ECONOMIC COMMENTARY

Alberta's Oil and Gas Supply Chain Industry

October 18, 2016

Highlights:

Weak oil prices and reduced investment by oil and gas companies is also impacting companies that supply machinery and equipment to the oil and gas sector and to construction firms that are working on oil and gas investment projects. The three sectors that make up the Oil and Gas Supply Chain industry, industrial machinery, primary metals and fabricated metals, have seen their sales fall sharply because of much lower capital investment by the oil and gas sector.

Alberta Government

What is the Oil and Gas Supply Chain Industry?

The Oil and Gas Supply Chain (OGSC) industry is made up of companies that primarily sell their products to the oil and gas sector and to the engineering construction sector, which derives most of its revenues from oil and gas projects. Most of these companies can be found in three manufacturing sectors: industrial machinery; fabricated metals; and primary metals.

Why is the Oil and Gas Supply Chain Industry important?

The importance of the Oil and Gas Supply Chain industry to Alberta's energy sector can be illustrated by examining Alberta's Input - Output tables. In 2012, the oil and gas sector and the engineering construction sector purchased at least $21 billion from domestic and international companies in the OGSC sector. This amount combines money spent on manufactured products as inputs into their companies' production processes and on machinery and equipment for final use (the latter category contains capital assets than are depreciated over time).

Alberta's oil and gas sector[1] purchased an estimated $12.7 billion in manufactured products in 2012 as inputs into their production processes. Of this amount $7.4 was supplied by domestic and international companies in the OGSC industry[2] (Chart 1):

- $4.3 billion in industrial machinery (such as oil and gas field machinery and equipment);
- $2.4 billion in primary metals (mainly iron and steel pipes and tubes);
- $735 million in fabricated metals (such as forging and stamping and metal valves and pipe fittings).

Moreover, Alberta's engineering construction sector purchased an additional $13.2 billion in manufactured commodities as inputs, of which $7.3 billion came from the OGSC industry (Chart 1):

- $3.7 billion in fabricated metals (boilers and tanks and metal valves and pipe fittings);
- $2.2 billion in primary metals (iron and steel pipes and tubes);
- $1.4 billion in industrial machinery (oil and gas field machinery and equipment and turbines).

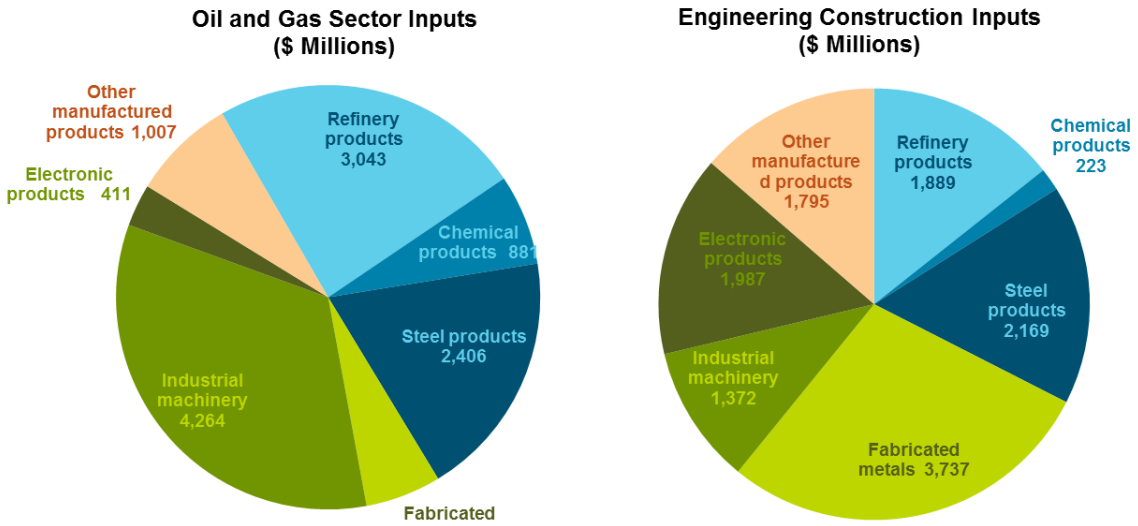
Besides the above products that are used in the production processes of these two sectors, the oil and gas sector also purchases at least an additional $6 billion of machinery and equipment from the industrial machinery sector for final use (and are depreciated over time). More than $4 billion of that machinery and equipment is destined for the oil sands and about $2 billion to the oil and gas services sub-sector.

