.

Exports of Mineral Fuels in HS Chapter 27 fall into three product groups (4-digit level). These are Coal, Oil, and Gas (gaseous state or liquefied).

Alberta did not export any energy products to Hong Kong in 2011 and a negligible $8.29 million of Coal to Taiwan. The breakdown of Alberta's total energy exports and those to the PRC is given in Table 2.10, below.

There were no exports of gas from Alberta to the PRC during the decade. Of course, the future may bring exports of liquefied gas of Alberta or British Columbia origin to the PRC, but there are some well known hurdles, namely the lack of infrastructure to liquefy gas, to overcome.

Table 2.10 shows coal exports beginning on a non-negligible scale in 2008, growing rapidly from $20 million to the $100 million-range. In 2010, the PRC took 24% of all of Alberta's coal exports, though in 2011 this share fell again to 11.5%. Thus the PRC has become a significant customer of Alberta coal producers. Little is known about the key suppliers, the key customers, and destination of these shipments within the PRC.

Oil exports from Alberta to the PRC took off in 2007, jumping to over $400 million in 2011. While these exports pale in comparison to the total 2011 oil exports from the province, namely $52 billion, their recent growth and their future potential in that new and energy-hungry market has given rise to much activity on the marketing and transportation front, not to mention the direct investments in the Alberta oil sector by PRC entities.

A further breakdown of energy products into six-digit detail did not provide additional insights. The exports to the PRC are confirmed to consist of Bituminous Coal (HS 270112) and Oil (270900).

Table 2.10 can be summarized as showing the emergence of the PRC as a major customer for Alberta-based coal and oil producers. Coal shipments in the hundreds of millions and oil shipments in the billions of dollars are distinct possibilities, with transportation issues for oil being a key constraint to reaching such levels in the medium term.

Table 2.10. Alberta: Energy Exports (HS 4-digit) (Can$ millions)
Note: Energy exports to Hong Kong were all zero in 2011

World

HS	Description	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Growth 2001-2011
2701	Coal	392.47	275.15	76.44	113.88	198.46	317.57	401.04	648.08	580.87	715.12	869.8	121.62%
2709	Oil	12632.51	12666.07	15938.65	17103.33	20707.74	26941.64	28155.63	47923.37	31237.68	39372.31	52084.12	312.30%
2711	Liquefied Petroleum or Hydrocarbon Gases	23138.12	17035.99	23602.91	25101.33	32446.51	25791.28	26277.51	30581.86	15033.41	14488.73	12600.7	-45.54%

PRC

HS	Description	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Growth 2001-2011
2701	Coal	0	0.03	0	0	0	0.02	0.01	21.77	69.55	171.88	99.76	N/A
2709	Oil	0	0	27.61	0	0	0	161.09	62.61	183.42	174.98	407.28	N/A
2711	Liquefied Petroleum or Hydrocarbon Gases	0	0	0	0	0.01	0	0	0	0	0	0	N/A

Taiwan

HS	Description	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Growth 2001-2011
2701	Coal	5.47	12.79	0.04	0.1	0.18	0.19	0.3	0.51	0.14	0.07	8.29	51.55%
2709	Oil	0	0	0	0	0	0	0	0	0	0	0	N/A
2711	Liquefied Petroleum or Hydrocarbon Gases	0	0	0	0	0	0	0	0	0	0	0	N/A

Alberta: Energy Exports (HS 6-digit) (Can$ millions)

World

HS	Description	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Growth 2001-2011
270111	Anthracite	0	0	0	0	0	0	0	0	0.01	0	0	N/A
270112	Bituminous Coal	392.4	274.77	75.92	113.24	197.63	316.99	396.92	646.73	580.12	714.29	866.48	120.82%
270119	Coal NES	0.07	0.38	0.52	0.64	0.82	0.58	4.12	1.35	0.75	0.83	3.31	4628.57%
270120	Coal Briquettes and Solid Fuels	0	0	0	0	0	0	0	0	0	0	0	N/A
270900	Oil	12632.51	12666.07	15938.65	17103.33	20707.74	26941.64	28155.63	47923.37	31237.68	39372.31	52084.12	312.30%
271111	Liquefied Natural Gas	0	0	0	0	0	0	0	0	0	0	0	N/A

