TD Bank Financial Group

TD Economics

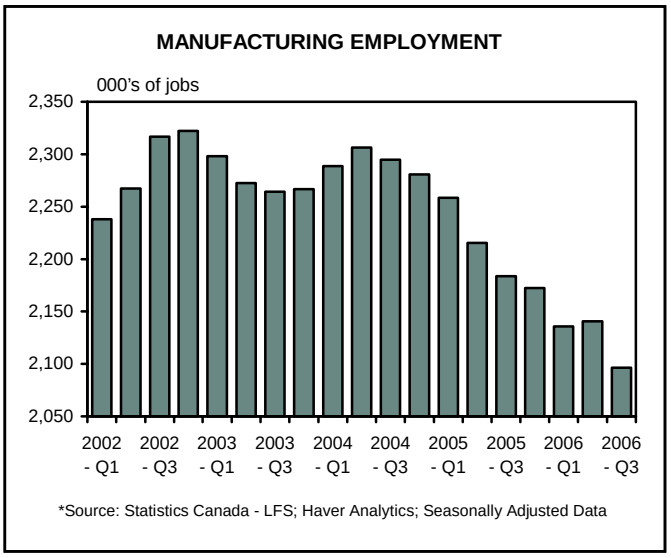
Special Report

December 21, 2006

PRESSURE MAKES DIAMONDS: A ROADMAP FOR CANADIAN MANUFACTURING

HIGHLIGHTS

- **Canadian economy's reliance on the manufacturnig sector is largely unchanged since the 1980's**
- **Greater labour productivity has led to a long-term decline in the share of manufacturing jobs in the economy**
- **Recent high-profile job cuts and production shutdowns mask some positive individual manufacturing stories.**
- **To be successful, manufacturers must invest in capital equipment, develop a stronger presence in global trade, and increase funding of research and development**



The Canadian manufacturing sector could be forgiven for taking a 'been there, done that and survived' attitude towards its current struggles. After all, this isn't the first time the sector has faced challenges. In the early 1980's, manufacturers battled high input prices. In the early 1990's they struggled with a strong currency and increased international competition. At each downturn, the sector restructured and reoriented their operations so that they could better compete and rebound strongly in the aftermath. The litany of woes is much the same this time around. Profit margins have narrowed, production has been weak, and the sector has lost about 9.7 per cent of its workforce, or 226,00 jobs since the end of 2002. The frequently cited list of manufacturing woes includes the strong Canadian dollar, high input costs and intense foreign competition.

What makes the current downturn different is that it comes during a period of robust economic growth. The previous manufacturing slumps in the 1980's and 1990's came as the US and Canadian economies were going through recessions. There are also some fresh elements that the manufacturing sector faces – in particular, the intensifying competition from emerging markets. All told, the factors suggest that near term prospects are dim – things are only going to get worse for manufacturers, as the economy enters the downward part of the business cycle and as emerging markets such as China gain a better foothold in the North American markets.

Nevertheless, we believe this period – difficult as it may be – could provide manufacturers with an opportunity to dramatically improve their long-term prospects. With intense global competition placing substantial pressure on bottom lines, firms will have no choice but to once again restructure and reorient their operations. They will have to invest in capital and technology, cut back on inef-

ficient labour and production facilities, and leverage efficiency gains from globally integrated supply chains to reduce costs and improve productivity. Firms that do so will find themselves in a competitive position, whereas firms who do not will inevitably become obsolete.

This report serves to capture the profile of Canada's manufacturing sector, the changes that have occurred recently and in the long run, and what they need to do gonig forward in order to be successful.

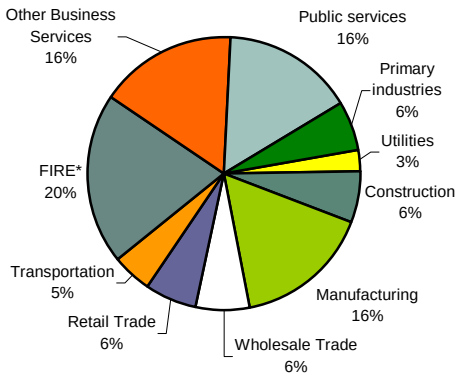
Hewers of Wood, Drawers of Water, Makers of Minivans

The manufacturing sector is a vitally important part of the Canadian economy. The sector accounts for about 16 per cent of Canada's economic output and employs about 13 per cent of the workforce, or 2.1 million people.

There are three major industries that comprise a little more than a third of all Canadian manufacturing output – transportation, chemicals and food. By far, the largest is transportation equipment, which accounts for about 17 per cent of all manufacturing production in Canada. Auto production makes up the bulk of the transportation manufacturing industry in Canada, but aerospace is also significant.

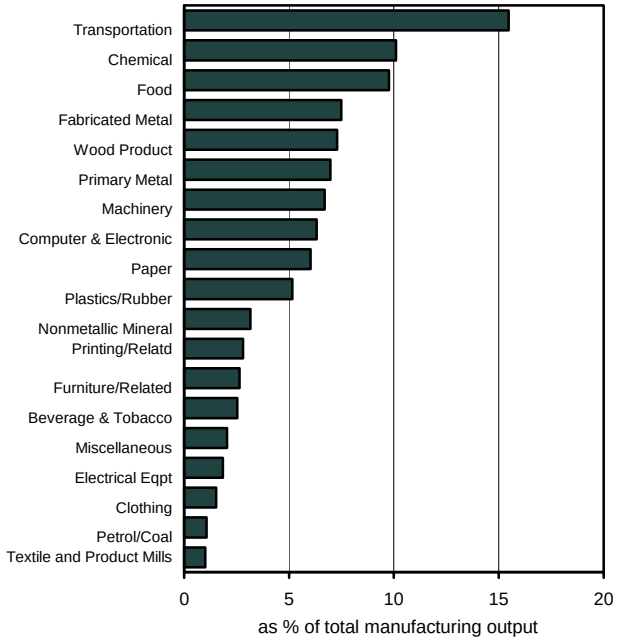
Given Canada's reliance on commodities, it's not surprising that resource-related manufacturing industries are responsible for much of Canada's manufacturing output. TD Economics estimates that resource-related manufacturing industries account for nearly half (48%) of the entire manufacturing sector's production. This figure may actually be much higher, since there is a great deal of vertical integration in the resource sector. For example, some forestry firms are not only involved in the production of goods such as pulp and paper, they are also involved in the extraction of resources – the cutting down of trees. This makes it difficult to differentiate between output from resource-related manufacturing and resource-extraction.

INDUSTRIAL SHARE OF CANADA'S REAL GDP - 2006



*Finance, Insurance & Real Estate; Data for 2006Q1-Q3; Source: Statistics Canada, Haver Analytics, TD Economics

MANUFACTURING OUTPUT BY INDUSTRY



Data for YTD2006; Source: Statistics Canada, Haver Analytics, TD Economics

Canada's manufacturing capital is…Toronto?

