

Recent Developments in Global Commodity Prices: Implications for Canada

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- *Between the summer of 1997 and the end of 1998, the average U.S. dollar price of the primary commodities produced in Canada fell by about 20 per cent. Approximately half of that decline was reversed in the first six months of 1999.*
- *While supply factors contributed to the price reductions of some commodities, the dominant influence was probably the decline in Asian demand caused by the financial and economic crisis in that region.*
- *Much of the reduction in the growth of Canada's aggregate real GDP during 1998 was concentrated in the resource-based sector, as a direct result of the substantial fall in world commodity demand and prices.*

Between August 1997 and December 1998, the Bank of Canada's U.S. dollar index of commodity prices fell by about 20 per cent. Expressed in real terms, the index of commodity prices at the end of 1998 was at its lowest level in the post-war period.¹ Although the index rebounded in the first half of 1999, prices have remained significantly below the levels of mid-1997.

Commodity production, while not as important as it was 20 to 30 years ago as a share of GDP, continues to be a major source of income for the Canadian economy. Thus, movements in commodity prices have important consequences for Canada. This article reviews the recent evolution of commodity prices and discusses the key factors behind these developments. The final section briefly reviews the effects of this substantial reduction in world commodity prices on economic activity in Canada.

Over the short and medium term, price fluctuations for many commodities can be dominated by changes in demand associated with the global business cycle. In contrast, longer-term trends in commodity prices tend to reflect relative price movements that stem from more persistent changes in factors affecting both supply and demand.

1. The concept of a "real" price refers to a relative price. In this article, the real price index for non-energy commodities is the ratio of commodity prices to the U.S. producer price index for finished goods. This deflator is selected because non-energy commodities are used mainly by producers as inputs in the production of manufactured goods. Real energy prices are the ratio between current prices and the chain-weighted U.S. GDP deflator, since energy is used more broadly by consumers and producers. All commodity price indexes used in this article have a base of 1982-90 = 100 and are expressed in U.S. dollars (unless otherwise indicated).

This article includes information received to June 1999.

Some analysts have suggested that much of the decline in commodity prices since mid-1997 has been part of a longer-term downward trend in the real value of commodity prices. However, an earlier study by Coletti (1992–93) suggested that the real price of the basket of non-energy commodities produced in Canada had shown neither an upward nor a downward trend over the period from 1900 to 1991.² While longer-term factors may have contributed to the recent price declines, a significant part of these declines reflects cyclical movements in the demand for commodities, partly associated with a large drop in Asian demand caused by the financial and economic difficulties in that region and in other emerging-market economies.

While longer-term factors may have contributed to the recent price declines, a significant part of these declines reflects cyclical movements in the demand for commodities.

The measure of commodity prices discussed in this article is the Bank of Canada commodity price index (BCPI). This index includes the prices of agricultural products, metals, forest products, crude oil, and natural gas, with weights based on Canadian production of each commodity (Box 1, page 40). Since the movements in energy and non-energy commodity prices are often quite different, changes in the Bank of Canada's index of non-energy commodity prices (BCNE) are also examined.

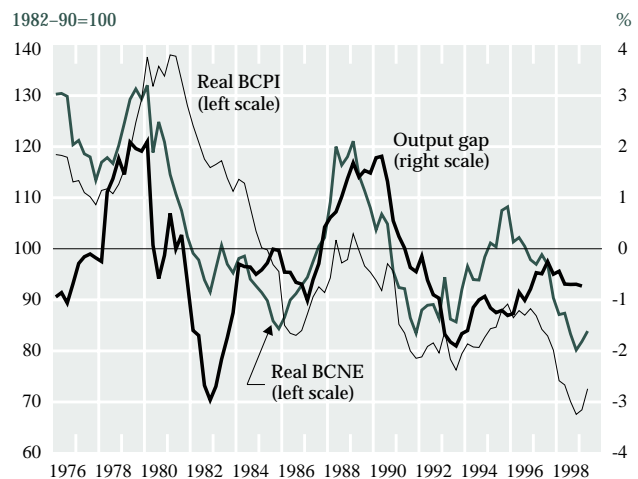
Recent Developments in World Commodity Markets

Since commodity prices can move substantially over fairly short periods, it is useful to put recent developments in a longer-term perspective. It is also instructive to examine how cyclical changes in the world economy affect commodity prices.