World

HS	Description	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Growth 2001-2011
271112	Liquefied Propane	1141.66	924.99	1106.71	1140.74	1267.07	1370.83	1408.61	1806.29	1059.83	1203.1	1311.16	14.84%
271113	Liquefied Butanes	121.31	137.44	158.42	218.93	234.92	156.2	130.08	215.02	203.38	122.36	112.66	-7.13%
271114	Liquefied Ethylene, Propylene,	87.5	99.95	143.37	208.21	249.21	291.62	287.25	382.26	239.7	404.89	476.62	444.71%

271119	Butylene and Butadiene Liquefied Gas, other	98.21	132.89	52.84	38.21	30.37	28.28	33.45	0.96	0.49	10.44	6.73	-93.15%
271121	Natural Gas in Gaseous State	21689.4	15740.63	22139.35	23494.49	30664.14	23940.16	24417.07	28177.32	13529.98	12747.94	10693.5	-50.70%
271129	Other Gases in Gaseous State	0.03	0.09	2.22	0.74	0.8	4.18	1.04	0.02	0.03	0.01	0.03	0%

PRC

HS	Description	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Growth 2001-2011
270111	Anthracite	0	0	0	0	0	0	0	0	0	0	0	N/A
270112	Bituminous Coal	0	0	0	0	0	0	0	21.76	69.54	171.88	99.76	N/A
270119	Coal NES	0	0.03	0	0	0	0.02	0.01	0.01	0.02	0	0	N/A
270120	Coal Briquettes and Solid Fuels	0	0	0	0	0	0	0	0	0	0	0	N/A
270900	Oil	0	0	27.61	0	0	0	161.09	62.61	183.42	174.98	407.28	N/A
271111	Liquefied Natural Gas	0	0	0	0	0	0	0	0	0	0	0	N/A
271112	Liquefied Propane	0	0	0	0	0	0	0	0	0	0	0	N/A
271113	Liquefied Butanes	0	0	0	0	0	0	0	0	0	0	0	N/A
271114	Liquefied Ethylene, Propylene, Butylene and Butadiene	0	0	0	0	0	0	0	0	0	0	0	N/A
271119	Liquefied Gas, other	0	0	0	0	0	0	0	0	0	0	0	N/A
271121	Natural Gas in Gaseous State	0	0	0	0	0	0	0	0	0	0	0	N/A
271129	Other Gases in Gaseous State	0	0	0	0	0.01	0	0	0	0	0	0	N/A

Taiwan

HS	Description	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Growth 2001-2011
270111	Anthracite	0	0	0	0	0	0	0	0	0	0	0	N/A
270112	Bituminous Coal	5.47	12.61	0	0	0	0	0	0	0	0	8.16	49.20%
270119	Coal NES	0	0.18	0.04	0.1	0.18	0.19	0.3	0.51	0.14	0.07	0.13	N/A
270120	Coal Briquettes and Solid Fuels	0	0	0	0	0	0	0	0	0	0	0	N/A
270900	Oil	0	0	0	0	0	0	0	0	0	0	0	N/A
271111	Liquefied Natural Gas	0	0	0	0	0	0	0	0	0	0	0	N/A
271112	Liquefied Propane	0	0	0	0	0	0	0	0	0	0	0	N/A
271113	Liquefied Butanes	0	0	0	0	0	0	0	0	0	0	0	N/A
271114	Liquefied Ethylene, Propylene, Butylene and Butadiene	0	0	0	0	0	0	0	0	0	0	0	N/A
271119	Liquefied Gas, other	0	0	0	0	0	0	0	0	0	0	0	N/A
271121	Natural Gas in Gaseous State	0	0	0	0	0	0	0	0	0	0	0	N/A
271129	Other Gases in Gaseous State	0	0	0	0	0	0	0	0	0	0	0	N/A

A Comment on the Composition of Exports to the PRC

A coarse division of exports into Commodity and Processed Products (HS 1-26, 28-83), Energy Products (HS 27), and Manufactured Products (HS 84-99) shows that for total Canadian exports the share of Manufactured Products diminished from 30% to 11% between 2001 and 2011, with Commodity and Processed Products and Energy Products increasing their share correspondingly. For Alberta's exports to the PRC (Table 2.11 below),we observe a decline in the weight of Commodity and Processed Products from 91% to 76%, a big jump in exports of Energy Products over the decade, and a small increase in the share of exports of Manufactured Products from 5.5% to 6.8% in the last five years. These findings confirm the role of the PRC as a growing market for Canadian and Albertan Commodity and Processed Products, as well as Canadian and, particularly, Albertan Oil and Coal.

