

## Business Indicators ♦ June 2008

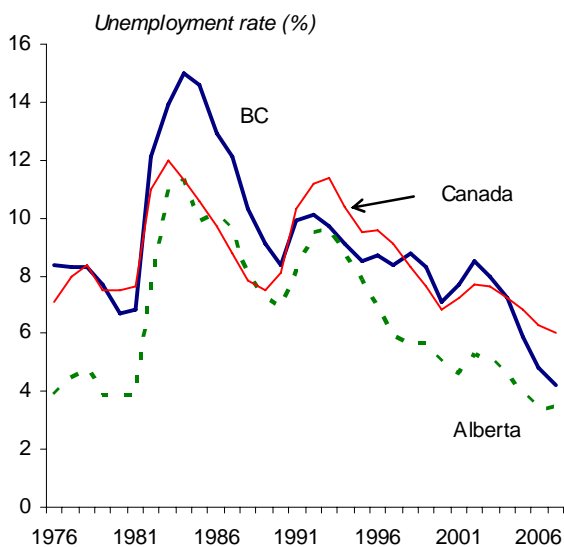
### Labour Productivity: BC's Achilles Heel?

#### Coping with labour supply constraints

British Columbia, together with Alberta, Saskatchewan and Manitoba, is currently facing tight labour market conditions. Unemployment rates are at thirty-year lows, and some employers are having difficulty staffing vacant positions.

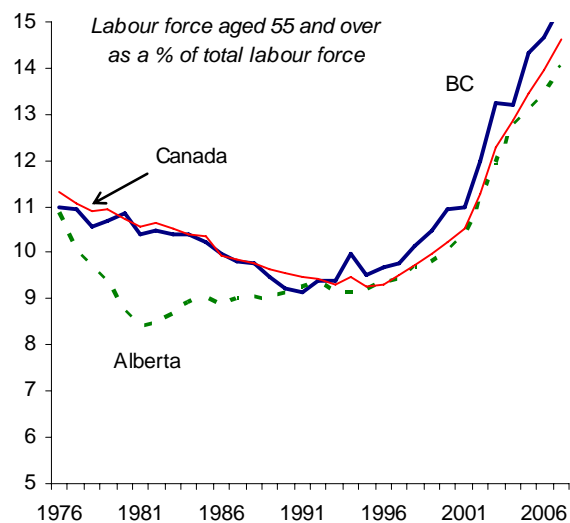
It is unlikely that the situation will change significantly in the near future. At the moment the economy is robust, but even if British Columbia were to enter a period of slower growth, labour supply constraints could persist because of demographic factors which are changing the characteristics of the workforce.

#### BC's unemployment rate is at a 30-year low...



Data Source: Statistics Canada

#### ...and a growing share of the labour force is nearing retirement age



Data Source: Statistics Canada

Together with the rest of Canada, BC's population is ageing. In 2007, just over 15% of the labour force (those who are either working, or looking for work) was 55 or older. The proportion of older workers has been climbing steadily since the early 1990s, as growing numbers of baby boomers are approaching retirement age. As these individuals leave the workforce, the supply of available labour will be reduced since there are proportionally fewer younger workers to replace them. This means that employers could be facing demographically-driven labour shortages in the future, regardless of prevailing economic conditions. Labour supply constraints could hamper the ability of firms to produce goods and services.

Employers have recognized this, and some are taking steps to encourage older workers to remain in the workforce longer, or to woo them back after they have retired. Governments have begun to roll back mandatory retirement policies, allowing older workers to remain employed after they reach the usual retirement age of 65.

However, these are only temporary solutions. A 60- or 65-year-old may be enticed to keep on working, or re-enter the workforce temporarily, but in the long run, it is less likely that large numbers of older workers will continue to have the energy and desire to participate in the workforce.

If the supply of available workers is, or is likely to be, limited, employers must find other ways to satisfy their need for labour. Some companies have been shifting their production facilities away from the ageing population centres in North America, Europe and parts of Asia toward developing economies, where labour is abundant, usually cheaper, and the workforce tends to be younger. Those for whom production facilities need not be located close to a traditional source of raw materials have already begun this process and unless transportation or, in the case of some services, communication costs become prohibitive, this trend is likely to continue.

### **Productivity improvements lead to economic growth, and reduce the need for capital and labour inputs**

In situations where the supply of available labour is limited, employers have other alternatives. For example, it may be possible to make more intensive use of existing labour and capital (machinery, equipment and facilities) inputs. A plant that is operating at less than full capacity can increase its production schedule. This is, however, only possible if labour and capital inputs are not being used to their full capacity.