2. Coletti (1992–93) showed that there had been a sharp downward trend in real non-energy prices beginning in the early 1970s but noted that much of that downward movement was a reversal of increases in previous years.

Most commodity prices are determined in markets that are very sensitive to cyclical fluctuations in overall world economic activity. As can be seen in Chart 1, movements in real commodity prices since the mid-1970s have generally followed the cyclical swings in aggregate demand in the major industrial economies. In particular, an estimate of the output gap among G-7 countries broadly explains movements in commodity prices until the mid-1990s.³

Chart 1
Real Commodity Prices and the G-7 Output Gap



For the most recent period, however, there was a sharp decline in real commodity prices at a time when changes in the excess supply among G-7 countries were relatively small. Indeed, the BCPI fell by 20 per cent on a U.S. dollar basis between August 1997 and December 1998, with virtually all components of the index recording considerable declines. A significant turnaround occurred in the first half of 1999, but the index in June 1999 was still about 10 per cent below its mid-1997 level (Table 1).⁴

3. The output gap is defined as the percentage difference between the actual level of output and the economy's productive capacity. The G-7 output gap is a weighted average of the gaps in seven industrialized countries, with weights being determined by each country's production share. The G-7 output gap is used because of the availability of more accurately measured data on output for G-7 countries than for the world. Nevertheless, a broader measure of the world output gap constructed by Bank of Canada staff generally shows a similar profile to the G-7 gap.

4. Owing to depreciation of the Canadian dollar, the BCPI fell by only 5 per cent on a Canadian dollar basis over the same period.

Table 1
Basket Weights and Price Changes for Selected BCPI Components

Commodity	Weight (per cent)	Percentage price change (in U.S. dollars)	
		December 1998/ August 1997	June 1999/ August 1997
Total BCPI	100.0	-20.2	-10.2
BCPI excluding energy	65.1	-18.6	-11.6
Metals	14.4	-31.6	-28.8
Aluminum	3.0	-27.2	-23.1
Copper	2.9	-34.6	-36.6
Nickel	2.4	-42.8	-22.9
Zinc	2.7	-41.9	-39.2
Gold	2.8	-10.3	-19.4
Forest products	29.6	-11.5	-2.9
Lumber	9.0	-13.9	9.5
Newsprint	8.3	2.7	-15.0
Pulp	12.3	-18.0	-11.5
Grains and oilseeds	8.8	-12.1	-16.6
Livestock	9.2	-37.6	-17.3
Energy	34.9	-24.8	-6.3
Crude oil	21.7	-43.3	-10.3

The recent break in the historical relationship between commodity prices and the G-7 output gap appears to be explained largely by the effects of the Asian crisis.⁵ In the earlier part of this decade, the rapid real growth in Asia (with the associated strong increases in investment expenditure, particularly on large infrastructure projects) meant that this region accounted for a disproportionate share of the growth in world demand for commodities. Over the 1992–96 period, the region's contribution to the growth of global demand for some key commodities has been estimated to be about 70 per cent (Table 2).

In 1998, following the economic turbulence that began in Asia after mid-1997, there was virtually no growth in real GDP in the region. Real GDP growth in Asia is expected to rise to 3.2 per cent in 1999, but this is less than half of the average growth rate of 6.8 per cent experienced over the 1991–97 period.⁶ Thus, whereas

5. Much of the drop in the non-energy price index in 1996 reflected the reversal of an earlier sharp upward spike in the prices of newsprint and pulp. Prices of these forest products had increased rapidly in 1994–95 as a surge in global demand led to a substantial decline in inventories. Newsprint prices rose by more than 46 per cent (year-over-year) in the third quarter of 1995, while pulp prices rose by more than 70 per cent (year-over-year) in the first quarter of 1995. For more details on this episode, see Canadian Pulp and Paper Association (1997) and Standard & Poor's Special Report (1998).