Table 2.11. Canadian Exports to PRC by Type (based on top 25 HS 2 **e**xport products, US$ millions)

Export Type	2001		2006		2011	
	Value	Share	Value	Share	Value	Share
Commodities/Processed Materials (HS 1-26, 28-83)	1535.67	69.64%	4808.88	81.78%	12928.36	80.64%
Energy (HS 27)	0.86	0.04%	39.56	0.67%	1323.08	8.25%
Manufactured (HS 84-99)	668.74	30.32%	1031.98	17.55%	1781.56	11.11%
Share of top 25 export products to total exports to PRC	88.08%		85.47%		94.29%	

Alberta Exports to PRC by Type (based on top 25 HS 2 **e**xport products, US$ millions)

Export Type	2001		2006		2011	
	Value	Share	Value	Share	Value	Share
Commodities/Processed Materials (HS 1-26, 28-83	470.15	91.26%	1795.36	94.35%	2277.37	75.72%
Energy (HS 27)	0.02	0.00%	3.44	0.18%	525.64	17.48%
Manufactured (HS 84-99)	45.00	8.74%	104.02	5.47%	204.61	6.80%
Share of top 25 export products to total exports to PRC	88.92%		98.34%		98.12%	

3. Canadian and Albertan Exports in the Greater China Market: Review

Canadian Merchandise Export Composition: PRC, Taiwan, Hong Kong

Building on the coarse distinction between Commodity and Processed exports, Energy exports, and Manufactured exports that had formed the basis of Table 2.11, above, a brief comparison of differences in export composition to the three China markets is provided here. Trade theory suggests that Canada's comparative advantage be reflected in the products exported. Canada's comparative advantage had been shown to be in commodities and processed materials, as well as energy products, with manufacturing exports (not counting automobiles to the US) a relative weakness.

The export composition to all three China markets shows this to be the case: the majority of exports, between 71 and 81%, consisted of products in HS 1-26 and HS 28-83, comprising Commodities and Processed Materials. Not surprisingly, the PRC's imports from Canada were composed of roughly 81% of such products. Also not surprising is the fact that Hong Kong did not import Oil, Gas, or Coal from Canada, its imports consisting of a 78-22% split between commodity-type and manufactured products. Hong Kong, after all, has easy access to Chinese electricity, whereas Taiwan does import Canadian coal: in 2011, 19% of Taiwan imports from Canada consisted of Energy Products and 10% of Manufactured Products.

Table 3.1. 2011-Import composition of the PRC, Hong Kong, and Taiwan

Export Type	Share		
	PRC	Hong Kong	Taiwan
Commodities/Processed Materials	80.64%	77.81%	71.03%
Energy Products	8.25%	0.00%	18.83%
Manufactured Products	11.11%	22.19%	10.14%

The differences in the composition of Canada's exports to greater China are slight; the composition itself is consistent with Canada's wealth of natural resources; and the fact that Hong Kong has long term supply contracts for electricity (as well as water) with the PRC explains the absence of energy imports from Canada. The fact that Hong Kong takes a larger percentage of manufacturing products from Canada can possibly be explained by its low tariffs, which encourage trans-shipment to the PRC under preferential or special considerations. As well, the role of Hong Kong as an entrepôt which transforms imports and re-exports them to nearby markets is often mentioned. While it does not lend itself readily to empirical analysis, it could be the case that Hong Kong, to some extent, simply proxies for the PRC as ultimate destination. Located at the

Pearl River Delta, Hong Kong's imports of machinery would perhaps show up as PRC imports, if they were properly recorded. Whether the higher proportion of manufacturing exports from Canada to Hong Kong is due to its role as an entrepôt or due to flaws in the data, or both, and to what extent, could not be resolved.