Although manufacturing takes place all over the country, it is concentrated in Central Canada. Manufacturing represents about one-fifth of total economic output and accounts for about 1 in 6 jobs in Ontario and Quebec. Elsewhere, manufacturing's contribution to output and employment is on average half of that.

With manufacturing being concentrated in Central Canada, it is not surprising that the largest manufacturing city can also be found there. Most people generally think of Windsor, Hamilton, or maybe Oshawa when they think of "manufacturing" cities – a fair assumption given the prominence of auto or steel manufacturing in these Central Metropolitan Areas (CMAs). However, the CMA with the highest manufacturing output is none other then Toronto. Manufacturing output in Toronto totaled about $40 billion from 2005-2006, almost doubling Montreal – the second largest manufacturing CMA. Moreover, Toronto also provides the greatest number of manufacturing jobs of any CMA in Canada at 444,000 over the same period.

Windsor, Hamilton and Oshawa aren't exactly shrinking violets in the manufacturing league tables. In fact, when you look at the importance of manufacturing to the local economy, Windsor is the biggest "manufacturing-centered" CMA. Manufacturing accounts for more than a third of Windsor's economic output and almost one in three jobs (47,000 of 162,000). Windsor's economy is tilted towards auto manufacturing, with the two largest private sector employers falling into that category – Ford Motor Company of Canada Ltd. and DaimlerChrysler Canada Ltd[1]. Manufacturing is also very important to the economy of Kitchener-Waterloo, which placed a close second on our manufacturing reliance ranking. Although auto and auto part manufacturing is also important to this local economy – Toyota Motor Manufacturing Canada is the largest employer in these parts[2]– the manufacturing sector in Kitchener-Waterloo is relatively more diversified than in Windsor, as technology and food manufacturers are equally prominent.

LARGEST MANUFACTURING CITIES BY VOLUME

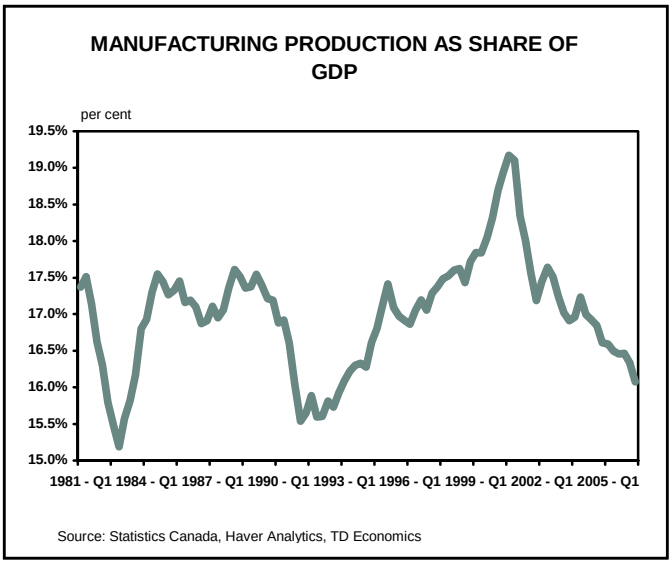
RANK	CMA	MANU. OUTPUT ($M)	MANU. JOBS (000'S)
1	TORONTO	40249.0	443.6
2	MONTREAL	21947.3	270.9
3	VANCOUVER	8435.4	101.1
4	HAMILTON	5906.0	62.7
5	KITCHNER-WATERLOO	5529.3	63.1
6	EDMONTON	4923.1	43.9
7	CALGARY	4877.7	44.7
8	WINDSOR	4111.7	47.0
9	OTTAWA	3361.6	36.8
10	QUEBEC CITY	3107.2	44.4
11	OSHAWA	2973.7	34.0
12	WINNIPEG	2769.4	44.4
13	ST.CATHERINES	2327.7	25.9
14	SHERBROOKE	1154.1	14.3
15	SASKATOON	885.6	10.8
16	HALIFAX	605.5	10.0
17	SAINT JOHN	341.6	4.4

*Source: Conference Board of Canada; 2005Q3-2006Q2

MANUFACTURING'S CONTRIBUTION TO LOCAL ECONOMY

RANK	CMA	MANU. OUTPUT (%)	MANU. JOBS (%)
1	WINDSOR	35.5	28.9
2	KITCHNER-WATERLOO	30.6	25.3
3	SHERBROOKE	24.2	17.6
4	OSHAWA	23.4	19.3
5	HAMILTON	22.9	16.8
6	TORONTO	20.0	15.9
7	MONTREAL	19.7	14.8
8	ST.CATHERINES	18.4	13.7
9	QUEBEC CITY	13.8	11.7
10	WINNIPEG	12.5	11.8
11	EDMONTON	11.9	8.0
12	VANCOUVER	11.7	8.7
13	SASKATOON	11.7	8.6
14	SAINT JOHN	10.7	7.1
15	CALGARY	9.8	7.1
16	OTTAWA	8.2	5.8
17	HALIFAX	5.4	5.0

*Source: Conference Board of Canada; 2005Q3-2006Q2



Steady as she goes

The Canadian economy's reliance on the manufacturing sector is virtually unchanged since the 1980's. Indeed, taking into account business cycle fluctuations, the manufacturing sector's share of total economic output has been fairly constant over the last 26 years, cycling around 17 per cent.

Underneath the surface, however, there have been significant changes to the composition of Canada's manufacturing sector. Some industries have seen dramatic reductions in output, while in other areas have picked up greatly. In particular, since 1990 the largest declines have been reported in the leather and allied products (-70.9 per cent), textiles and product mills (-15.6 per cent) and clothing (-13.6 per cent) manufacturing. The greatest increases have been in the computer and electronic product (+147 per cent) and plastics and rubber (+109 per cent) manufacturing industries. Strong gains have been registered in many of the other industries as well.

On balance, we have seen manufacturing output becoming slightly more concentrated. This is not surprising, as increased competition should drive out marginally profitable firms and ensure resources are directed to the healthiest manufacturing sectors. Basically, industries that can provide the best product at lowest cost and ultimately highest return on investment will be where the money goes.

Fewer jobs but greater productivity

Although manufacturing production as a share of total economic output has remained largely unchanged over the years, the same cannot be said of manufacturing employment. Since 1991, manufacturing has added 180,000 new jobs – an increase of 9 per cent. To put that in context, non-manufacturing sectors of the economy have added a cumulative 3.6 million new jobs – an increase of 28 per cent. This has led to a long-term decline in the share of manufacturing jobs in the economy, which has fallen from about 16% at the start of the 1990's to about 13% in 2006.