6. Asia's growth rates are weighted average growth rates of various Asian regions in IMF (1999).

Table 2
Contribution of Asia to World Output and Commodity Demand
Per cent

	Share of world activity (1996)		Contribution to growth (1992–96) ^a	
	Real GDP ^b	Commodity demand ^c	Real GDP ^b	Commodity demand ^c
World	100.0	100.0	100.0	100.0
Asia ^d	26.9	26.3	37.4	70.1
Japan	17.3	8.2	10.7	4.2
Other Asia ^e	9.6	18.1	26.7	65.9

a. Share of global growth accounted for by each region.

b. Real GDP is calculated by deflating nominal GDP by average 1992–96 prices and converting the result into U.S. dollars using average 1992–96 market exchange rates.

c. Estimated share of world consumption (in volume terms) of selected key commodities produced in Canada (includes petroleum, base metals, and grains), weighted by their relative contributions to the BCPI. Source: IMF mimeograph compiled from *World Bureau of Metal Statistics*; USDA, *Grain: World Markets and Trade*; and *Oil World Statistics Update*.

d. Japan, China (includes Hong Kong), India, Korea, Taiwan, Indonesia, Malaysia, Philippines, and Thailand.

e. Asia (as defined above) excluding Japan.

strong growth in Asian demand was supporting commodity prices throughout the early 1990s, the economic downturn in the region has had a strong negative effect on the global demand for commodities and has placed downward pressure on their prices.

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Developments affecting the supply of both agricultural and industrial commodities have also contributed to the recent weakness in commodity prices. New capacity has come on stream, and at the same time, some producers have increased production in an attempt to maintain their revenues or their share of the market. Base metals markets, in particular, have had to absorb substantial increases in supply since the middle of 1997.

Box 1: A Comparison of the Bank of Canada Commodity Price Index with the Bridge/CRB Commodity Price Index

Bank staff use the Bank of Canada Commodity Price Index (BCPI), which is published weekly, to monitor developments in the world prices of those commodities most important to Canada. In contrast, many analysts closely follow the Bridge/CRB index of commodity futures prices, which is available daily. Commodity coverage and weighting differ significantly between the two indexes.

The BCPI is an arithmetic, fixed-weight index of the spot or transaction prices of 23 commodities produced in Canada and sold in world markets. The weight of each commodity in the index is based on the average value of Canadian production of the commodity over the 1982–90 period.

In contrast, the Bridge/CRB index of futures prices, produced by the Commodity Research Bureau in the United States, weights its components equally. For each commodity, the average price is calculated for contracts with maturities of up to six months (between two and five contracts are used, depending on the commodity). There are 17 commodities

in the CRB index. Among the nine items in its foodstuffs subindex, five are not part of the BCPI: cocoa, coffee, soybeans, orange juice, and sugar. Of the eight raw industrial commodities, cotton and platinum are not included in the BCPI. The CRB index does not include any of the forest products (lumber, pulp, and newsprint) that account for almost 30 per cent of the BCPI, nor does it include various other components of the BCPI (barley, canola, cod, lobster, salmon, aluminum, zinc, nickel, potash, sulphur, and coal). The weight for energy commodities is about 18 per cent in the CRB index, compared with almost 35 per cent in the BCPI.

As a price index of commodities produced in Canada, constructed using Canadian weights, the BCPI is a more relevant index for the analysis of Canadian economic developments. Consistent with this conclusion, research in the International Department of the Bank of Canada has shown that there is no stable statistical link between the Canada/U.S. exchange rate and the CRB index.