The other way to cope with labour supply constraints is by improving productivity. This can be done by changing the processes or technology used to produce goods and services. Investing in new machinery, equipment or facilities might allow a producer to increase output with the same amount of labour, or to maintain existing levels of production with a smaller workforce. Finding ways to use existing resources more efficiently—by working “smarter”—is another option.

Higher productivity is a key factor in economic growth, and can help mitigate the limitations imposed by resource constraints. The extent to which productivity growth will occur in the future is unknown, but given the demographic and labour market situation, productivity improvements could become increasingly important drivers of economic growth. The remainder of this paper focuses on labour productivity trends in BC and the rest of Canada during the last ten years.

### **Measuring labour productivity**

Labour productivity is a measure of the relationship between output and the amount of labour used in production. It is relatively easy to calculate, since it is equal to the ratio of real gross domestic product (GDP, which is the value added to the economy by a given industry, expressed in chained<sup>1</sup> 2002 dollars) to labour inputs (the total number of hours worked) used in production.

Labour productivity is a less than ideal measure. The ratio of GDP per hour worked reflects a variety of factors: the efficiency with which labour is used, the mix of labour and capital

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<sup>1</sup> All of the GDP figures used in the productivity calculations are in chained (2002) dollars. This means that they have been adjusted to remove the effects of price changes over time, and can be viewed as measures of the volume of goods and services produced by the economy, priced in 2002 dollars.

A more detailed explanation of chained data is available on the Statistics Canada website at:  
<http://www.statcan.ca/english/nea-cen/gloss/iea.htm#gdp>

inputs used in production, and the effect of technological change over time.

Some differences in productivity levels simply reflect the way in which various industries produce goods or services. For example, hydroelectric power production relies on infrastructure such as dams, transmission systems and other structures and equipment. Although the development of the infrastructure is costly, once it is in place, relatively little labour is required to produce electric power. Therefore, labour productivity, the ratio of GDP to total hours worked, is very high in this industry.

In contrast, many service industries rely primarily on labour rather than capital inputs. This is especially true in industries that provide personal or consulting services (e.g., legal services, accounting, engineering, hairstyling and so on). For these industries, the ratio of GDP per hour worked is lower because labour is the primary input used in production.

When making productivity comparisons among industries or regions it is important to keep this in mind. An economy that is highly service-oriented is likely to have lower labour productivity than one where key industries rely on more capital-intensive production processes. Productivity indexes can be more revealing than productivity levels, since they show whether the efficiency of production in a given industry or region is rising, falling or staying the same over time.

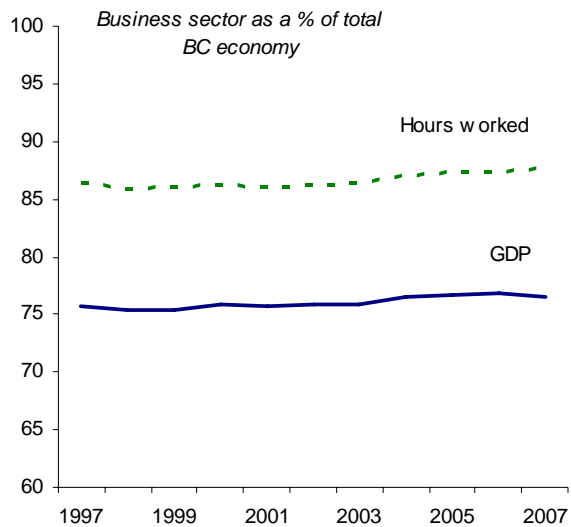
**The business sector**

Productivity data for some industries are somewhat meaningless. The public sector, for example, does not produce a measurable output. It exists to provide services such as defence, or health care, or education, which are not normally bought and sold in the market place. These public goods have an intrinsic value but not an explicit price. Therefore, the value of public sector services, and their contri-

bution to GDP, is usually measured based on the cost of providing those services—labour plus depreciation on capital equipment and buildings. Since the measurement of GDP in these industries is directly related to the amount of labour used, the relationship between GDP and labour inputs does not change much over time, and these services are usually excluded from productivity calculations.

Similarly, an estimate of the imputed rental value of owner-occupied housing is included in total GDP. There is no market transaction associated with this estimate, nor is there any employment, so this “industry” is also excluded from productivity estimates.

