

YUKON 2000

Yukon Diversification: Benefits and Possibilities

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Abstract

A diversified economy is characterized by variety in terms of industrial sectors, exports, markets, locally oriented products, non-market activities, business ownership, credit sources, and plant sizes, and in terms of seasonality, location, resource-basis and technological basis of production.

While researchers have yet to develop a satisfactory indicator of diversification, case studies of regional economies indicate that diversified economies are likely to be more predictable, creative, resilient, fair, responsive, productive, and independent, and to offer more occupational and locational choice, than highly specialized economies. To the extent the Yukon economy is diversified, the Yukon will likely benefit in these ways as well.

The benefits from diversification will contribute to the strategy goals outlined in the Yukon 2000 paper: "the option to stay in the Yukon" (because of stability, productivity, fairness and choice benefits of diversification); "taking control of the future" (because of predictability and independence benefits); "achieving an acceptable quality of life" (because of creativity, productivity and independence benefits); and "achieving equality" (because of fairness benefits).

Measures which governments at all levels could take to enhance diversification of the Yukon economy fall under the headings of diversifying the export-oriented sector, strengthening and diversifying the local market economy, maintaining the strength of the non-market economy, diversifying the structure of the economy, expanding the size of the economy, and orienting planning toward diversification. The diversified resource base and culture of the Yukon provide particular opportunities to maintain and enhance the diversification of the economy.

YUKON DIVERSIFICATION: BENEFITS AND POSSIBILITIES

INTRODUCTION

This discussion paper is intended to contribute to the Yukon's economic development planning being undertaken through the Yukon 2000 project.

The purposes of this paper are:

1. To introduce the concept of economic diversification, the theoretical debates centred on this concept, and the findings of empirical research on diversification and its relationship to stability and growth.
2. To describe the consequences for some regions and communities which have experienced economic diversification or specialization.
3. To describe the benefits and limitations of diversification.
4. To analyze the structural character of the Yukon economy in terms of its degree and nature of diversification and the consequences for stability, growth, and wealth distribution at the Territorial and community levels.
5. To identify measures which could be taken by governments at all levels to enhance diversification of the Yukon economy.

Definitions of Diversification

Diversification is most commonly thought of in terms of:

- inter-sectoral variety of goods and services produced.

By sector is meant industry grouping such as mining, forestry, tourism, government services, etc.

Diversification can also be considered in terms of the following categories:

- intra-sectoral variety of goods and services produced
(e.g., farming vs. ranching within the agriculture sector)
- variety in terms of production for both external trade and for internal consumption
- diversity of markets for exports
- variety in terms of both market and non-market (cash/non-cash) activities
- diversity of business ownership and forms
- diversity of credit sources
- seasonality of activity
- variety of production locations (rural/urban, inter-regional)
- variety of renewable and non-renewable resource based activities
- high-tech/low-tech mix
- diversity of plant sizes within each industry

In summary, a diversified economy is characterized by variety in terms of industrial sectors, exports, markets, locally oriented products, non-market activities, business ownership, credit sources, and plant sizes, and in terms of seasonality, location, resource-basis and technological basis of production. It has a balance of activities between market and non-market exchange, between export-oriented and locally oriented production, between winter and summer work, between urban and rural locations, between renewable and non-renewable resource exploitation, between high-tech and low-tech skills, and between large and small plants.

Specialized Manchester vs. diversified Birmingham

Jane Jacobs, an observer of urban processes, has compared the English cities of Manchester and Birmingham in the mid 1800's. Manchester, because of its stunningly efficient immense textile mills was deemed by many to be "the most wonderful city of modern times" . By the 1840's the mills dominated the city completely. On the the other hand, Jacobs says, "most of Birmingham's manufacturing was carried out in small organizations... It was also a little hard to say just what Birmingham was living on because it had no obvious speciality of the kind that made Manchester's economy so easy to understand and so impressive." Birmingham's economy was a "muddle of oddments".

At the time of all the intellectual excitement about Manchester, nobody was nominating Birmingham as the city of the future. But as it turned out Manchester was not the city of the future and Birmingham was. Manchester's efficient specialization portended stagnation and a profoundly obsolescent city. For the 'immensity of its future' proved to consist of immense losses of its markets as other people in other places learned how to spin and weave cotton efficiently too. Manchester developed nothing sufficient to compensate for these lost markets. Today it has become the very symbol of a city in long and unremitting decline.... The economy of Birmingham did not become obsolete, like Manchester's. Its fragmented and inefficient little industries kept adding new work, and splitting off new organizations, some of which have become very large but are still out-weighted in total employment and production by the many small ones. (Jane Jacobs, The Economy of Cities, New York: Random House, 1969)

A New York neighbourhood

Jane Jacobs also provides a neighbourhood example of the benefits of diversity and the costs of specialization.