Market Share Analysis

Since joining the WTO in 2001 the PRC has made efforts to increase the availability of trade statistics. As the China Yearbook data is now available online, it has become possible to analyze the development of the market shares of Canada's and Alberta's merchandise exports among total imports of the PRC for the more recent years[2]. Again using Canadian export data according to two-digit HS classification and relating it to the total imports of the PRC, the market position of Canada and Alberta can be ascertained for the top 25 exports for the years 2005 to 2010. The corresponding developments of market shares in Hong Kong and Taiwan are also added. The results of these computations are shown and commented upon in this section to complement the insights of the previous section.[3]

The previous section had shown that Canadian and Albertan exports to greater China, and in particular to the PRC, have shown less than spectacular growth, though an increased share of total exports going to these markets. Our market share results for the PRC suggest a similarly sobering assessment. As Table 3.2, below, shows for Canada and Alberta, total exports to the PRC have, on balance, lost market share in the PRC. Canadian and Alberta-based exporters in 2011 had a smaller share of the PRC market than in 2001. For Alberta, the downward trend is less clear. Taking the average of the market shares for 2001 to 2005 and comparing it to the average for 2006 to 2011, a slight gain in market share for exports from Alberta is observed. It is attributable to increased oil exports.

[2] China Data Online, China Statistical Yearbook, various years, accessed September 4, 2012. http:chinadataonline.org

[3] The Asia Pacific Foundations publishes market shares of Canadian exports in 17 Asian countries for 2010. Canada's market share in the PRC was 1.06%. Accessed September 4, 2012 http://www.asiapacific.ca/statistics/trade/market-share/Canada

Tables 3.2. Market Shares of Canada's and Alberta's Top 25 Export Products among Total PRC Imports (US$ billions)

Year	PRC Imports	Canada		Alberta	
		Exports	Market Share	Exports	Market Share
2001	243.55	2.75	1.13%	0.58	0.24%
2002	295.17	2.63	0.89%	0.54	0.18%
2003	412.76	3.43	0.83%	0.69	0.17%
2004	561.23	5.20	0.93%	1.48	0.26%
2005	659.95	5.95	0.90%	1.69	0.26%
2006	791.46	6.88	0.87%	1.93	0.24%
2007	956.12	8.85	0.93%	2.64	0.28%
2008	1132.57	9.82	0.87%	2.95	0.26%
2009	1005.92	9.77	0.97%	2.38	0.24%
2010	1396.24	12.85	0.92%	2.79	0.20%
2011	1743.46	17.00	0.98%	3.07	0.18%

Source: TDO and China Data Online (China Statistical Yearbook)

For Hong Kong and Taiwan the market shares of Canada's and Alberta's exports in the total imports of these trading partners remained constant, suggesting that exporters remained competitive in these markets. This is evident in Tables 3.3 and 3.4 below.

Table 3.3. Market Shares of Canada's and Alberta's Top 25 Export Product among Total Hong Kong-Imports (US$ billions)

Year	Hong Kong Imports	Canada		Alberta	
		Exports	Market Share	Exports	Market Share
2006	334.52	1.42	0.42%	0.11	0.03%
2007	367.45	1.44	0.39%	0.13	0.04%
2008	388.33	1.66	0.43%	0.12	0.03%
2009	347.13	1.31	0.38%	0.09	0.03%
2010	432.91	1.83	0.42%	0.15	0.03%

Source: TDO and WTO Statistical Database

Table 3.4. Market Shares of Canada's and Alberta's Top 25 Export Product among Total Taiwan-Imports (US$ billions)

Year	Taiwan Imports	Canada		Alberta	
		Exports	Market Share	Exports	Market Share
2006	200.00	1.24	0.62%	0.17	0.08%
2007	216.61	1.44	0.66%	0.24	0.11%
2008	237.37	1.46	0.62%	0.22	0.09%
2009	171.46	0.97	0.56%	0.14	0.08%
2010	247.41	1.25	0.51%	0.19	0.07%

Source: TDO and WTO Statistical Database

The market shares of the top 25 exports (HS two-digits) to the PRC are shown in Table 3.5, below, for Canada, and in Table 3.6, below, for Alberta.