**About three-quarters of BC’s GDP originates in the business sector**



Data Source: Statistics Canada

The rest of the economy, the business sector, is defined to include all industries which operate on a for-profit basis<sup>2</sup>. In BC, just over three

<sup>2</sup> Statistics Canada does not publish business sector GDP data for the provinces. BC Stats’ business sector estimates include some non-business activities which cannot be easily extracted from the GDP data. For example, the Worker’s Compensation Board is a government agency, but its activities and employment would be included in the insurance industry rather than in public administration.

quarters (77%) of the province’s GDP originates in the business sector. This is lower than the national average of 80%, indicating that public sector services, together with rental values on owner occupied housing, play a bigger role in the province’s economy than is the case in most parts of Canada. Relative to the size of the economy, the public sector in British Columbia is similar to the Canadian average, but imputed rental income accounts for a bigger share of total GDP. This is partly a reflection of the high cost of housing in BC<sup>3</sup>.

**What’s happening to labour productivity in the business sector?**

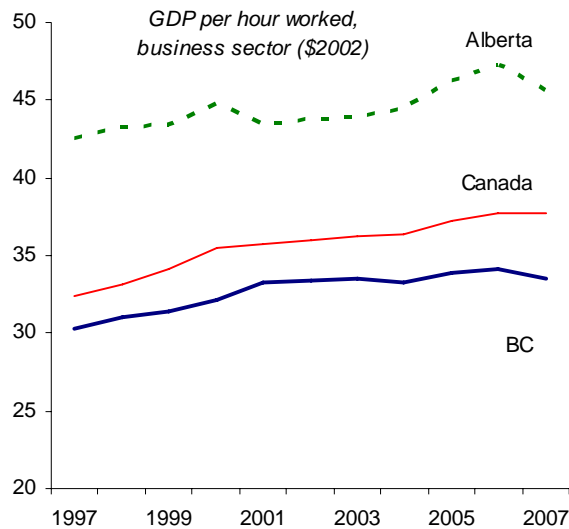
Labour productivity measures tell an interesting tale: while some provinces have made big gains in labour productivity during the last ten years, others, including BC, have not fared as well.

Business sector GDP per hour worked in this province is well below the national average. In fact, the province ranks sixth in Canada, behind Alberta, Newfoundland, Ontario, Saskatchewan and Quebec. BC’s comparatively low ranking is not a recent development; GDP per hour worked in the province’s business sector has been below-average since 1997<sup>4</sup>—and the size of the gap is growing.

Labour productivity in Alberta has long been the highest in the country, while Ontario and Saskatchewan have traditionally alternated between second and third place. More recently, Newfoundland has become a force to be reckoned with, as production from offshore oil reserves has provided a much-needed boost to its economy. Fuelled by its developing energy sector, labour productivity in Newfoundland is

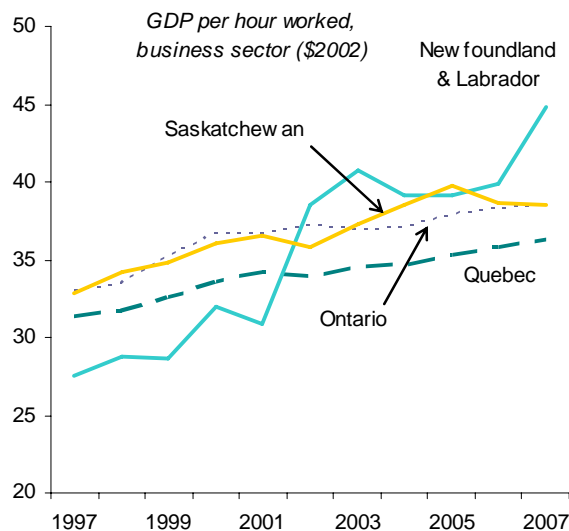
now the second-highest in the country, and only slightly lower than in Alberta.

**GDP per hour worked in BC remains well below the national average**



Data Source: BC Stats

**Newfoundland’s dramatic productivity growth is largely due to its emerging offshore oil industry**

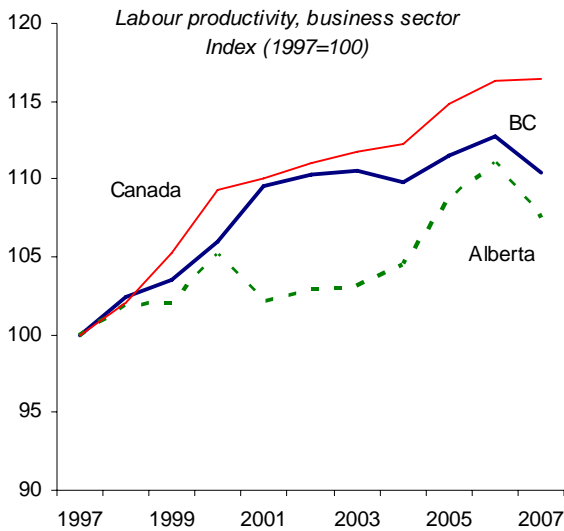


Data Source: BC Stats

<sup>3</sup> However, high housing costs are not the only explanation. Imputed rental income in Nova Scotia also accounts for a higher-than-average share of total GDP. In the case of Nova Scotia, the cost of housing is much lower than in BC, but because home ownership is more affordable, homeowners may make up a higher-than-average share of the population.