The commissioners of the housing agencies of New York City sincerely believe that they have been benefitting the economy of the city by reducing the numbers and varieties of New York's enterprises in the cause of efficiency for those retained. It is the boast of one of these commissioners...that in the Lower East Side, rebuilt under the city's auspices, each new store the plans have permitted takes the place, on the average, of forty older stores that have been wiped out... Of course the Lower East Side, once fabulously productive in developing work, is now almost an economic desert. But the commissioner is quite right: it does have more efficient stores. (Jacobs, Economy of Cities)

Canadian resource towns

Of course, this country is full of example of towns that did not survive because they were over-specialized. Happily, there are also increasing numbers of resource towns which have diversified.

Uranium City vs. the new Saskatchewan uranium mines:

Uranium City in northern Saskatchewan was reduced from a population of thousands to tens when Eldorado closed its uranium mine there a few years ago. Because the town was dependent not only on one industry but also on one employer, the end came suddenly and for many catastrophically. Some merchants were still renovating and expanding their operations the day the word came that Eldorado would close its mine.

Newer uranium mines in Northern Saskatchewan now all operate on a fly-in/fly-out basis. This simultaneously eliminates the need to build specialized mining towns and diversifies the workers' home communities--many of them native communities which formerly were totally reliant on traditional pursuits.

Ocean Falls vs. Vancouver Island towns:

Ocean Falls on the B.C. coast was wiped out when its one forest industry company closed, despite intensive efforts by residents and at times by the B.C. Government to save the town.

Forest industry towns in the southern half of Vancouver Island, a location which favours diversification because of climate, soils and proximity to large cities, have been less badly hurt by slumps in the forest industry. Many have diversified through tourism, by becoming retirement centres, and through development of significant non-cash economies.

Much ingenuity has been shown in these diversification efforts. For instance, Chemainus is now famous for its dozens of beautiful large murals painted on the sides of stores and public buildings. People in Duncan, Nanaimo, Powell River and Courtenay have formalized their non-cash economy through local exchange trading systems--in effect, printing their own money so as to become less dependent on federal dollars.

Alberta Coal Branch then and now:

Alberta's coal branch area in the foothills had thriving towns before the coal companies gave up a few decades ago. Now the new coal mines in the area are being worked by miners living in the relatively diversified Edson (agriculture and oil) and Hinton (pulp and tourism) because Alberta's present policy is to prevent the development of overly specialized resource communities. This policy was formed in reaction to Alberta's continuing problems with its last specialized coal town: Grande Cache

Schefferville and Sept Isles vs. Thetford Mines, Quebec:

Two eastern examples of resource towns which have suffered from over specialization are Schefferville and Sept Isles in northern Quebec. The former was totally dependent on iron ore mining, the latter on transferring the ore from rail to ships. When the mine was closed, Schefferville was virtually abandoned, and Sept Isles though hundreds of miles from the mine was hit hard.

Thetford Mines, in southern Quebec, also used to be very specialized. It was highly dependent on asbestos mines. Apart from the economic dislocations caused by sizable mine layoffs in recent years, the community suffered from its dependency on these mines in earlier years in terms of health conditions and worker choice. As a recent (Oct. 11/86) Globe and Mail article on the town explains, "the dust was so thick at times that [a worker] could not see fellow workers 20 feet away. Despite those conditions, workers of a generation ago stayed on because there were few alternatives." Thetford is now the object of considerable diversification effort by local and senior governments. Hospitals have been located there and individuals have used government loans to start enterprises such as Christmas tree farming for the U.S. market.

Dawson, Keno, Elsa and Faro:

Even temporary mine closures can profoundly affect the economy and social life of towns which totally depend on them, whether the closures are because of strikes, plunging commodity prices or ore depletions. Right in the Yukon, the early histories of Dawson and Keno City, and the recent histories of Elsa and Faro, provide unfortunately good examples of what lack of diversification can mean for a community.

Ross River Indian Band:

The Ross River Indian Band can be compared to Faro, its nearest neighbour. Despite attempts to involve Ross River members in the Cyprus Anvil mine, few have actually worked there. A 1983 study found that Ross Rver income came 41% from harvesting wildlife for food and furs, 36% from wages and 23% from transfer payments. Additionally, virtually all the households rely on wood as the primary home fuel. When Cyprus Anvil closed in 1982, most of Faro was shut up but Ross River was not greatly affected. The latter was not dependent on the mine, though it received some income from it. Its economy was more diversified than Faro's. (Peter Dimitrov, "A Northern Indian Band's mode of Production and Its Articulation with the Multinational Mode," M.A. thesis, U.B.C., 1984)

Regional economies

Whole regions can also benefit from diversification or be harmed by over-specialization.