Recent Developments in Individual Commodity Markets

This section summarizes recent changes in the prices of the key groups of individual commodities. Supply-side developments are mentioned when they have been important in reinforcing the downward pressure on prices arising from the Asian crisis.

Metals

The price index for metals rebounded in the first half of 1997, as the economic recovery in Europe gathered strength and the expansion in North America remained vigorous. However, metals prices fell sharply between August 1997 and the end of 1998 (Table 1 and Chart 2). The economic difficulties in Asia reduced demand for metals, since this region was a major consumer of metals earlier in the

decade, particularly for megaprojects.⁷ Nevertheless, metals prices have increased somewhat since the beginning of 1999 in response to improving prospects for a gradual recovery in Asia.

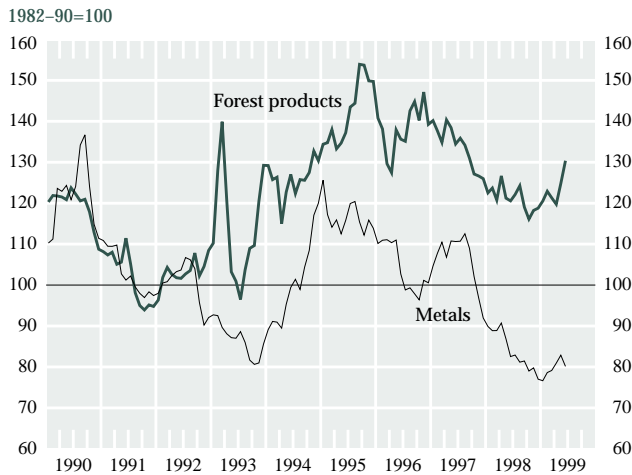
Copper prices moved steadily downwards from mid-1997 until the first quarter of this year. The Asian crisis was the major factor behind a sharp decline in global consumption growth (to 2.1 per cent in 1998 from 4.8 per cent in 1997). Asian demand, which accounts for approximately one-third of global copper consumption, contracted by about 9 per cent in 1998. Increases in production (particularly from Chile) also contributed to the fall in copper prices. Prices moved up modestly over the second quarter of 1999.

Even before the onset of the Asian crisis, the market situation for *nickel* was softening. During 1995–96, North

7. Asian data in this section exclude China.

Chart 2

Price Indexes for Metals and Forest Products (US\$ terms)



American and Asian production increased sharply, and Russian exports surged as internal demand in that country declined. Since 1997, the demand for stainless steel (of which nickel is a major component) has fallen sharply, particularly in the United States and Asia. Increased supply played a smaller role more recently in the nickel market, although there was a further increase in Russian exports in 1997–98 and a surge in material recovered from stainless steel scrap in the United States. Nickel prices recovered substantially over the first half of 1999, aided by production cutbacks in various countries including Canada.

Falling Asian demand for *aluminum* and *zinc* (which accounts for about 23 per cent of global demand) contributed to substantial declines in the prices of both metals after mid-1997. Asian demand for aluminum, which had grown by 22 per cent in 1997, declined by more than 28 per cent in 1998, while Asian demand for zinc, which had grown by 1 per cent in 1997, declined by about 7 per cent in 1998. Nevertheless, prices of both metals increased over the first half of this year.

Gold prices fell in 1996, owing to expanded production in North America, Latin America, and emerging markets in Asia, as well as sales of gold by central banks. The situation was exacerbated by the Asian crisis in 1997 and 1998 and, more recently, by expectations in the first half of the year of potential sales by the IMF and central banks. Asian consumption, which

accounts for more than half of global demand, remained relatively weak in 1998.

Forest products

The forest products component of the BCPI includes the prices of pulp, newsprint, and lumber. Asian consumption of *pulp* fell in both 1997 and 1998, forcing non-Asian producers to look for new export destinations. This resulted in both an additional buildup in inventory levels and sharply lower prices. After remaining relatively stable in the first quarter of 1999, pulp prices improved by 5 per cent in the second quarter as producers cut back output, which helped to ease the large amount of excess inventories.