Table 3.5. Canada: Market Share of PRC Imports by HS 2 Classification

HS	Description	2005	2006	2007	2008	2009	2010	Change in Share 2005-2010
26	Ores, Slag and Ash	1.40%	1.53%	0.9%	0.67%	1.75%	1.19%	**-14.49%**
47	Woodpulp	6.70%	8.43%	9.6%	7.55%	8.23%	10.30%	**53.70%**
44	Wood	1.56%	1.59%	1.9%	2.72%	4.64%	7.22%	**362.16%**
27	Mineral Fuels	0.10%	0.04%	0.2%	0.14%	0.62%	0.65%	**532.73%**
12	Oil Seeds and Oleaginous Fruits	1.29%	2.07%	2.9%	3.64%	6.53%	3.04%	**135.39%**
84	Machinery	XXX	XXX	0.4%	0.48%	0.65%	0.36%	**N/A**
75	Nickel	13.57%	19.30%	16.2%	17.69%	12.04%	12.03%	**-11.36%**
15	Fats, Oils, and Waxes	2.36%	1.17%	2.9%	2.41%	4.55%	10.49%	**345.33%**
29	Organic Chemicals	2.78%	2.60%	2.6%	2.13%	0.91%	0.91%	**-67.31%**
31	Fertilizers	11.80%	8.67%	13.3%	14.44%	5.34%	12.33%	**4.49%**
74	Copper	0.73%	1.18%	0.9%	0.93%	0.87%	0.89%	**22.39%**
3	Fish	8.95%	7.58%	6.4%	6.62%	5.36%	6.47%	**-27.68%**
85	Electrical Machinery	XXX	XXX	0.1%	0.11%	0.11%	0.11%	**N/A**
88	Aircrafts and Spacecrafts	2.50%	0.54%	0.7%	0.73%	0.67%	1.13%	**-54.90%**
7	Edible Vegetables	8.20%	6.95%	9.0%	11.41%	8.92%	11.21%	**36.71%**
39	Plastics	0.54%	0.77%	0.7%	0.70%	0.58%	0.38%	**-30.19%**
90	Scientific and Technical Instrumentation	XXX	XXX	0.2%	0.26%	0.29%	0.23%	**N/A**
76	Aluminum	1.29%	1.95%	2.1%	1.94%	1.27%	2.15%	**67.55%**
28	Inorganic Chemicals	XXX	XXX	0.8%	2.29%	0.93%	1.37%	**N/A**
2	Meat	7.64%	5.76%	3.0%	1.82%	1.63%	2.55%	**-66.60%**
25	Salt, Sulfur, Earths, Lime, Stone, and Cement	11.59%	8.91%	8.1%	10.64%	4.58%	4.01%	**-65.38%**
71	Precious Metals and Stones	0.03%	0.05%	0.1%	0.33%	0.13%	0.09%	**166.15%**
41	Raw Hides, Skins and Leather	1.65%	1.38%	1.1%	1.23%	1.32%	1.27%	**-22.85%**
43	Furskins and Artificial Fur	5.18%	12.83%	13.9%	15.60%	13.06%	14.72%	**184.12%**
23	Food Industry Residues and Waste	XXX	XXX	0.3%	0.07%	1.04%	5.85%	**N/A**