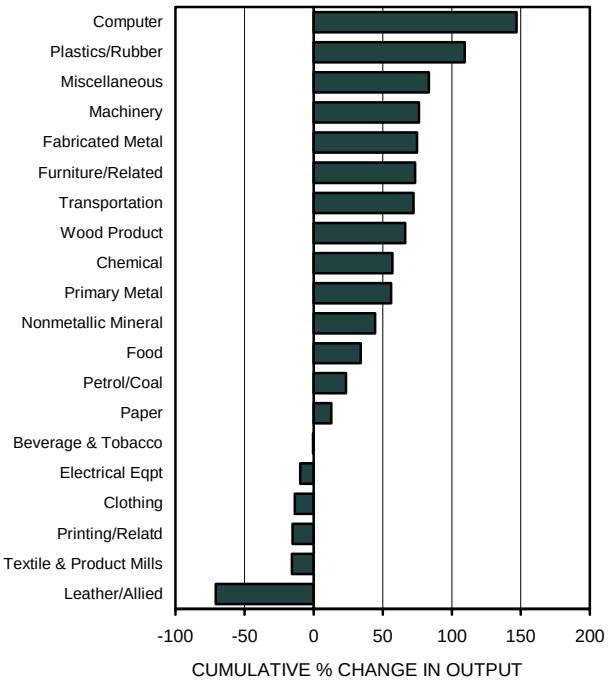
Why is this? It has largely been a labour productivity story. Manufacturers can more easily substitute capital for labour, which helps to keep costs lower in the long run and actually improves productivity per worker. Although this occurs in other industries, manufacturing is generally more capital investment heavy. It uses more machinery and heavy equipment in its production process. As such, it tends to be more effective at substituting capital for labour. As a result, labour productivity in manufacturing has increased by a cumulative 43 per cent since the beginning of the 1990's, while it has only increased at roughly

MANUFACTURING SECTORS BY CAPITAL INTENSITY

RANK	INDUSTRY	CAPITAL INT.*
1	Petrol/Coal	1.418
2	Leather/Allied	0.335
3	Nonmetallic Minerals	0.146
4	Primary Metal	0.141
5	Transportation Equipment	0.137
6	Wood	0.131
7	Paper	0.118
8	Chemical	0.102
9	Beverage & Tobacco	0.101
10	Plastics/Rubber	0.097
11	Food	0.086
12	Printing/Relatd Support Act	0.072
13	Miscellaneous	0.071
14	Machinery	0.063
15	Fabricated Metal	0.059
16	Computer & Electronic	0.059
17	Textile/Product Mills	0.045
18	Furniture	0.044
19	Electrical Eqpt	0.043
20	Clothing	0.022

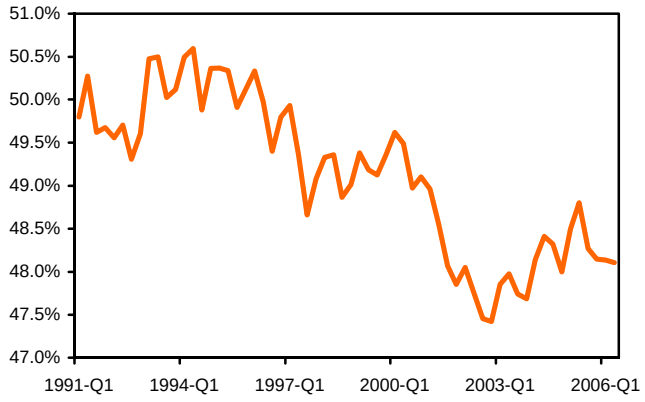
*units of capital expenditure per unit of output; 2005;
Source: Statistics Canada, TD Economics

CHANGE IN OUTPUT BY INDUSTRY (1990-2006)



Source: Statistics Canada, Haver Analytics, TD Economics

JOBS IN CAPITAL-INTENSIVE INDUSTRIES AS A SHARE OF TOTAL MANUFACTURING JOBS



Source: Statistics Canada, Haver Analytics, TD Economics

half that (27 per cent) across the rest of the economy. On the whole, this means manufacturers have not had to add workers at the same pace as the rest of the economy to keep pace with demand – hence the decline in manufacturing jobs.

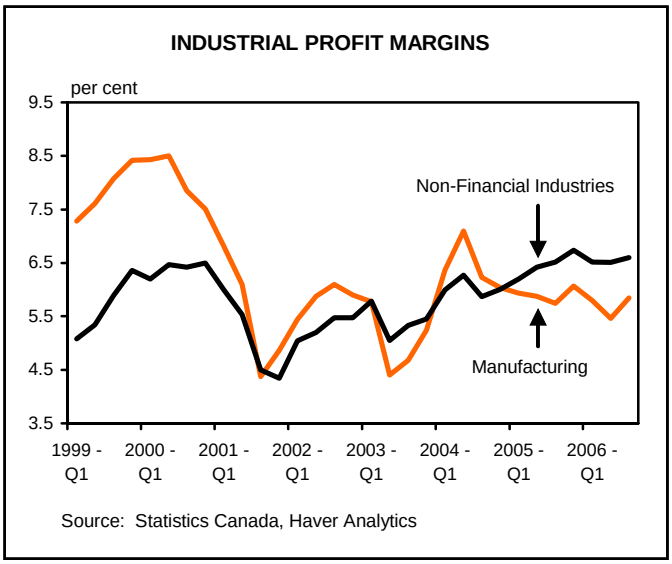
Even within manufacturing industries we have seen that jobs in the more capital intensive sectors have been added at a slower rate than in the more labour intensive sectors – albeit not as rapidly when compared to non-manufacturing sectors. Since 1991, the share of jobs in capital intensive manufacturing industries has fallen from about 50 per cent to 48 per cent. It is not a large drop, but it still represents a shift of about 75,000 jobs.

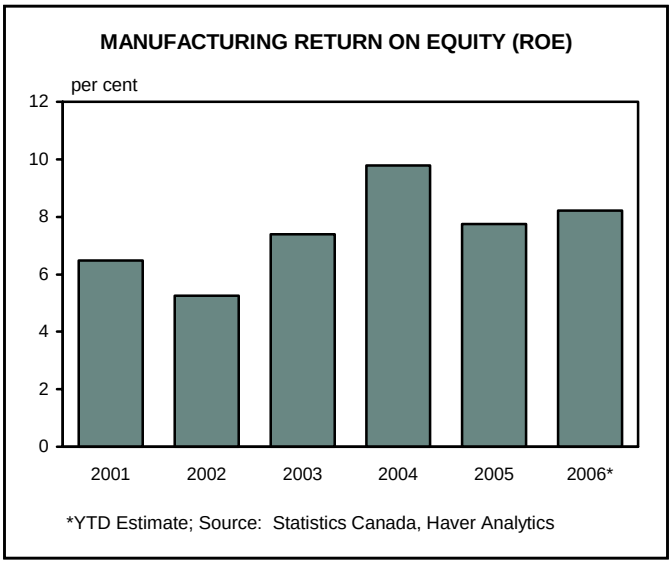
2002-Present: Clouds but a silver lining

These productivity improvements are still not enough, however, to protect the sector from the triple threat of rapid Canadian dollar appreciation, higher input costs, and greater and more effective foreign competition than ever before. To remain competitive, manufacturers are laying workers off, closing down some production plants, and consolidating.