The effects of lower Asian demand for *newsprint* were offset by continued strong demand in North America and Europe and by supply cutbacks arising from labour disruptions in Canada, so that, until very recently, newsprint prices were quite stable. However, prices fell steadily in the first half of 1999 as Abitibi-Consolidated resumed production and announced it was striving to regain its pre-strike share of the North American market.

Lumber prices began to ease considerably in early 1997 because of a substantial surge in U.S. lumber supplies combined with a slowdown in housing construction in Japan and in a number of other Asian countries. Producers in emerging Asian markets responded by increasing their market share in the United States. Lumber prices have rebounded markedly over the first half of 1999, chiefly as a result of high levels of housing activity in the United States.

Crude oil

World demand for oil was buoyant in 1995 and 1996, leading to a steady price recovery well into late 1996. This began to change with the emergence of discord among OPEC members and a sharp decline in Asian demand. OPEC increased oil-production quotas by 10 per cent in November 1997, although seasonal demand for heating oil and other fuels in North America and Europe was weak that winter because of unusually mild weather conditions. Subsequent production cutbacks by OPEC and non-OPEC countries in April and May 1998 proved to be insufficient to restore balance, and the West Texas Intermediate benchmark price fell from an average of US\$19.20 per barrel in June 1997 to US\$11.30 per barrel in December 1998.

Oil prices rebounded to an average of US\$17.90 per barrel in June 1999, following a March announcement

that OPEC and several non-OPEC producers had agreed to cut production by 2.1 million barrels a day. Mounting demand in the United States also contributed to the rise.

Livestock, grains, and oilseeds

Markets for livestock, grains, and oilseeds also suffered from the effects of the Asian crisis. Supplies of both *hogs* and *cattle* in North America had expanded sharply, beginning in 1996, in anticipation of a strong export demand from Asia that did not materialize. The supply of U.S. cattle began to increase through the first half of 1998, as a record number reached slaughter weight. Hog prices were hit even harder and plummeted through the end of 1998, after production reached a record high in the summer, and cold storage stocks mounted sharply. Panic selling drove hog prices to post-war lows over the Christmas season. Prices recovered in the first half of 1999, owing both to supply adjustments and some recent improvements in demand.

Ample wheat crops in the United States and in other wheat-producing countries, combined with slower growth in global consumption, have led to surplus supplies of *grains* and *oilseeds* in the last two years. Faced with mounting stocks of the 1997 crop, some U.S. producers began to move the early harvested wheat to the market in 1998, in order to take advantage of the Loan Deficiency Payment program,⁸ adding to negative market sentiments. Prices for grains and oilseeds weakened further in the first half of this year owing to increases in exports from Brazil and Argentina.

Effects on the Canadian economy

Both commodity exports and output in the resource-based sector have fallen back since the end of 1997 as a direct result of weakness in the world demand for commodities and of the associated impact on commodity prices.⁹ Because of the consequent impact on

8. The U.S. Loan Deficiency Payment program provides interim financing to producers of grains and oilseeds. The loan proceeds help a producer to pay bills when they come due without having to sell the harvested crop at a time of year when prices tend to be lowest. When prices are expected to fall, however, producers who have taken payment may try to sell their wheat rapidly in order to minimize their losses.