Although some of the demand for the above OGSC products is met by Alberta companies, imports from other provinces and especially other countries likely account for more than half of the Alberta demand for these products. It is estimated that in 2012 Alberta imported about $14 billion of industrial machinery, $7 billion of primary metals and $5 billion of fabricated metals. While these imports are used by various Alberta sectors the oil and gas and engineering construction sectors are two of the

[1] The oil and gas sector includes companies that extract oil and gas as well oil and gas services companies
[2] The OGSC industry includes the following durable goods manufacturing sectors: fabricated metals; industrial machinery; steel products

three largest customers. The manufacturing industry is the third one and most of the manufacturing industry's imports are destined for companies in the OGSC industry.

Chart 1
Manufactured Goods Purchased by Alberta's Oil and Gas and Engineering Construction Sectors



Source: Statistics Canada's Input - Output Model

Capital Investment in the Oil and Gas Sector

Capital investment in Alberta's oil and gas sector increased at a rapid pace between 2006 and 2014, averaging almost $40 billion a year during that period. However, plunging oil prices have caused a sharp drop in investment and it is expected that oil and gas investment may have declined by one-half between 2014 and 2016. Prior to 2008 most of the investment was taking place in the conventional oil and gas sector, but oil sands investment has outstripped conventional oil and gas investment in recent years (Chart 2). Almost all of the capital investment by the conventional sector is in construction spending. Although construction spending also dominates in the oil sands sector, investment in industrial machinery and equipment is also strong. Capital investment in machinery and equipment has averaged about $6 billion a year since 2006 (Chart 3).

Chart 2
Oil and Gas Capital Investment in Alberta

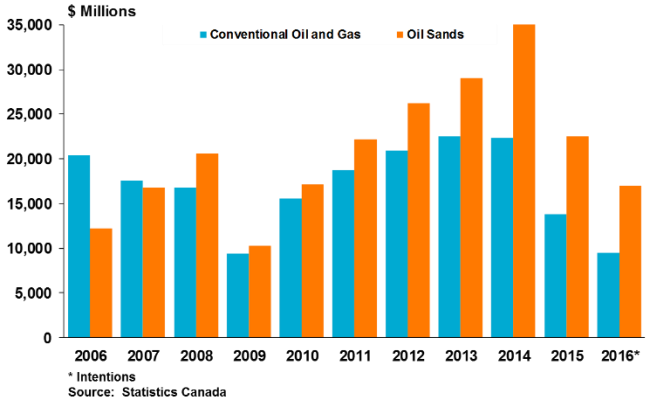
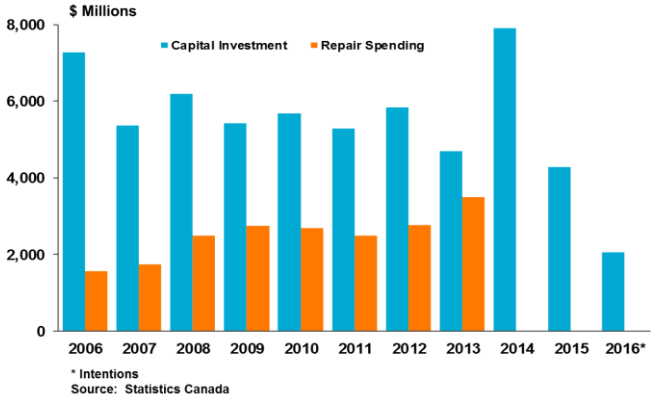


Chart 3
Oil & Gas Spending on Machinery and Equipment in Alberta

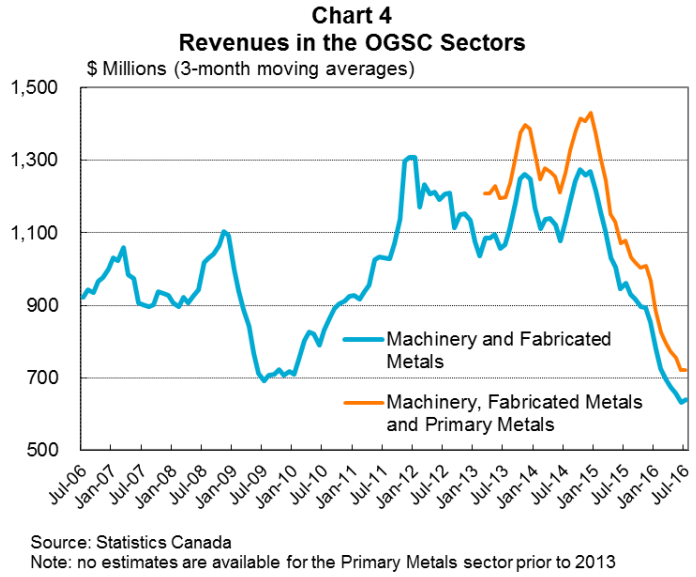


Repair spending on machinery and equipment by the oil sands sector has been rising sharply over the past decade and has averaged more than $3.5 billion a year between 2008 and 2013[3] (Chart 3). As oil sands production is expected to surge over the next decade repair spending on machinery and equipment will also continue to grow at a rapid pace and may eventually overtake capital investment on machinery and equipment.