These actions don't play well to a public focused on the high-profile job cuts – 226,000 since the end of 2002 – and production shutdowns. In addition, the sector looks even worse given how well the rest of the economy has performed.

That said, under the headlines is a silver lining. For starters, manufacturing production has been increasing – albeit weakly – suggesting there continues to be demand for Canadian manufactured goods. Secondly, manufacturing remains on a fairly solid financial footing. Net corporate profits remain solid, although profit growth has been muted. This is in contrast to the 1990's when the sector operated at a loss. Furthermore, the return on equity has been consistently higher since a low point in 2002.





A mixed bag of tricks within the manufacturing sector

The aggregate statistics mask some positive individual manufacturing stories. Although they have all struggled, 11 of the 20 major manufacturing sectors have reported higher production levels since 2002. The sectors that have seen higher output have tended to be of the resource-oriented and/or export-intensive variety.

This increased level of activity ties in to the recent commodity boom. Overall, production of resource-related manufacturers increased by a cumulative 5.8 per cent between 2002 and 2006, while production of non-resource manufacturers only went up by 1.6 per cent. Within the resource sector, chemical and non-metallic mineral manufacturers saw the greatest pick up in production, though the forestry sector has struggled. Paper manufacturing in particular has really taken one on the chin – due in part to the weaker demand for newsprint – as production has fallen by 5 per cent since 2002. Wood product manufacturers have done better from a production standpoint (output is up 13 per cent over the same period), but lumber prices remain very low, resulting in losses for many firms.

Export-intensive manufacturers make headway in global economy

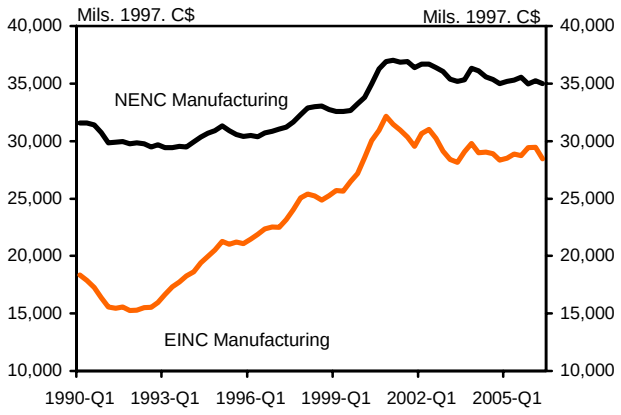
Although the high Canadian dollar makes Canadian

manufactured goods more expensive to US buyers, the impact has been different for various manufacturing industries. You might assume that manufacturing sectors with the highest export intensity – the percentage of shipments exported – would have been hurt the most by the exchange rate leading to the worst output performance. The reality is the dead opposite. Overall, manufacturing sectors that are most dependent on exports increased production by 4.6 per cent between 2002 and 2005. Production in the other manufacturing sectors fell 2.5 per cent over the same period.

Not all export intensive manufacturing sectors are growing. The growth is almost entirely in commodity-related businesses. When we strip out these export-intensive commodity manufacturing industries, we find that export-intensive non-commodity (EINC) manufacturers have seen their production decline by about 4.5 per cent between 2002 and 2005. This has been worse than the manufacturing industries that are not export-intensive and not commodity-related (NENC). Their production declined by just 3.2 per cent over the same period.

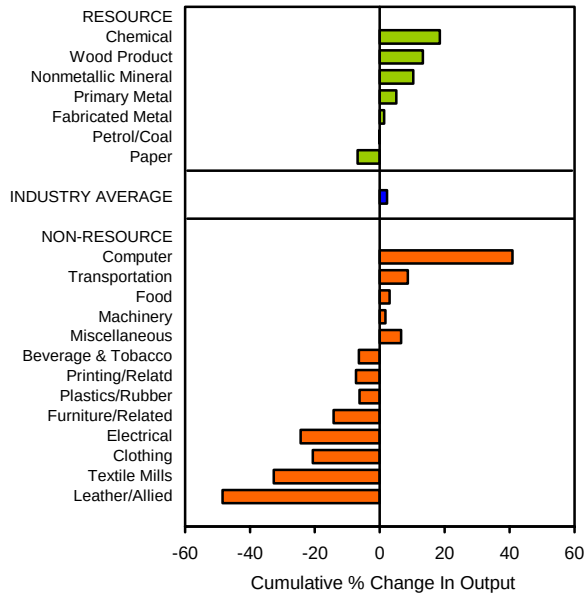
While this is a sign that exporters who are not involved in the commodity trade have struggled with the dollar, the long-term trends suggest that EINC manufacturers have done considerably better than their NENC counterparts.

NON-COMMODITY MANUFACTURING PRODUCTION



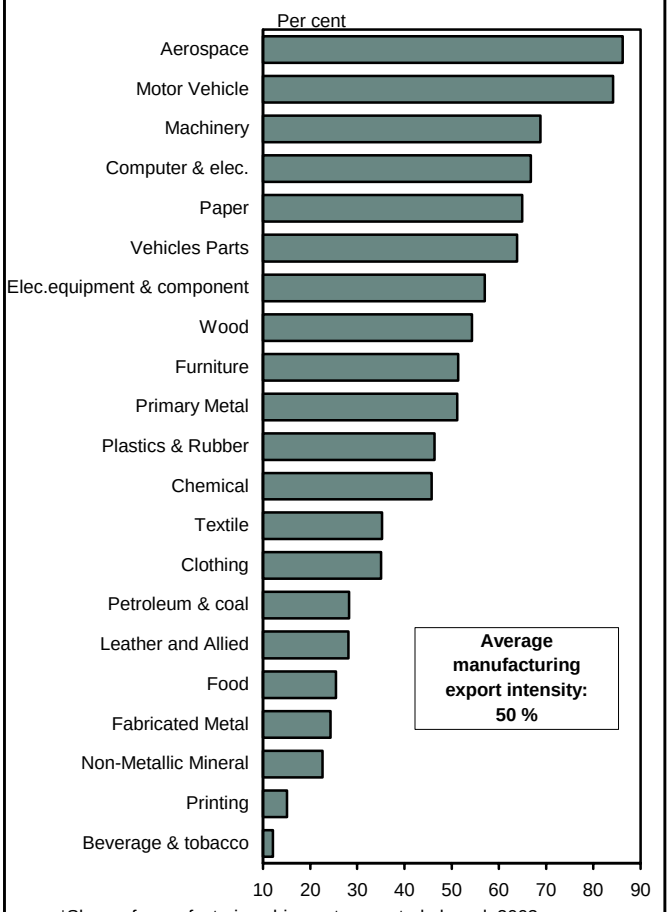
NENC - Non export-intensive non-commodity; EINC - Export- intensive non-commodity; Source; Statistics Canada, Haver Analytics, TD Economics

