INSIGHT INTO INDUSTRY

News of Industrial Advances in British Columbia

Spring 1990

New Name, New Look

For all of you who have been wondering what has happened to the **B.C. Industrial Development Bulletin,** we at ISTC have been reworking its format to make it more concise and easy to read and have renamed it **Insight Into Industry**. With this, premiere issue, we hope to bring you information on the economy, innovations in management and technology, export markets, upcoming events and special issues of significance to B.C.'s industrial community. Should you have questions, comments or material you would like to see included in subsequent issues of Insight Into Industry, please feel free to contact Dr. Brian Anderson or Chris Bywater at the number listed on the back cover.

Victor G. Lotto
Executive Director
ISTC - British Columbia

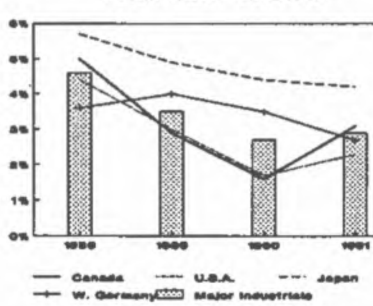
In this Issue

ECONOMIC TRENDS

World Outlook

The International Monetary Fund recently released its international outlook, which predicted more moderate growth for this year and next as the world's monetary authorities strive to attain price stability in the face of rising inflation. Japan, West Germany and France are expected to take a gentle descent towards more steady, sustained, growth in the 3%-4% range. Canada, the U.S. and Great Britain, on the other hand, are looking for more of a roller coaster ride with growth slowing from around 3% in 1989 to about 1.5% this year, climbing back to the 2%-3% level by 1991.

Real GNP Growth

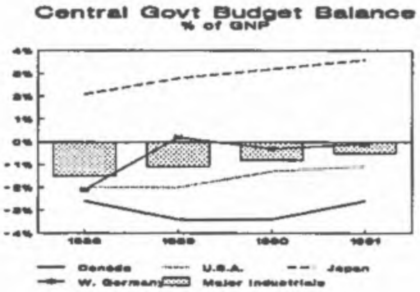


The higher interest rates associated with international inflation will have a negative effect on output, as consumer demand and business investment are curtailed. This impact will likely be more pronounced in North America where workers have historically been able to push through wage increases. The resulting inflation could require high interest rates to be maintained longer.

Growth in countries such as Canada, the U.S. and Great Britain will be

'... a second generation of silicon chips that don't calculate but instead detect pressure, temperature, motion, chemical composition or pump, cut, sew, or generate power!"

further constrained by central government moves to control relatively high budget deficits (see graph), which will squeeze government demand for goods and services.



All in all, the much talked about soft landing looks to be in the cards according to the IMF's calculations, although it looks to be softer for some than others.

Canadian Outlook

Despite the fact that inflation and interest rates have stayed higher than anyone forecast, Canada's growth has been stronger than anticipated. Consequently, a recession looks unlikely in 1990.

Inflation is still occupying centre stage in the economic theatre and looks to have several more lines to recite. High profile wage settlements in the 6%-7% range have set the tone for a heavy collective bargaining lineup still to come in 1990 -- Canadian Auto Workers/big 3 automakers, Canadian Paperworkers/Stone-Consolidated, United Steelworkers/Algoma Steel Corp. & Stelco Inc. and Communications & Electrical Workers/Bell Canada. Similar settlements for these and other negotiations could fuel wage push inflation.

This wage push risk, coupled with competition for capital from rising interest rates internationally, suggests that Canadian interest rates, which looked as though they might ease before the end of the year, will stay high into 1991.

B. C. Outlook

The B.C. economy enjoyed boom times in the late 80's due largely to strong domestic demand - as a result of employment gains and an influx of residents - and zealous commercial/industrial construction. In 1990 these same driving forces continue to bolster the province's economy, albeit at a somewhat less frantic pace.

However, by 1991 many of the major capital projects will have been completed and consumer spending will slow in the face of high interest rates and the GST.

Consequently, while the growth in the B.C. economy will likely continue to outpace the rest of the country for the next while, it will follow the moderating trend for Canada and the other industrialized nations. The province's economy will grow a respectable 3% this year but slow to 1.7% in 1991.

TECHNOLOGY

The Fascinating World of Micro Machines

In the world of micro-machines the concept of small takes on a whole new dimension. How about gears with teeth the size of blood cells, pressure sensors that can sit three on the head of a pin and motors that are two hairs wide and run on static electricity?