Growth in Output and Revenues of Alberta's OGSC Industry

Between 2010 and 2014, the industrial machinery sector was the fastest growing manufacturing sector in the province with output growth of 62% over that period, compared with a 17% increase in Gross Domestic Product (GDP) for Alberta's manufacturing sector. The fabricated metals sector rose 21% during the 4-year period and primary metals 8%. However, in 2015 all three sectors were hard-hit by weak oil prices which led to reduced capital investment. GDP in the industrial machinery sector fell 28% last year, led by a 41% drop in production by construction and mining machinery manufacturers. GDP for fabricated metals fell 13% in 2015, mainly as a result of a 40% drop in output of machine shops, and output of primary metals declined 11%.

Monthly GDP estimates at the Canadian level suggest that the industrial machinery and fabricated metals sectors continued to decline in 2016. This can be substantiated by examining monthly revenues (rather than GDP) for the Alberta OGSC sectors. Revenues for all three sectors started to decline in January 2015 and have continued to weaken this year (Chart 4) reaching a 12-year low of $721 million in July, a 50% drop from the $1.41 billion of December 2014 and 25% less than the $966 million of December 2015.



Between 1995 and 2005 revenues for these three sectors nearly tripled from $3.9 billion in 1995 to $11.0 billion in 2005 as investment in the oil and gas sector more than tripled during that period. Revenues of the industrial machinery sector more than tripled to $5.1 billion as a result of a more than 400% increase in the oil and gas field machinery and equipment sub-sector (to $2.5 billion). The fabricated metals sector saw its sales nearly triple between 1995 and 2005 to $4.0 billion as its architectural and structural metals sub-sector's sales also nearly tripled and sales of boilers and tanks

[3] Although Statistics Canada has released an estimate for repair spending for 2014 they warned that it is of poor quality. Therefore, we have not included it.

more than tripled. Primary metals' revenues doubled during that period to an estimated $1.9 billion because of strong growth in its iron and steel pipes and tubes sub-sector.

Between 2005 and 2015, revenues for these three sectors only rose 18% to $12.9 billion because of the contraction the sector was facing in 2015 when combined revenues fell 19%. The value of shipments in the industrial machinery sector rose 21% during that 10-year period: they rose 65% between 2005 and 2014 and dropped sharply by 27% in 2015 to $6.2 billion. Revenues in its largest sub-sector, oil and gas field machinery, nearly doubled between 2005 and 2014 but then fell sharply by 42% in 2015. Sales of pumps and compressors increased by 57% between 2005 and 2014 and declined by 4% in 2015.

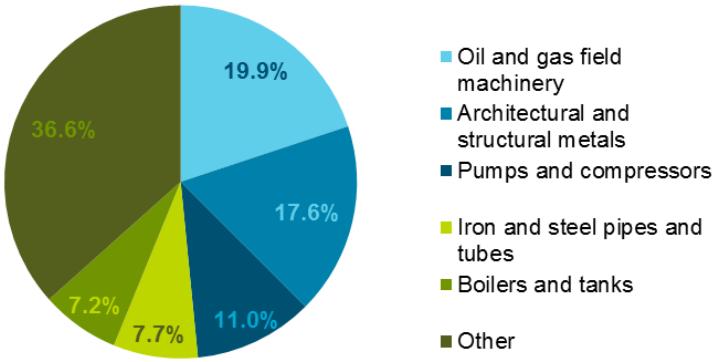
Revenues of the fabricated metals sector increased by 34% between 2005 and 2015 to $5.3 billion: they rose 45% between 2005 and 2014 and fell by 8% in 2015. The largest sub-sector, architectural and structural metals, saw its sales rise 61% between 2005 and 2014 and another 3% in 2015. Sales of boilers and tanks saw little change during that 10-year period, rising 4% between 2005 and 2014 and falling 5% in 2015. Revenues in the primary metals sector fell by one-quarter between 2005 and 2015 to $1.4 billion: they declined by 10% between 2005 and 2014 and by 17% in 2015 as sales of iron and steel pipes and tubes grew strongly between 2005 and 2008 but have fallen since then.

As Chart 4 shows OGSC revenues have continued to fall in 2016. Sales in the industrial machinery sector totaled $2.0 in the first seven months of 2016, compared with sales of $4.0 billion during the same seven-month period of 2015. Revenues in the oil and gas field machinery sub-sector fell by two-thirds and sales of pumps and compressors dropped by one-half. Shipments in the fabricated metals sector are 17% lower this year compared to the first seven months of 2015 as all oil and gas related sub-sectors saw lower sales. Year-to-date revenues in the primary metals sector fell by one-quarter between 2015 and 2016 as sales of iron and steel pipes and tubes declined 31%.