RESOURCE V. NON-RESOURCE MANUFACTURING 2002-PRESENT*



*2002Q1-2006Q2; Source: Statistics Canada, Haver Analytics, TD Economics

MANUFACTURING EXPORT INTENSITY*



*Share of manufacturing shipments exported abroad; 2003; Source: Statistics Canada

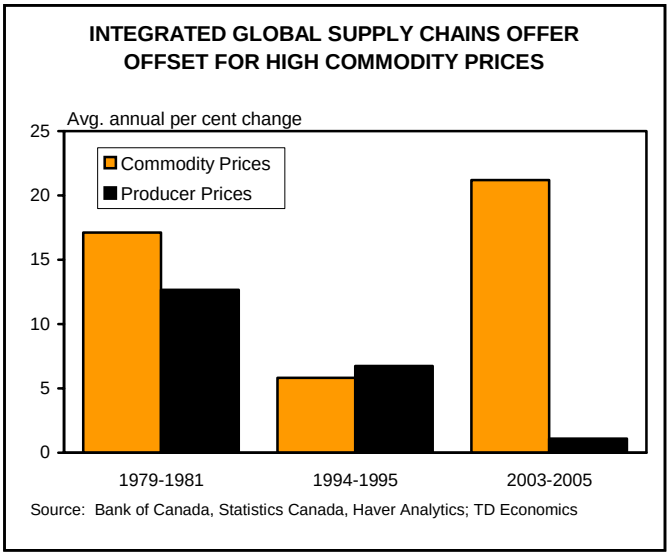
Indeed, since the early 1990's, production from EINC manufacturers has increased by a cumulative 70 per cent, outpacing an increase of 13 per cent in the NENC sector. Going forward, as the dollar stabilizes we expect export-intensive manufacturers to pick up even more ground on their non export-intensive counterparts.

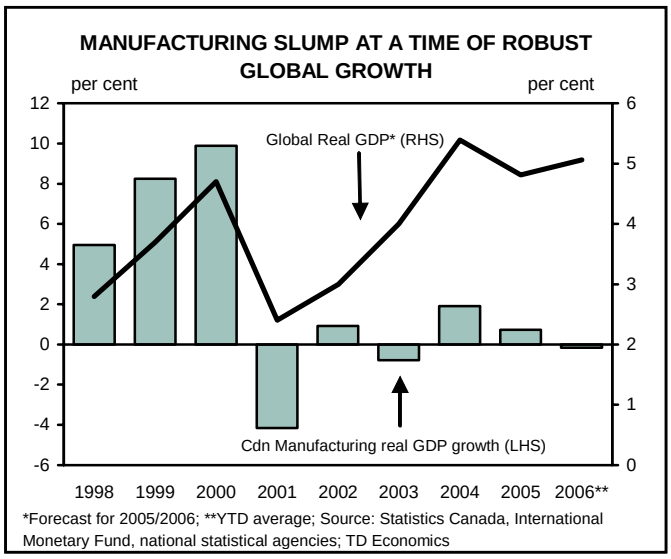
There are two reasons. First, sectors that are export-intensive are more likely to have access to globally integrated supply chains. Among other benefits, this reduces their production costs to a lower level than their competition. Second, while they may have had to lower prices to compensate for the higher currency, a broader customer base will allow them to recoup their losses in the long-run.

For non-export intensive manufacturing sectors, the struggle will be harder. While not as affected by the high Canadian dollar, their lack of exports may be a sign that they are not as globally competitive and are more vulnerable to foreign firms entering into their markets. The high Canadian dollar makes foreign goods cheaper and dampens demand for domestically produced products. Additionally, the manufacturing sectors that are low-export intensive are often in the low-tech and lower-value added areas such as clothing, textiles, and leather products. These are goods where emerging markets have a sizeable cost advantage.

Canadian manufacturers: battle-hardened veterans

The manufacturing sector has battled adversity before and won. So what makes the current challenges different?



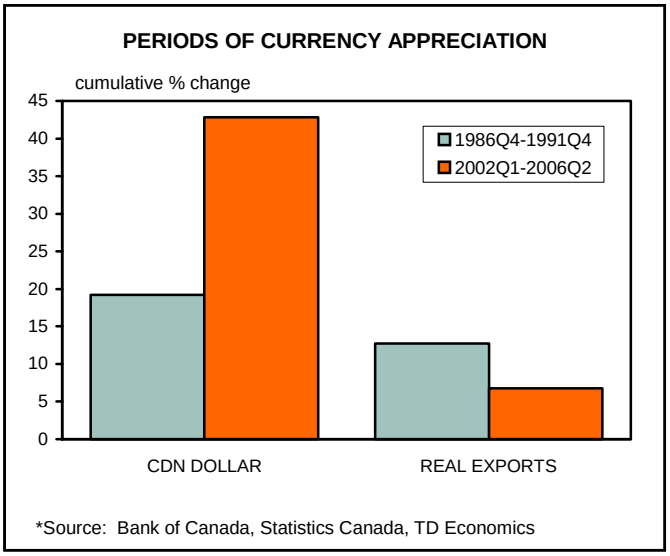


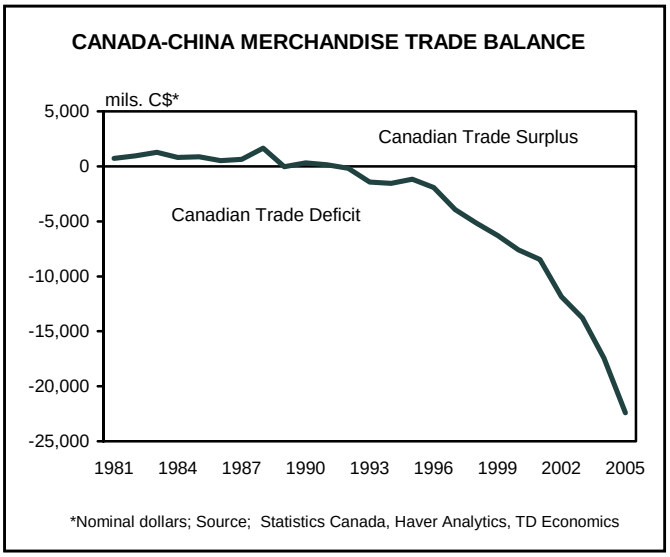
1) Global supply chains offer offset for manufacturers from high raw material prices