<sup>4</sup> 1997 is the first year for which consistent GDP figures are available for all provinces.

**Labour productivity in BC has increased less than in any other province except Alberta**



Data Source: BC Stats

In BC, productivity growth since 1997 has been relatively modest, lagging behind virtually every other province. Interestingly, Alberta, despite its hot economy, is in an even worse situation. Since 1997, labour productivity growth in Alberta has been weaker than in any other province. BC had the second-lowest productivity growth in the country during this period. However, business sector productivity in Alberta is significantly higher than in most other provinces, so slower-than-average growth simply means that the rest of Canada has a chance to catch up, or at least close the gap a little. In contrast, output per hour worked in BC is already low compared to other parts of the country.

**Why do these differences exist?**

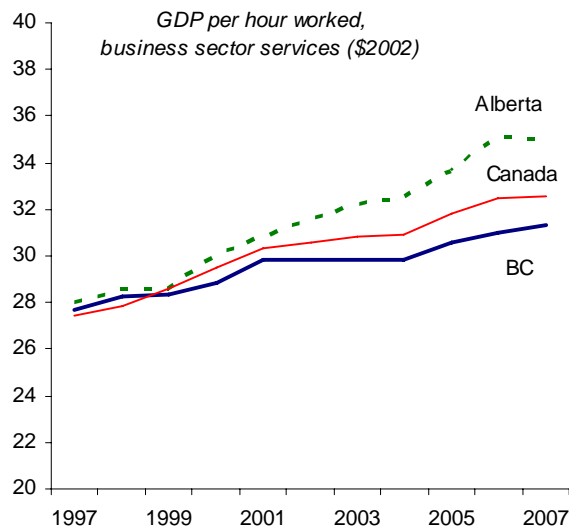
There are many reasons for variations in labour productivity among the provinces. They are partly due to differences in economic structure, since some industries are more (or less) reliant on labour inputs in production. An examination of productivity differences on an industry by industry basis can help shed some light on the situation.

**Labour productivity tends to be lower in service industries**

One possible reason for BC’s relatively low labour productivity is that the province is one of the most service-dependent economies in the country. About three-quarters of British Columbia’s total GDP (and two-thirds of business-sector GDP) originates in service industries. Service industries tend to rely more heavily on labour inputs so the ratio of GDP per hour worked is usually lower.

Using structural differences as the explanation for BC’s lower productivity is appealing, but unfortunately this does not explain the observed differences. As is the case for the business sector as a whole, service-sector productivity in BC is below the Canadian average. Moreover, the size of the gap has been growing since the late 1990s.

**Labour productivity in BC’s service sector is slightly below the Canadian average, but higher than in most other provinces**



Data Source: BC Stats

There are big variations within the service sector. GDP per hour worked is lower than average in the retail, wholesale, professional, scientific & technical services, information & cultural

services, administrative services and arts, entertainment & recreation industries. It is higher than average in transportation & warehousing, finance, insurance & real estate, accommodation & food services, and other services. However, productivity *growth* in almost every service industry in BC has been below the Canadian average during the period since 1997, which is the reason for the growing productivity gap.

**The productivity gap is larger in the goods industries**

In the goods sector, the situation is less positive. GDP per hour worked is well below the Canadian average, and is falling.

The mining, oil & gas extraction industry compares favourably with the rest of Canada in terms of productivity levels, but productivity in this industry has been falling since the beginning of the decade. In the other primary industries, productivity levels in BC are virtually the same as in 1997, while labour productivity in other provinces has improved during the last ten years.