Table 3.6. Alberta: Market Share of PRC Imports by HS 2 Classification

HS	Product	2005	2006	2007	2008	2009	2010	Change in Share 2005-2010
27	Mineral Fuels	0.00%	0.00%	0.14%	0.05%	0.18%	0.19%	**51051.18%**
29	Organic Chemicals	2.67%	2.54%	2.59%	2.08%	0.82%	0.86%	**-67.69%**
15	Fats, Oils and Waxes	2.04%	0.87%	2.60%	1.96%	4.16%	6.80%	**232.77%**
12	Oil Seeds and Oleaginous Fruits	0.47%	0.76%	1.09%	1.22%	2.08%	0.73%	**56.23%**
47	Woodpulp	0.79%	0.82%	0.66%	0.92%	1.34%	1.19%	**51.16%**
75	Nickel	1.95%	7.49%	4.50%	4.54%	5.14%	4.21%	**116.01%**
25	Salt, Sulfur, Earths, Lime, Stone and Cement	10.54%	8.40%	7.79%	9.96%	4.27%	3.84%	**-63.59%**
84	Machinery	N/A	N/A	0.04%	0.06%	0.06%	0.04%	**N/A**
41	Raw Hides, Skins and Leather	1.14%	0.99%	0.90%	0.98%	0.92%	0.97%	**-15.24%**
39	Plastics	0.44%	0.62%	0.52%	0.49%	0.43%	0.18%	**-57.84%**
23	Food Industry Residues and Waste	N/A	N/A	0.23%	0.01%	0.06%	3.09%	**N/A**
10	Cereals	7.78%	4.31%	5.99%	3.40%	6.00%	2.90%	**-62.70%**
7	Edible Vegetables	0.13%	0.13%	0.32%	0.01%	0.05%	0.28%	**120.87%**
85	Electrical Machinery	N/A	N/A	0.01%	0.01%	0.01%	0.01%	**N/A**
90	Scientific and Technical Instrumentation	N/A	N/A	0.05%	0.03%	0.04%	0.02%	**N/A**
74	Copper	0.03%	0.07%	0.05%	0.06%	0.03%	0.04%	**2.11%**
73	Articles of Iron or Steel	0.08%	0.10%	0.07%	0.05%	0.05%	0.15%	**84.81%**
44	Wood	0.05%	0.03%	0.04%	0.03%	0.04%	0.07%	**51.49%**
72	Iron and Steel	0.04%	0.06%	0.06%	0.05%	0.05%	0.04%	**19.17%**
76	Aluminum	0.07%	0.11%	0.09%	0.12%	0.05%	0.07%	**11.82%**
20	Preparations of Vegetables, Fruits and Nuts	6.75%	5.65%	4.54%	1.92%	0.90%	0.42%	**-93.79%**
28	Inorganic Chemicals	N/A	N/A	0.08%	0.03%	0.05%	0.06%	**N/A**
81	Other Base Metals and Cermets	N/A	N/A	1.40%	0.43%	1.73%	0.42%	**N/A**
5	Products of Animal Origin Not Elsewhere Classified	N/A	N/A	1.18%	0.69%	1.85%	1.75%	**N/A**
87	Vehicles	0.02%	0.02%	0.03%	0.06%	0.01%	0.00%	**-94.66%**

Since the export values decrease rapidly with their rank we concentrate on the top ten of these 25 HS-categories, both for Canada and for Alberta. One observes market share increases for six of ten HS-classifications in Canada's case and five of ten in the case of Alberta. Alberta Mineral Fuel exports, especially exports of oil, led to a significant increase of their share in the PRC-market. The conclusion is that, when there are as many market share losses as increases among the top ten export products, we cannot speak of a strong export success. Both the country and the province are challenged to do better exporting to the PRC. Opportunities do exist but questions arise. Why has there not been better

penetration of the PRC-market by Canadian producers? What are obstacles to more exports to the PRC?

4. Lessons Learned, Other Observations, and Agenda for the Future

Canada's and Alberta's merchandise exports to the greater China region, but particularly to the PRC, have developed positively, but have not grown as strongly as could have been expected on the basis of the region's fast growth. In accordance with Canada's endowment of natural resources, the preponderance of exports consists of natural resources and processed materials. In particular, Alberta exported Oil, Coal, Chemicals, Wood Pulp, Fats, Nickel, products that satisfy the PRC's need for inputs in its manufacturing industries. Exports of wheat and other agricultural products appear consistent with Alberta being a residual supplier: when the PRC's domestic harvests fall short, the world market, Canada, and Alberta can supply the product. Admittedly, the PRC is a major agricultural producer and exporter itself.

Merchandise exports may continue to hold promise for Alberta's producers, yet conversations with China experts suggest a changing complexion of the country's future business focus. While imports of raw materials were important in the past, there will be an increased flow of direct investment from China into acquiring ownership of natural resources abroad. Decisions on the sourcing of raw materials will then be even more in the hands of Chinese decision makers than is currently the case.

In part motivated by low returns on foreign exchange reserves invested in US-Treasury bonds, the China Investment Corporation's (CIC) has made a deliberate decision to acquire productive direct investments abroad. Given its more than $300 billion portfolio, the CIC has already been a major new foreign direct investor. In the field of energy, emphasis of the key decision makers in state-owned firms and ministries is placed on becoming operators rather than import-buyers. As operators and managers acquire and learn more about new technologies, they can also apply these at home and elsewhere abroad. China's heavy dependence on one major international supplier of ores (Vale) causes anxiety and spurs efforts to break into production in Africa.

Strong interest appears to exist in importing liquefied natural gas from North America, but uncertainty about future energy supplies from abroad also spurs investment in coal mining within the PRC (Xinjiang Province). The diversification of the PRC's chemical industry is underway as well, with priority given to ethylene and polymer production for the five year plan 2012 to 2016. This may herald fewer such imports in the future. Additionally two of the new national plan goals, namely innovation and environmental sustainability, imply

a strengthening of intellectual property protection, especially as patents become more prevalent in the PRC.