9. The resource sector, as defined in this article, includes all of the primary industries, wood, paper and allied products, primary metals, non-metallic mineral products, refined petroleum and coal products, chemical products, and electric utilities. Among the various definitions of the resource sector that might be chosen, this one is relatively comprehensive in the sense of including all important sectors that extract or make significant use of natural resources in their production. Data on output are from Statistics Canada.

profitability in this sector, levels of activity have been scaled back, especially at high-cost facilities (Charts 3 and 4).¹⁰ In contrast, the growth of production in the rest of the economy, while slowing somewhat, continued to be fairly robust between the end of 1997 and

Chart 3
Real Gross Domestic Product
4-quarter percentage change

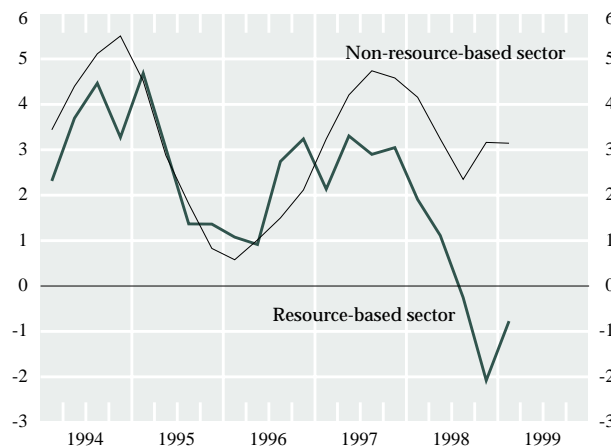
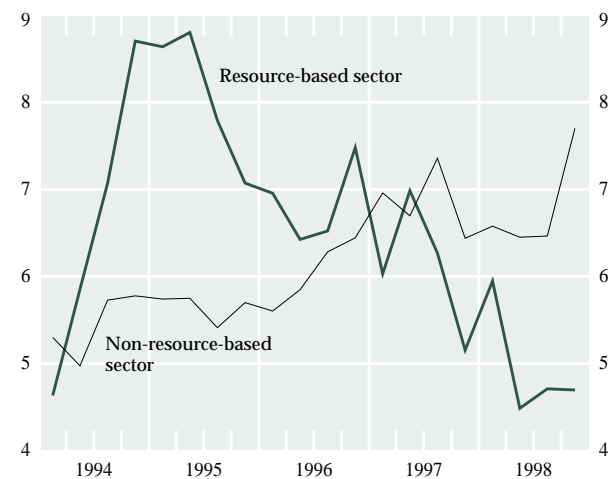


Chart 4
Return on Capital Employed
Per cent



10. The estimates of return on capital shown in Chart 4 are defined as the ratio of profit before extraordinary gains and interest on borrowings, net of tax, to capital employed. Capital employed is defined as the sum of borrowings, loans and accounts with affiliates, and total equity.

the end of 1998. Moreover, the reduction in cash flow and downward revisions in medium-term expectations for commodity demand and prices contributed to a decrease in expenditures on business investment by resource firms, especially in the oil and gas industry. (The longer-term trends in output and exports in the resource-based sector are discussed in Box 2, page 44.)

In addition, the substantial reduction in the share prices of Canadian resource companies, arising from the downturn in commodity prices, has worked in the direction of dampening household demand. Output and business investment in the resource-based sector are likely to remain weak until world demand for commodities and, hence, commodity prices, recover significantly.¹¹

The drop in commodity prices has clearly resulted in lower real incomes for Canadians, in the form of reduced profits and employment in resource-based industries. Lower net exports of primary commodities have also implied, other things being equal, a larger current account deficit and therefore a greater need for foreign borrowing than would otherwise have been the case.

The depreciation of the Canadian dollar has helped the economy to adjust to the downturn in commodity prices.