Drawing on lessons learned in the micro-electronics industry, micro-mechanics employs the etching process used to make integrated circuits to carve out microscopic levers, gears, valves, motors and pumps from layers of silicon. The result is a second generation of silicon chips that don't calculate but instead detect pressure, temperature, motion, chemical composition or pump, cut, sew, or generate power!

Micromotor: two human hairs wide!

" What the Japanese have done from the start and companies like NCR, AT&T, Westinghouse, Xerox, Motorola, IBM and Ford are doing now . . . Concurrent Engineering"

The applications for micro-machines are seemingly limitless. Gordon Guild of North Vancouver's Venture Marketing, who has been working to bring more micro-machine technology to Canada, feels that it is "the mechanical equivalent of micro-electronics". Unfortunately, micro-machines are getting all the respect that micro-electronics used to. Says Guild: "The situation with micro-machinery today is like that in micro-electronics 30 years ago, when Sony's Chairman came to the U.S. with the transistor radio and everyone said `Well, that's nice, but who would want one?'".

Sensors are currently used in the automotive industry for anti-lock brakes, dynamic suspensions and the deployment of airbags. However, other applications, both actual and potential, exist in a variety of fields including instrumentation, environmental monitoring, consumer goods, medicine and defense products. Guild again draws a parallel to micro-electronics. "Trying to estimate the potential applications for micro-machines is like trying to envision the uses for computer chips 30 years ago". Who would have imagined they would be in everything from washing machines to sawmill equipment?

Medical applications offer some of the more fantastic opportunities. A researcher in England has reportedly developed a combination vacuum/sewing machine the size of a dime - enormous by micro-machine standards - that can be placed at the end of a stomach catheter to repair ulcers internally by sucking in the area around the perforation and sewing over the hole. One of the most ambitious medical applications currently being pursued is by 20 researchers at Tokyo University, under the direction of heart specialist Dr. Iwao Fujimasa. Fujimasa's team is building a "Fantastic Voyage" style robot "ship" less than 0.045 inches in diameter. The ship would be injected into a patient's body and travel through veins and inside organs where it would detect and treat diseased tissue.

Japan's commitment to such medical applications of micro-machines is reflected by MITI's allocation of nearly $70 million for the development of medical micro-robots alone. Guild, who recently met with Dr. Fujimasa in Tokyo, would like to see increased Canadian involvement in Japanese research projects, which have become far more open. "MITI wants foreign involvement and has stipulated that projects it funds must be open to foreign participation".

In Canada the two leading micro-machine centres are both in the West: at Simon Fraser University, under Dr. Albert Lueng, and at the University of Alberta, under Dr. L. Rustic. By the time this article goes to press, micro-machine experts from around the world will be congregating at Simon Fraser University for an international micro-machine symposium sponsored by the Science Council of B.C. Through the symposium the Council is seeking to spread the word on micro-machining and determine the level of interest in this emerging technology within British Columbia.

MANAGEMENT PRACTISES

Concurrent Engineering

Taking opportunities from concept to product has traditionally been a conveyor belt process which rolls from design to engineering to production to marketing. Problems at the production stage often require the product be taken off the "belt" and put back on at the design end. Time is wasted, productivity sinks and profitability suffers.

What the Japanese have done from the start - and companies like NCR, AT&T, Westinghouse, Xerox, Motorola, IBM and Ford are doing now - is to put people from all these divisions together from the start. **Concurrent engineering** is the buzzword, but more important are the competitive benefits this fairly simple concept has produced:

Development time	**30% - 70% less**
Engineering changes	**65% - 90% fewer**
Time to market	**20% - 90% reduction**
Overall quality	**200% - 600% higher**
Mgr. productivity	**20% - 110% higher**
Dollar sales	**5% - 50% higher**
Return on assets	**20% - 120% higher**

" Good Ideas are a dime a dozen. What are valuable are good business opportunities . . . the key is good management."

The April 30, 1990 issue of Business Week magazine features an excellent special report on concurrent engineering: ''A Smarter Way to Manufacture''.

Turning Good Ideas into Good Opportunities

Good ideas are a dime a dozen. What are valuable are good business **opportunities** and the key to taking ideas and turning them into opportunities is good management.

Ideas and opportunities are two different things. While there are many good ideas - the raw material - few of them are ever translated into good opportunities - the finished product. Tony Bailetti and John Callahan, Carleton University business professors who specialize in the management of technology, have put together some principles for pursuing opportunities as a component of their overall technology management framework.