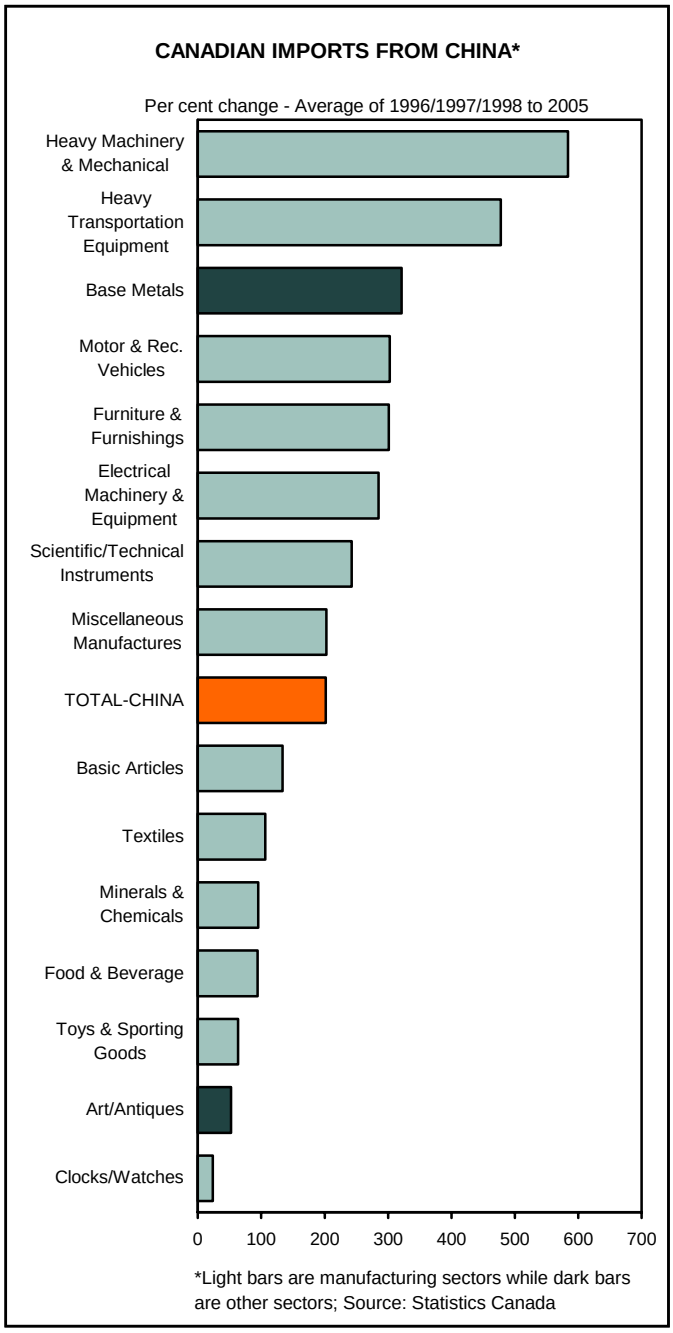
In the early 1980's crunch, manufacturers were also battered by high commodity prices, which shot up 22 per cent in 1980, driving producer prices up 13 per cent over that same period. Similarly, between 2004 and 2006 commodity prices have been about 24 per cent higher on a year-over-year basis. Given that high input costs are a commonly cited reason for the recent manufacturing downturn, one would also expect producer prices to have picked up substantially as well. However, that is not the case. It appears that one benefit of globalization is that it keeps producer prices low, even against record high commodity prices. Indeed, with integrated global supply chains, manufacturers have been able to leverage efficiency gains across other nations to offset high raw material prices. For example, if higher steel prices are raising the expenses of auto makers, they try to offset that by leveraging China's ability to produce tires more cheaply. Because of that, while commodity prices have soared – up an average of 8 per cent on a year-over-year basis since 2002 – producer prices have only increased by an average 1.1 per cent over the same period.

2) Downturn comes at a time of strong economic growth

In past manufacturing downturns, the sector struggled as the Canadian and US economies floundered and only rebounded each time as economic growth picked back up. However, manufacturing has hit a soft-patch recently even against a backdrop of robust economic growth around the







world. This raises the real possibility that manufacturing may weaken further, as it appears that the Canadian and U.S. economies are both in the midst of a mid-cycle slowdown.

3) Rapid currency appreciation and emerging markets pose new challenge

Manufacturers had previously faced an appreciation of the Canadian dollar and increased international competition. However, the recent downturn does offer some fresh elements. Although the loonie is sitting at about the same levels as it was in the early 1990's, a dramatic undervaluation of the currency in the early 2000's exacerbated the degree to which the Canadian dollar appreciated this time. From 1986 to 1991, the Canadian dollar increased by 19 per cent against the US greenback. In comparison, the recent run-up has seen the loonie jump about 42 per cent since the beginning of 2002.

Similarly, while manufacturers did live through heightened international competition with FTA/NAFTA and the removal of many domestic and US trade tariffs, the challenge from emerging markets does seem to be different – particularly the speed at which they have entered North American markets and grabbed market share. In general, Canada has become more open to the global markets, as

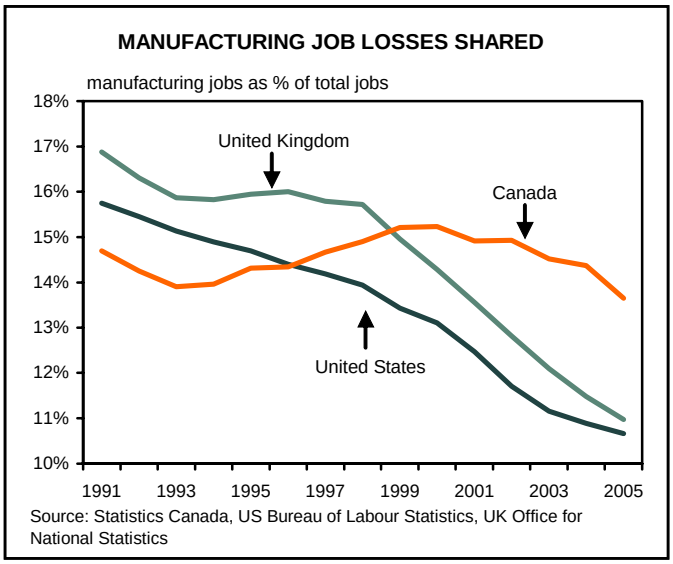
nominal imports have increased by a cumulative 68 per cent between 1995 and 2005 – up with almost all of Canada's top 36 trading partners with the exception of Singapore and Hong Kong. That said, this total doesn't even come close to reflecting how fast Chinese goods have entered Canadian markets. Over that period, imports from China have rocketed up a cumulative 536 per cent – topping all other nations. This speed is best illustrated in the auto parts sector. Five years ago China was a non-entity in the North American auto parts industry. Now 5 per cent of North American auto parts come from there.