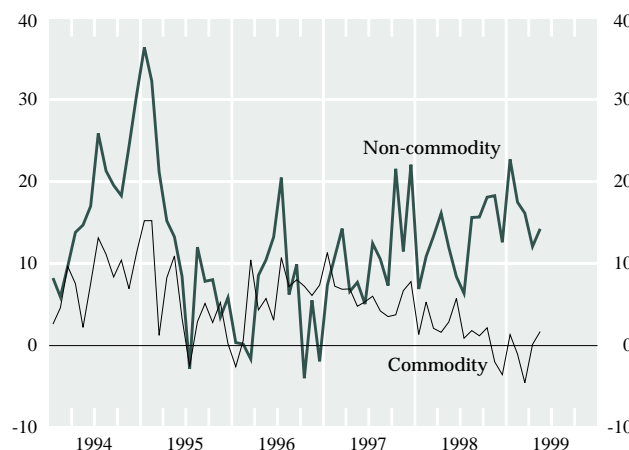
The effect of the downturn in commodity prices on economic activity has been very uneven from a regional perspective. The British Columbia economy has been the most adversely affected, both because of its relatively large trade exposure to Asia and the continuing importance of resource industries in that province. The economic crisis in Asia and the subsequent fall in commodity prices contributed to a downturn in provincial income from exports and in corporate profits. In the forest sector, there were layoffs in several provincial facilities. Activity at many mining opera-

11. Business investment in the resource-based sector has a much higher domestic content than in most other sectors, so the direct effect on real GDP of a downturn in business investment in this sector would be considerably larger than a similar reduction in capital spending elsewhere.

tions either came to a halt or was scaled back. The weakness of grain prices has also had a serious impact on the economies of the Prairie provinces.

The depreciation of the Canadian dollar has helped the economy to adjust to the downturn in commodity prices. While the weakening in the Canadian dollar helped alleviate the adverse effect of the decline in resource prices on workers and firms in the resource-based sector, it served to absorb the adverse shock at the aggregate-economy level by stimulating demand for non-resource-based goods and services produced by both exporters and import-competing firms (Chart 5).¹² As a result, there has been a shift in employment and production from commodity-based industries towards export and import-competing industries. Thus, while employment has fallen considerably in resource industries over the past year, there has been a solid increase in total Canadian employment.

Chart 5
Merchandise Export Volumes
12-month percentage change



Conclusion

The prices of virtually all commodities important to the Canadian economy were adversely affected by the economic and financial crisis in Asia. Asian demand, which had accounted for a relatively large share of the growth of world consumption for many commodities, has weakened considerably over the past two years.

12. Exporters of finished products were only slightly affected by the decline in Asian demand, since these countries import relatively few finished goods from Canada.

Box 2: Trend in the Share of the Resource Sector in Canada

There are at least two ways to measure the relative size of the commodity-producing sector. One method is to measure the contribution to output of the labour and capital used in the resource sector and compare it with aggregate output in Canada. This corresponds to the gross domestic product at factor cost for the commodity-producing sector as a share of the gross domestic product at factor cost for the whole economy (the “real value-added” measure). According to this measure, the resource sector’s share of aggregate output in Canada has fallen from about 19 per cent in the early 1960s to just over 13 per cent in 1998, with much of this reduction taking place during the 1970s (Chart 1).

Another method of measuring the relative importance of the resource sector recognizes that the production of resources requires not only the labour and capital employed in that sector but also requires purchases of inputs from other sectors of the economy. This is the “real gross net output” measure, which calculates the share of real gross output for the commodity-producing sector, net of intrasectoral transactions, in the real gross domestic product for the whole economy. This measure, shown here over the period 1971 to 1995, reached a peak of about 24 per cent in 1973 and fell to about 21 per cent later in that decade, where it remained