Bailetti and Callahan suggest the use of a small multi-functional team with top management support to translate ideas into opportunities. Such an approach recognizes the importance of the exercise, ensures it is sufficiently resourced and creates synergistic collaboration between all facets of the organization.

An idea turns into an opportunity when a coherent position can be established on six basic issues:

1.Incremental activities.
- projecting the activities required to generate sustainable profits from the idea and then breaking these activities into successive manageable chunks provides both direction and a set of attainable milestones for the organization's employees;

2.Value for your customers (and your customers' customers).
- understanding how your product will make your customers' lives better underlies the demand there will be for your idea and what features are important in its development;

3.Drivers and impediments.
- identifying likely barriers to the opportunity allows the firm to anticipate problems and devise solutions before they stall the project. Appreciating the benefits that drive the opportunity helps in the assessment of barriers and provides a basis for solutions;

4.Fit.
- assessing whether your firm has the resources in terms of people, capital, infrastructure, etc. to exploit the opportunity will determine the viability of the opportunity, possible organizational changes and involvement of outside resources, eg: joint ventures;

5.Alternative solutions.
- will the solution your idea provides have to compete with similar products, and if so what is your relative advantage? If you have an advantage over similar products could the advantages associated with your idea be rendered irrelevant by a completely alternative solution?;

6.Competition.
- within the realm of your idea who are the competing firms and what are they doing?

Once a coherent position can be established on these six issues, management must then decide whether or not to move forward and invest resources into developing a business plan. Itemizing the transformation process does not mean that it is simple. In fact it is very difficult. However, the pay-offs and savings from going through this process are well worth the effort.

EXPORT MARKETS

South Korea: The Industrial Adolescent

As you switch off your Samsung computer, walk down to the parking lot, get into your Hyundai Excel and drive home, have you ever stopped to wonder how much business Canada and Korea are really up to? South Korea is a nation that will continue to be a key player in the Pacific Rim and important trading partner for Canada.

"... consumer behaviour appears to be shifting in Korea, due to the rising prominence of the younger, somewhat less traditional consumer - 60% of the population is under 27."

Korea is Canada's 2nd largest trading partner in the Pacific Rim, next only to Japan, while Canada is Korea's 6th largest trade partner worldwide. Approximately 80% of Canadian exports to Korea are raw or semi-processed materials, however it should be noted that a growing portion of exports have been in non-traditional areas, away from the raw material sectors. Korean exports to Canada are 98% fabricated or fully manufactured.

Traditional consumer behaviour appears to be shifting in Korea, due to the rising prominence of the younger, somewhat less traditional consumer - 60% of the population is under 27. Wage gains in the last two years and a rise in disposable incomes has also spurred demand for more diverse consumer goods. In response, the government has begun to relax the excise tax on "luxury" goods which has helped to increase the demand for quality consumer durables.

Export Opportunities:

Several sectors have been identified wherein Canadian businesses may find increased opportunities.

1. Food & Food Products
Beef and cattle imports, completely banned in 1985, have been eased in the face of international pressure. Other opportunities exist for suppliers of frozen salmon, herring, tomato paste, prepared mustard, canned products, and specialty items such as chocolates, confectionaries, and lobsters. Continued relaxation of the excise duties on "luxury" goods could see additional markets develop for other food products.

2. Technology Transfer
Korea is actively looking to acquire foreign technology. Opportunities exist for firms wishing to export their technology or enter into joint venture agreements, especially in the aerospace, textiles, footwear and automotive sectors.

3. Electronics
A strong market exists for high quality, high technology items, especially those with defense applications. The electronics field is moving rapidly as a result of increased investments in R & D and technology transfers. Emphasis has been placed on the telecommunications, fibre-optics, computer equipment, precision measuring equipment and semiconductor sectors.

4. Automotive
The Korean automotive industry is dependant on foreign technology for sophisticated parts and components. A large number of these are currently coming from Japan. However, major Korean investments in Canada (Hyundai in Quebec) have also provided Canadian firms with the opportunity to supply parts in order for these operations to meet Canadian content requirements.

The government of Korea provides numerous tax holidays or exemptions, special depreciation rates, and exemptions or reductions in customs, consumption and value added taxes for selected industries. These are applicable to firms of all sizes and to joint ventures.

Numerous general product, specialty and country specific trade fairs are held in Korea each year, highlighting both Korean and foreign made products. These are an excellent way to assess interest in a product and identify potential customers and distributors. The Canadian embassy in Seoul can provide valuable assistance through the use of its "Trade Centre" facilities for small follow-up presentations and seminars.