The OGSC industry's largest sub-sectors in 2015 on a revenue basis are:

- Oil and gas field machinery: $2.8 billion; up 12% between 2005 and 2015
- Architectural and structural metals: $2.4 billion; up 67% from 2005
- Pumps and compressors: $1.5 billion; up 51%
- Iron and steel pipes and tubes: $1.1 billion; down 20% from 2005
- Boilers and tanks: $1.0 billion; down 1%

Chart 5
Revenue Shares in 2015 for Major Sub-Sectors



Steep Job Losses in 2016

Between 2005 and 2015, the number of employees in the OGSC industry grew by 13% or 5,500 to 46,500[4]. The sector's workforce grew by about 10,000 between 2005 and 2014 to about 51,100, and then fell by almost 4,600 in 2015. The oil and gas field machinery sub-sector accounted for almost half of 2015's job losses and losses were also severe in the boilers and tanks, machine shops and pumps and compressors sub-sectors.

Employment estimates for the first half of 2016 indicate that job losses are even more acute this year as employment in the OGSC industry averaged just over 37,900 in the first seven months of this year, down from an average of 46,500 jobs for all of 2015. Of this employment loss of 8,600, the largest losses were registered in these sub-sectors:

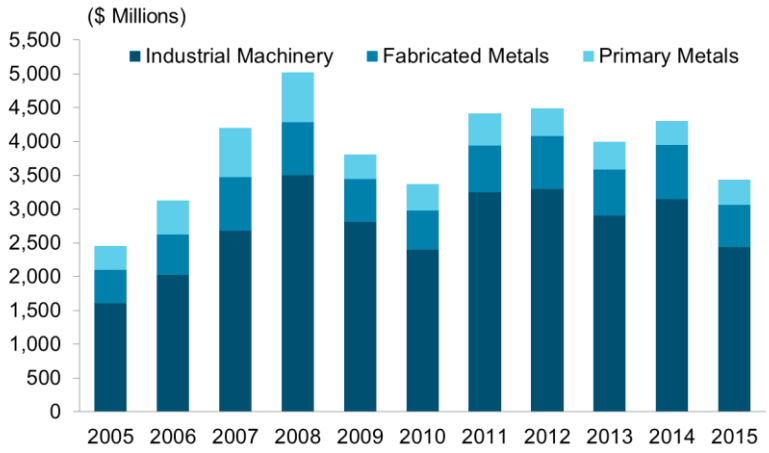
- Oil and gas field machinery has lost about 3,000 jobs so far this year;
- General-purpose machinery (mainly pumps and compressors) close to 1,700 jobs;
- Machine shops with about 1,000 jobs lost;
- Architectural and structural metals lost 600 jobs; and
- Boilers and tanks also lost 600.

Where do Alberta's OGSC Products get shipped to?

Approximately 55% of the industry's output is shipped to customers within the province, mainly in the oil sands and conventional oil and gas sectors. A further 15% is shipped to customers in other provinces.

About 30% of this sector's production is exported internationally. International exports of the primary and fabricated metals and industrial machinery sectors rose 40% between 2005 and 2015 to $3.4 billion (Chart 6). The industry's exports increased by 75% between 2005 and 2014, but declined 20% in 2015. The industrial machinery sector accounts for about 70% of OGSC exports.

Chart 6
Alberta's Exports of Machinery and Metals



Sources: Statistics Canada and Alberta Economic Development and Trade
Note: exports of primary metals exclude exports of nickel and cobalt products

[4] All employment estimates are from Statistics Canada Table 281-0023 - Employment (SEPH), unadjusted for seasonal variation, by type of employee for selected industries classified using the North American Industry Classification System

In the first seven months of 2016, OGSC exports were about 35% lower than in the same period of 2015 because of sharp declines for exports of iron and steel pipes and tubes, metal valves and pipe fittings, and especially oil and gas field machinery to the US. However, exports of boilers and tanks have increased 21% so far in 2016. The OGSC sector's largest export market is the US, with a 65% export share in 2015, followed by China (3%), the United Arab Emirates, South Korea and Mexico.

Summary

Lower crude oil prices have had a severe impact on the Alberta economy and especially on the OGSC industry. Oil and gas companies are drastically lowering their capital spending which translates into reduced demand for the products that are manufactured by Alberta's industrial machinery and primary and fabricated metals sectors. As a result, monthly sales in the OGSC industry fell to a 12-year low of $721 million in July 2016, a 50% drop from the $1.41 billion of December 2014. This in turn has led to a major contraction of this industry's workforce as well, especially this year.