Chart 1

Two Measures of the Size of the Resource Sector Relative to GDP

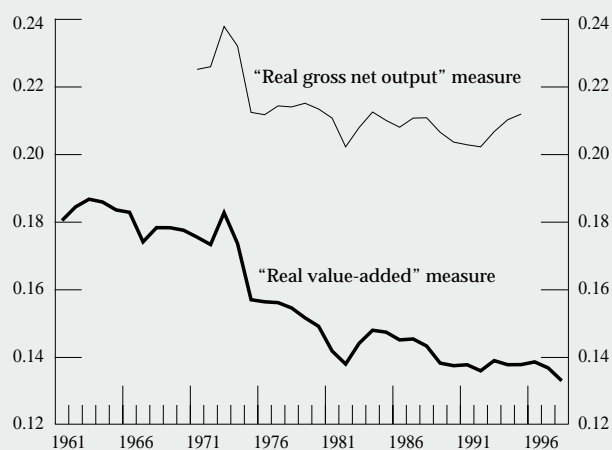
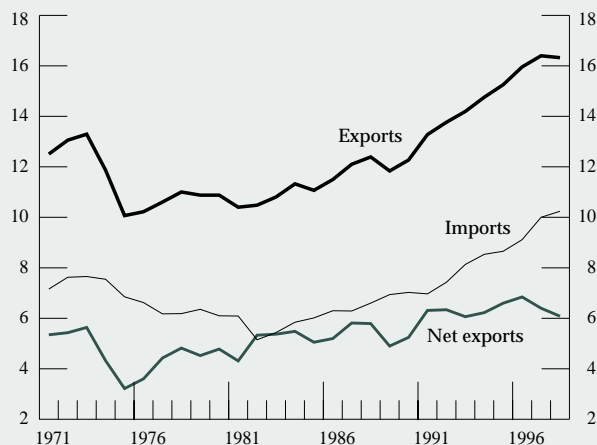


Chart 2

Ratios of Real Commodity¹ Exports and Imports to Total Real GDP²



1. Agricultural and fish products, energy products, forestry products, and industrial goods and materials from the quarterly National Accounts
2. Real GDP at factor cost

up to 1995. One of the reasons for the decline in the “real value-added” measure observed after 1975 may have been the outsourcing of services previously produced by labour and capital in the resource sector.¹ At the same time, the share of the volume of net exports of commodities in total real GDP has changed very little, on balance, since the early 1970s (Chart 2).² There has been an upward trend in intra-industry trade, however, reflected in rises in both exports and imports of commodities (relative to GDP) over this period. These have resulted mainly from efforts by firms to improve profitability through increased specialization and the associated savings of large-scale production.

1. There has been a shift in activity towards the service sector, particularly to those industries producing services for other firms (Bank of Canada 1990). Outsourcing of various service-related activities has been underway for some time because of cost considerations.
2. The share of commodity exports in total merchandise exports is another indicator of the importance of resource-based activity in the Canadian economy. With the definition of commodity exports used in Chart 2, this share was about 44 per cent in 1998. A narrower definition, excluding such items as iron and steel products, chemicals, and electricity, would yield a share of about 35 per cent.

In some cases, increased supplies also contributed to the marked reduction in world commodity prices. These developments in commodity markets have adversely affected the growth of aggregate demand in Canada over the past year. At the same time, the real depreciation of the Canadian dollar against the U.S. dollar (itself mainly the result of the downturn in world commodity prices), together with the continued strong growth of the U.S. economy, has partly offset these negative effects on Canadian aggregate demand.

Recent evidence suggests that the fall in overall commodity prices may be over, since market imbalances are being corrected. Crude oil prices have rebounded considerably, as a result of optimism that oil producers will adhere to the new production quotas. Prices of many non-energy commodities have also improved in recent months. Nevertheless, the prospects for further recovery in commodity prices will depend on overall world demand, particularly the situation in the Asian economies.

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Appendix: Data Sources

Data on commodity prices are compiled and maintained by the Research Department at the Bank of Canada. The BCPI, BCNE, and prices for energy, food, and aggregate industrial materials are published in Table H9 of the *Bank of Canada Banking and Financial Statistics* and are available on the Bank of Canada Web site (www.bank-banque-canada.ca). The data for the G-7 output gap are produced by the United States Division in the International Department at the Bank of Canada.

The world production and consumption data for base metals are from *Metal Statistics 1998*, 90th edition, published by American Metal Market, a publication of Cahner's Business Information. The data for consumption and production of crude oil are from the *Oil Market Report*, published by the International Energy Agency.