The establishment of business contacts and arranging of introductory meetings is best accomplished through intermediaries known to both parties. Korean businessmen are

"Downplay your own accomplishments and successes, and be modest about your status. Overall the key . . . is presence, patience and persistence."

reluctant to deal with unfamiliar people or firms. Personal relationships are highly valued and play a significant role in the development and maintenance of a successful business association. Continuous personal contacts must be maintained once business links are established. The Commercial Counsellor attached to the Canadian Embassy can act as the intermediary or can assist in providing a list of local representatives and agents.

Downplay your own accomplishments and successes, and be modest about your status. Overall the key to developing a successful business relationship is **presence, patience** and **persistence.**

More detailed information on South Korea is available through ISTC's Business Service Centre at: (604) 666-0266.

SPECIAL FEATURE

Service Sector Growth: Excess or Essential?

The service sector has suffered from an image problem for a long time. Even the noble pursuits of medicine and the law have taken their knocks. Classical economist Adam Smith disdainfully lumped all unproductive service sector labourers together as: "churchmen, lawyers, physicians, men of letters of all kinds; players, buffoons, musicians, opera singers, opera dancers, etc... like the declamation of the actor, the harangue of the orator, or the tune of the musician, the work of all of them perishes in the very instant of production." (Wealth of Nations).

Services are still often viewed as unproductive, parasitic signs of excess that have to be towed by the country's resource and manufacturing engines like so much dead weight. Consequently, for those holding this view, the recent growth in service industries is seen as dangerous because it represents a growing load for the country's already strained economic engines.

This notion that "as goes manufacturing so goes the economy" suffers from both a restricted view of what service industries are, and an incomplete understanding of the interdependent relationship that exists between manufacturing and service industries.

Service industries account for approximately 70% of Canada's economy and represent a wide array of activities. Banking, transporting, designing, communicating, teaching, researching, healing and entertaining are just a glimpse of what constitutes the service sector.

Dr. Michael Walker of The Fraser Institute and Dr. Herbert Grubel from Simon Fraser University acted as senior editors for a recent series of studies commissioned by ISTC's Service Industries Branch examining various aspects of the growth of the service sector. In these studies services were divided into three groups: **Consumer services** - demanded directly in the marketplace, eg: haircuts, car repairs and movies; **Producer services** - used by producers of other goods and services, eg: shipping, accounting and advertising; and, **Government services** - such as health care, education, and defense.

It was found that **producer services** accounted for **half** of all service production, with government and consumer services each representing a quarter. Interestingly, producer services have accounted for **almost all the growth** in the service sector in the past 25 years, rising 20% during this time. Consumer services, meanwhile, have remained essentially static and government services have grown only marginally.

Many producer services are crucial inputs to B.C.'s resource and manufacturing sectors, helping them improve productivity and stay globally competitive. One does not have to think too hard to conclude that most resource and manufacturing firms would be hard pressed to compete without the services of engi-

"Service imports out strip service exports by almost 4 to 1 . . . a significant portion of the business services deficit is due to Canada's branch plant economy"

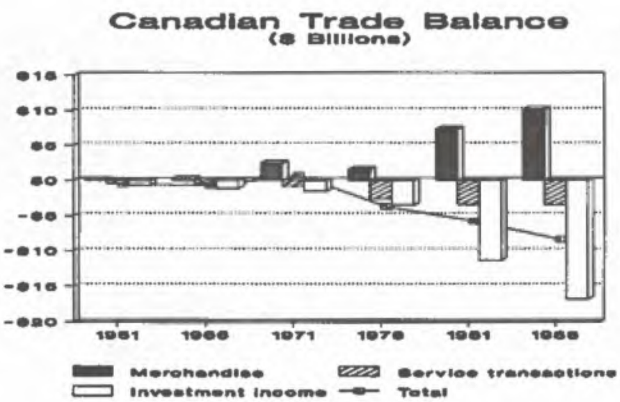
neers, designers, lawyers, architects, trading houses, shippers or utility companies.

While it is true that some service industries are dependant on manufacturers, some manufacturers are also dependant on service firms, who provide important markets for high value manufactured goods such as medical devices, telecommunications equipment, ships, aircraft, trucks, defence products and power generation/transmission equipment.

Hence, it is more appropriate to view goods and service producers as being mutually dependent, offering both markets and inputs for each others' products. A healthy economy requires that both its service and manufacturing industries be efficient, innovative and competitive in world markets.