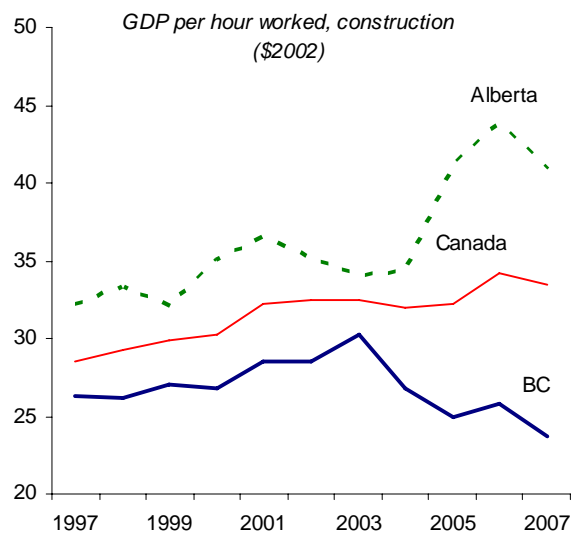
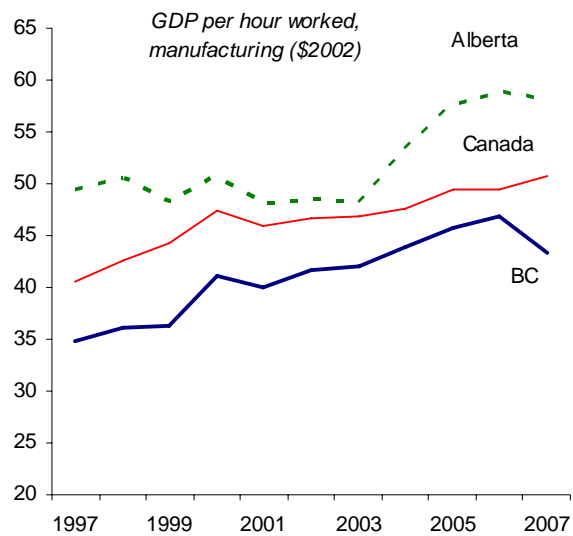
The two largest industries in the goods sector are manufacturing and construction. Together, these industries account for nearly two-thirds of the sector’s GDP, and about 80% of the total hours worked.

In manufacturing, labour productivity is significantly lower than the national average. Although BC manufacturers have seen productivity rise during the last ten years, the increase has not been enough to bring it up to the level in other parts of the country. The extent to which this reflects differences in the structure of BC’s manufacturing sector compared to that in other parts of Canada is unknown.

In the construction industry, which is arguably more homogeneous than manufacturing, the differences are striking. GDP per hour worked,

which is already lower than average, is falling at a time when the industry is seeing labour productivity improve in other parts of the country. BC’s construction industry is now the biggest employer in the goods sector, and produces about a quarter of the sector’s GDP, so falling labour productivity in this industry is cause for concern.

**Productivity is below-average, and falling, in BC’s biggest goods-producing industries**



Data Source: BC Stats

The reasons for the recent productivity decline in the construction industry are unclear<sup>5</sup>. There does not appear to have been a substantial shift in the occupational composition of the industry's workforce and although self-employment is more prevalent in BC's construction industry than in other provinces, the percentage of self-employed workers has not changed significantly in the last few years.

However, construction projects related to the 2010 Olympics, together with the recent boom in BC's housing market, have boosted the demand for workers in this industry. It is possible that as the demand for workers has risen, the number of experienced (and presumably more efficient) tradespeople and other workers available to work on construction projects has been limited. A lack of experienced workers could have contributed to declining productivity in the industry but even if this were the case, it is unlikely that it would fully explain the drop in labour productivity.

### Can BC close the productivity gap?

Overall, labour productivity in BC is below the Canadian average, and lower than in most other provinces. Lower-than-average productivity levels are observed in many industries in both the goods and service sectors. The situation is not improving, as productivity growth in BC industries has been relatively weak compared to other parts of Canada.

Business investment in machinery, equipment and structures, which could help boost productivity, has not been increasing as much as in other parts of the country, and this could be a

contributing factor to the growing productivity gap. As well, BC's resource-based manufacturing sector has faced challenges that may have hampered productivity growth during the last ten years.

In order to close the productivity gap between BC and other parts of the country, it may be necessary for industries in both the goods and service sectors to invest in new capital equipment, adopt new technologies, and find ways to use existing labour and capital resources more efficiently. By doing this, they will help build the foundation for the long-term prosperity of the province. If they fail to do so, BC's potential for future economic growth may be reduced.

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<sup>5</sup> Speculation that underground economic activities in this industry may explain the decline in productivity may be unfounded, as there is no reason to believe that the extent to which construction work is under-reported should be substantially different in British Columbia than in other parts of Canada. Even if this were true, underground activities would not fully explain the discrepancy since one would have to assume that 30-40% of the industry's GDP was not reported in BC, while also assuming that construction activities in other provinces were properly reflected in their data.