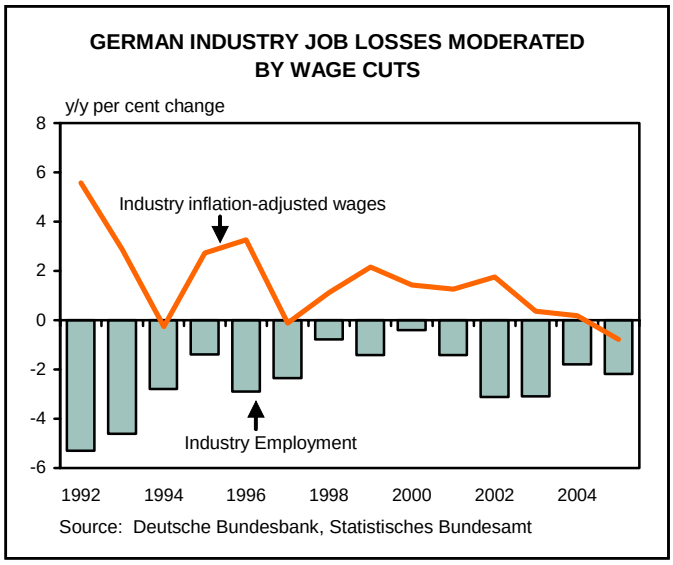
The speed is even more impressive given the fact that in 1995 China was the sixth largest exporter of goods to Canada. In as little as a decade, it has become the second largest exporter to Canada with $29.5 billion worth of merchandise. The U.S. remains the number one exporter to Canada with close to $380 billion in shipments a year.

In addition, while China has traditionally been thought of as an exporter of low value-added items, such as toys and textiles, they have moved quickly up the value added chain. We have seen a very large increase in Chinese heavy machinery and mechanical equipment imports to Canada, capital equipment that traditionally came from the U.S. All told, this represents a clear and present danger to the entire Canadian manufacturing sector, unless they find ways to stay ahead in the productivity game.

We are not alone…

Canadian manufacturing's counterparts in the US, United Kingdom, and many industrialized countries face similar challenges. The same prominent long-term trend





is evident across all these countries – the shift away from goods production jobs towards service sector jobs. As noted earlier, this is because goods producers have become relatively more productive than the service sector.

The U.S., manufacturers have shed about 8 per cent of their workforce or 1.3 million jobs, since the beginning of 2002. But as in Canada, this is just a continuation of a long-term trend. Since 1991, the share of manufacturing jobs in the U.S. has fallen from about 16 to 10 per cent.

It's been a similar story in the U.K. and again it has been more dramatic than what we have seen in Canada. Manufacturers have cut their workforce by 13 per cent, or 600,000 jobs, since 2002. Job gains in the rest of their economy has brought the share of manufacturing jobs down from 13 to 10 per cent in that period.

German manufacturers have also shed jobs in a bid for productivity. They have cut about 6 per cent of their workforce, or 450,000 jobs, since 2002. This is not as severe as the U.S. or U.K. experience largely because the unions have negotiated contracts that sacrificed wages to save jobs.

On the whole, we have seen much larger declines in the share of manufacturing jobs in the U.S. and U.K. than in Canada, although all three nations face the same headwinds from emerging markets. This raises the possibility that we may only be in the middle stages of an adjustment in Canadian manufacturing jobs.

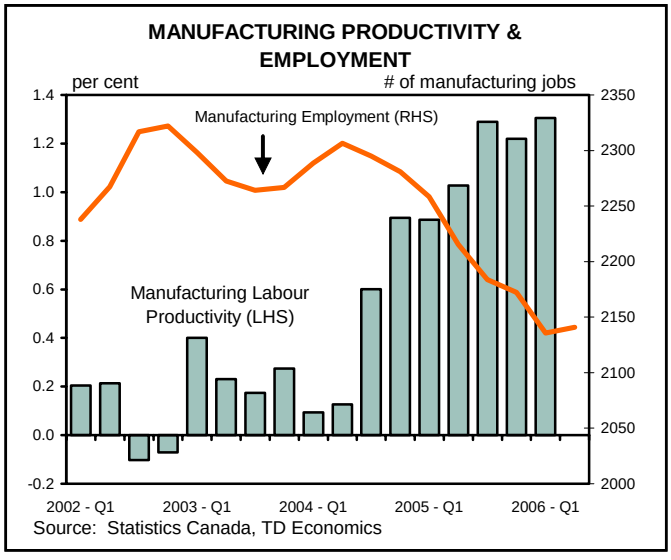
A cracked crystal ball

So, where do we see manufacturing headed in the coming months and years? Commodity prices are stabilizing,

as is the Canadian dollar – albeit at a level that is still a bit of a challenge. However, the Canadian and U.S. economies are entering a mid-cycle slowdown. For the most part, we expect manufacturing – at least with respect to production – to weaken a tad further, but begin to rebound in the latter half of 2007. It will likely be a gradual pick up, though we don't expect a massive manufacturing resurgence like in the late 1990's.

On the employment front, look for further job shedding in the manufacturing sector. With a tight labour market, firms will increase productivity by investing in capital equipment, which will help keep costs low in the long-run. While this incentive applies to firms across all sectors, we expect a greater number of jobs to be lost in capital-intensive manufacturing – as we noted earlier this sector gets relatively more bang from their implementation of new machinery and equipment.

Going further out, we expect the competition from emerging markets will likely continue to squeeze low-tech and low valued-added manufacturers. Indeed, a common perception is that the manufacturing sectors of most industrialized nations cannot compete with the emerging markets because wages of workers in places like China are substantially lower. If Chinese workers were as productive as Canadian workers, we would agree that Canadian manufacturing wouldn't stand a chance. However, that is not the case. Although Canadian and U.S. manufacturing salaries are 40 times higher than Chinese wages, the same Canadian and U.S. workers are also 30 times more productive. In other words, the pay is higher because more is produced per hour of work or the quality of the product is higher.



VALUE-ADDED BY INDUSTRY		
RANK	MANU. INDUSTRY	OUTPUT (1997 C$) PER WORKER
1	Printing/Relatd	240405
2	Paper	148680
3	Wood	140324
4	Primary Metal	135919
5	Beverage & Tobacco	133940
6	Chemical	132041
7	Computer & Electronic	113536
8	Transportation	112869
9	Nonmetallic Mineral	86171
10	Machinery	72965
11	Plastics/Rubber	72721
12	Electrical Eqpt & Appliance	69677
13	Food Manufacturing	67400
14	Fabricated Metal	64449
15	Miscellaneous	55312
16	Furniture/Related	48373
17	Clothing	43693
18	Textile & Product Mills	42589
19	Petrol/Coal	21587
20	Leather/Allied	17643

Source: Statistics Canada, TD Economics

Then again, the productivity differences between Canada and China (and other emerging markets) are not the same across different manufacturing industries. The sectors that have seen the greatest job losses and production declines have been of the lower value-added variety. The assumption is that those areas are struggling relatively more. On the whole, they may find it harder to justify their higher wages because they may not be that much more productive than their emerging market counter-parts in the future. As a result, even Canadian buyers may look abroad for these products.