Trade in Services

People tend to forget that many services are traded internationally. Tourism and conferences are big service exports, as are shipping and business services such as engineering, advertising and consulting. However, Canada's non-merchandise trade has historically been the millstone that has dragged the country's trade balance into the red (see graph). While income to foreign investors represents the bulk of this drag, service trade has also added to the weight. Currently, **service imports out strip service exports by almost 4 to 1.**



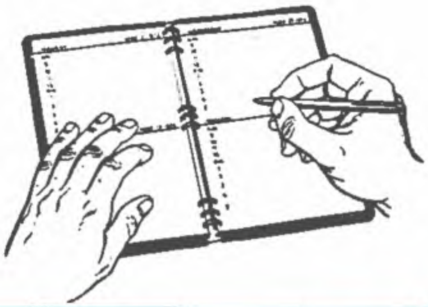
A significant portion of the business services **deficit is due to Canada's branch plant economy.** Fully 83% of the imports are payments to parent companies for royalties, trademarks, management/administration services and R&D. On the other side, 60% of business service exports are between non-affiliated companies.

What can be done to improve our services trade balance? Two things:
1. Develop and expand Canada's ability to supply export services, and,
2. Work to further liberalize trade in services.

Work has been done on both these fronts through activities such as tourism product development and promotion, transportation deregulation, extension of export programs to include service industries, the services sub-sections of the Free Trade Agreement and current GATT negotiations. However, more needs to be done so that Canada can capitalize on the advantages it has in service related to resource industries, overland transport and communications.

Service industries need to become aggressive in exploiting the international opportunities which these initiatives are revealing. ISTC is anxious to help. We have cooperated with the provincial Ministry of International Business & Immigration to offer seminars on the FTA and Service Industries. These seminars will discuss the new temporary access provisions of the FTA and provide a guidebook to expanding business services into the U.S. market. If you are a service firm doing business in the U.S., or contemplating a move into the American market, or even concerned about new U.S. competition, get in touch with your industry association to express your interest in these FTA seminars.

Service industries are integral to the continued prosperity of Canada's economy and our standard of living as Canadians. However, trade in services is an overlooked and underexploited dimension of the service sector and one in which opportunities continue to expand.



Calendar of Selected Events

ROV '90 Subsea Trade Show. June 25 - 27, 1990, Vancouver Trade and Convention Centre. ROV '90 will attract over 2,000 delegates from all over the world who are involved in subsea technology. This technical conference and trade show will focus on the subsea industry as it stands poised for the nineties. Cost: Marine Technology Society members $360, non-members $480; (daily rate) members $240, non-members $300. Contact: Richard Higgins (604) 844-1900.

Relating to Clients and the Public. June 25 - 27, 1990, Ramada-Victoria Hotel, Victoria, B.C. Topics include: how to listen and ask questions effectively, relating to and understanding other perspectives, and how to handle difficult situations. Cost: $250. Contact: (604) 385-0679.

D.E.E.D.S. Open House and Micro-enterprise Trade Fair. July 7, 1990, 496 Prior St., Vancouver, B.C. The Downtown Eastside Economic Development Society is celebrating its First Anniversary by throwing open its doors and inviting everyone to visit between 10:00 a.m. and 4:00 p.m. The open house will showcase the DEEDS facility ,and the new businesses developed there, with interesting displays, booths and concessions. Contact: (604) 683-3558.

Winning in the 90's: From Patents to Profits. July 8 -10, 1990, The Westin Bayshore, Vancouver, B.C. Workshops and plenary sessions will feature such topics as: evaluating technology, new opportunities for international technology licenses, licensing unprotected technology, using licenses and joint ventures effectively, and bridging the gap from university to business. Cost: AUTM/LES members $175, non-members $200. Contact: Penny Dalziel (203) 852-7168.

Food Pacific '90. August 16 - 18, 1990, B.C. Place Stadium, Vancouver, B.C. This biennial international food and beverage exhibition will feature 300 - 400 exhibitors from 30 nations and attract 8,000 - 10,000 visitor/buyers from 56 nations. Cost: $10 pre-registration, $15 at door. Display cost: bulk space: $194 per sq. meter; with company sign: $242 per sq. meter. Contact: Valerie Green (604) 684-3663

Sustainable Development. September 19 - 22, 1990, Quesnel, B.C. This annual conference of B.C. and Yukon Community Futures/ Business Development Centre groups will discuss the definition and implementation of sustainable development in resource based communities. Contact: (604) 992-3868.

This newsletter is published quarterly. For more information contact:

Dr. Brian Anderson
Director
Policy, Planning & Corporate Services

Chris Bywater
Economist
(604) 666-1415

publie aussi en francais

Printed on recycled paper