As regards advice for Alberta-based businesses, experienced China-hands report that the enforcement of contracts in China is much improved. Often disagreements can be sorted out without recourse to the courts. Importantly, contracts with PRC partners should be translated into Mandarin. For those availing themselves of Chinese suppliers, it is important to recognize that detailed specification regarding packaging and coloring of products must be provided: it can materially influence the price quoted. And payment practices for imports from China appear to involve 30% with the order and 70% with shipment. In contrast to international trade norms of 30 or 60 days' terms, paying later is not customary in China.

As regards policy makers and management researchers, there is a lack of detailed public information on the nature of the export relationships between Canada and greater China. Who initiates contracts for commodity exports? Is a Chinese importer requesting quotes from Canadian suppliers who then respond, or are Canadian producers making active marketing efforts? And could such marketing efforts be made more effective?

In part, answers to these questions can be inferred from reports in the financial press. For example, in 2009, the China Investment Corporation (CIC), the sovereign wealth fund of the PRC, made a Can$ 1.7 billion investment in Teck Resources Ltd. Teck had been selling coking coal to the PRC's steel industry, and the CIC investment will have solidified that trading relationship. Similarly, Grand Cache, the Alberta coal producer, accepted a take-over offer by Wingway of Hong Kong and Marubeni of Japan. Wingway had long been a supplier of coal to the PRC, and Marubeni is a well known trading house and commodity trader. Two other Canadian producers of coking coal, Western Coal and Fording Canadian Coal Trust, have been bought out by Asian interests in recent years. It can be expected that such significant Chinese ownership stakes will foster long term supply relationships for Canadian coal miners. While the marketing of their product may become easier as a result, it is less clear whether the pricing power and negotiating strength of the producers will be enhanced by the foreign ownership. Commodity and natural resource producers typically face prices that are determined in global markets. Additionally, permits may be required, as they are for Canada's uranium exports, resulting in a political dimension.

Canadian trade commissioners have insights into the details of trading relationships, and Canadian exporters do as well but, for obvious reasons, they may not rush to publicize their lessons learned. In the end, the proprietary aspect of exporters' experience and the intense international competition tend to 'seal their lips'. But in order to support Canadian exports effectively, policy makers will need more insights regarding the particulars of Canada's China trade. This

means more detail needs to be assembled on the buyers, their alternative sources, and their location, as well as their shipment- and payment practices. A start could be made by the preparation of some detailed case studies of particular export negotiations, especially in areas other than natural resources. Agriculture, clean technology, and environmental services had been identified as areas in which Alberta and Canada can develop stronger trade ties, so case studies of recent such transactions should prove instructive. Australia is often said to be very successful in its trading relationships in Asia. Casual internet searches show the Australian Government supporting exporters with film clips and widely accessible briefing material for exporters and foreign investors. Are there lessons from the Australian export promotion programs and export experience? How well are Australian exports doing in the PRC?

Apart from the need for more detailed insights into the contract negotiations with Chinese trading partners, the review undertaken here also points to the need for better trade data. While in the Canadian case, merchandise exports to Asia by their commodity-nature exhibit a high domestic content, the growth of global supply chains undermines the information content of export data that do not inform about their import-intensity: if nominal imports and exports are growing rapidly, this could reflect the increased international division of the production process. The increasing value of trade would, however, say very little about how much value is added in the reporting jurisdiction. This is the well-known iPhone lesson: large exports are recorded from its assembly and subsequent shipment from the PRC, yet as a fraction of the total value the contribution of the PRC is quite small. While the problem has been identified, its solution is not yet in sight.

This report has left untouched the export of services. As tourism exports to greater China residents illustrate, there is much growth and promise in such and other service exports. The connection and the interface between exports of merchandise and foreign direct investment has also been an undercurrent in this report, both in the context of Canadian entrepreneurs moving from importing components to establishing a Chinese presence and supplying products for the Chinese market, and in connection with the ownership stakes by Chinese entities in Canadian resource producers that result in locking in long term supplies. This link between trade and foreign direct investment tends to be underappreciated, but it also speaks to the need for now formalizing the investment promotion and protection agreement (FIPPA) with the PRC that the two parties are reported to have negotiated.

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