Canadian manufacturers in many of these lower-value added sectors have put in a valient effort to ramp up their productivity and compete. And there are bound to be success stories, particularly in niche areas. Nevertheless, there is no getting around the fact that these sectors will be under much more intense and sustained pressure going forward.

Karma of Globalization

What goes around comes around. As China squeezes out less productive Canadian manufacturing, China will also have to contend with competitive pressures from other

emerging markets in the years ahead. This will also force their manufacturing sectors into the higher value-added areas.

Korea and Taiwan are good examples of the transition China will likely make. Years ago, those two economies were manufacturing the low-tech and low-value added products such as toys and clothing. However, as they became more productive, their manufacturing base shifted into the high-tech sectors, leaving the low-tech to other emerging countries. In addition, workers in those two countries now enjoy much higher wages due to their increased productivity.

A Roadmap to Success

We firmly believe manufacturing can weather this storm, albeit with a slightly changed composition of jobs and output. To prosper in the new global economy we identified the following three most important factors:

- **Investment in capital equipment**
- **A stronger presence in global trade**
- **Increased funding of research & development**

Capital Investment – Staying a step-ahead of the competition

Canadian manufacturing must invest more heavily in capital. China's investment in capital is increasing at a very rapid rate, while capital investment by Canadian manufacturing has been modest at best. So does this mean Chinese workers will eventually be as productive as Canadian workers, but remain relatively cheaper? No. As productivity increases so do wages[3] – though they lag considerably. Manufacturing wages will not stay low in China forever. In the long-run, as Chinese workers become more productive, the wage differential between workers in China and North America will narrow substantially – evening out China's current cost advantage. That said, if China continues its robust pace of capital investment and Canadian manufacturing remains complacent and does not find ways to increase productivity, there is a very real risk that Chinese workers may become more productive than Canadian workers. Worse, during the time it would take the gap in labour costs to narrow, the intense competitive pressure could put some Canadian manufacturers out of business.

The only defense is for Canadian manufacturers to invest heavily in capital and find other efficiency gains to keep China from closing the productivity gap too rapidly. In fact, there is no better time to purchase U.S. and Chinese made machinery and equipment, as the Canadian dollar is at one of its highest levels in decades.

At the same time, while it is inevitable that competition from emerging markets will put pressure on many low-value added manufacturers, we should not forget that competition from the U.S. and other industrialized nations – including China – will also create comparable challenges for high-value added Canadian manufacturing sectors. A Statistics Canada study has shown that Canadian manufacturing shipments have increased at roughly the same pace as U.S. manufacturers[4], suggesting that Canadian manufacturers have fared reasonably well when compared to the U.S. However, while manufacturing profits have increased by a cumulative 191 per cent in the US between 2002 and 2004, profits have increased by just one-tenth that amount in Canada. This provides US manufacturers with a substantial advantage in the near-term, as they are better able to invest, expand their operations, and absorb demand shocks.

You can look at this as another downside risk or as an opportunity. Without doubt, increased competition hurts firms' bottom lines in the short run, but it also provides an incentive to be more innovative, productive, and efficient. Firms that do not find a way to do so will be forced out by the competition. However, firms that that find a way to achieve these objectives will prosper.

Go global or go home

There are no ifs, ands or buts. Canadian manufacturing firms must take part in the global market place if they are to succeed. As we already noted, firms that have delivered solid performance over the last few years have tended to be export-intensive firms. Not only have these firms benefited from the strong global demand, they have the opportunity to leverage efficiency gains through global supply chains. For some manufacturers this could mean purchasing widgets from China, thingamajigs from India, whatchamacallits from the U.S., and assembling the parts in Canada – each country being more efficient at producing certain goods. Firms that remain bottled up within domestic borders won't have much of a fighting chance.

Increase R&D funding

When it comes to innovation, Canada is at a substan-

tial disadvantage to the U.S. The manufacturing sector is the biggest contributor to industrial research and development, accounting for roughly two-thirds in Canada and the U.S. However, according to a Statistics Canada study[5], while the US manufacturing sector is about 11 times larger than Canada's, their reported research and development expenditures were 20 times more than their Canadian counterparts in 2000. Part of the reason is the difference in the structure of the manufacturing sector across the two markets. Notably, technology manufacturing plays a larger role in the U.S. than it does in Canada. This sector inherently requires more research and development funding to operate.

Nevertheless, if Canadian manufacturers are to succeed in the competitive global arena, they have to invest more heavily in R&D. A good example of the importance of R&D spending is the Canadian aerospace manufacturing sector. This sector on an R&D intensity basis (R&D spending as a percentage of value added) was relatively the same across Canada and the US in 2000 (22.3 and 21.0 per cent respectively). With the exception of a short downturn following 9/11, aerospace has been one of the strongest performers in Canadian manufacturing over the last decade. Although there are many other factors at work, one can assume that part of the success has been due to productivity gains brought on by R&D.

Bottom Line

Although both commodity prices and the Canadian dollar are stabilizing, Canadian manufacturers are still faced with a number of challenges. In particular, the intense pressures from global competition, which are only getting stronger as the world economy becomes more integrated. While history shows that this sector has had much success overcoming obstacles they faced, manufacturers cannot rest on their laurels. They need to be more aggressive than ever before if they hope to compete. For starters, Canadian manufacturers must find better and new ways to improve productivity if they wish to stay a step-ahead of developing nations. They can better accomplish this by increasing their investments in capital, consolidating, and shedding inefficient production facilities and labour. Secondly, manufacturers must go global or go home. Indeed, evidence shows that over the last decade, manufacturing sectors in Canada that have a higher exposure to foreign markets have done better than their domestically-oriented counterparts. In all likelihood this trend will continue in the years to come, suggesting diminishing benefit of remaining on the sidelines of global trade. Lastly, manufacturers must also find ways to work smarter, not just harder, by putting more emphasis on innovation through research and development. All told, manufacturers should not shy away from competition. Instead competitive pressures can help firms shape and define a much more effective operational strategy. Manufacturers who make the best of this opportunity are more likely to sparkle in years to come.

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Endnotes

1 2005 Windsor-Essex Major Employer List. www.chosewindsor.com

2 Waterloo Region - Community and Statistical Profile, Dec 2005. www.greaterkwchamber.com/economy.html

3 Wolf, Martin. *Why Globalization Works.* New Haven and London, Yale University Press, 2004.

4 http://www.statcan.ca/english/freepub/11-010-XIB/0120511-010-XIB.pdf

5 Statistics Canada, "Comparing Canadian and U.S. manufacturing R&D," Innovation Analysis Bulletin, Vol.6, No.3, October 2004.