Mackenzie Delta vs. the Eastern Arctic:

The current bust in oil prices is disastrous for the regional economy of the Mackenzie Delta which in the last few years has become very dependent on exploration in the petroleum industry. As described in the Globe and Mail recently (Oct. 14):

Many of the soon-to-be jobless are permanent northern residents, with no hope of quick recall or other job opportunities. Tuktoyaktuk... will probably be hit hardest. People there have gradually replaced their old dependence on hunting and trapping with a new reliance on oil and gas. A recent territorial Government survey showed 140 of Tuktoyaktuk's 243 working residents--58 per cent of the permanent work force--draw their pay cheques directly from the oil patch... Tom Butters, Finance minister for the territorial government, said the pullouts will probably put more than 600 local people out of work.

The Eastern Arctic has seen very little oil exploration. Instead its diversified economy is based on harvesting wildlife for food and furs, art exports, mining, a little tourism now, and of course government. Even its stores are diversified with both the Hudson's Bay Company and co-ops sharing import and export business. With the disrepute of the fur industry in European

markets, the region has been looking at developing an even more diversified base--for instance, through commercial fishing and scallop harvesting. Trouble in the fur market is not having the same impact on this region that trouble in the oil industry is having on the Mackenzie Delta because of their relative degrees of diversification. Of course, the Eastern Arctic has not had the benefit of massive infusions of cash either. But nor have they had to cope with the associated problems.

Alberta:

Alberta has become very dependent on the oil and gas industry. Like the Mackenzie Delta it has started to suffer from this year's low oil prices.

Alberta realized in the 1970's the dangers of its growing dependency on oil. Accordingly it put a major effort into diversification. Unfortunately, most of the diversification was simply to balance exploration and production of oil and gas with early-stage processing of these products. This very limited diversification has not helped when the whole petroleum industry has suffered gluts. Low prices for raw commodities soon translate into low prices for slightly processed commodities.

Alberta's experience in the early 1980's showed that a specialized economy can be vulnerable to changes in government policy as well as to changes in markets. In Alberta's case the National Energy Policy initially precipitated a slump when oil prices were still quite high. Population growth rates of over 3% per year in the late 1970's and early 1980's fell within a couple of years to the point where the province actually declined in population during 1984. Federal and provincial government policies were revised and this helped lift Alberta out of the slump in 1985.

The 1986 collapse in oil prices put the province on the downhill slide again. Some regions of Alberta, however, learned their lesson from the first slump in the 1980's. In the Cold Lake region, for example, so many communities and developers were burned in the early 1980's as a result of over-building and -servicing of lots--at least one municipality had to declare itself bankrupt--that in 1985 they consciously worked to keep the lid on their urban development despite what then appeared to be another imminent boom in the heavy oil industry. Today, they're glad they did.

Saskatchewan:

In the 1930's, Saskatchewan's economy was based almost totally on grains for export. Drought and a depression in the business cycle combined to devastate the economy. After World War II, climatic conditions and markets improved but farm consolidations resulted in continuing population drains from a still highly specialized economy. In the 1970's however, the economy started to diversify.

An analysis of the major industrial projects being planned in 1981 found that of all western and northern jurisdictions, Saskatchewan was to be host to the most diversified set of planned projects. In terms of project cost, there was to be roughly equal shares of heavy oil, potash, hydro electricity, coal-based electricity, uranium and pipeline development. By comparison, about 50% of the projects planned for Alberta involved heavy oil and another 15% involved oil and gas processing and petrochemical sectors. (Peter Boothroyd, The Frontiers Within: Western Major Projects and Indian Affairs, Indian and Northern Affairs Canada, 1981)

As a consequence of its diversity of planned megaprojects, Saskatchewan was not stunned by the collapse of large projects in the 1982 depression. The biggest planned project, the Lloydminster heavy oil plant has been continually delayed, but uranium mines, potash and pipeline expansions have gone ahead. The industrialization which has occurred has meant that while wheat is still Saskatchewan's major commodity, even a bad year for crops and markets such as 1985 is not devastating.

However, while the economy has been diversified it is still highly dependent on exports of raw commodities--despite the development of some high tech industries in Saskatoon and Regina--and unfortunately commodities have tended to follow parallel price cycles. Saskatchewan is no longer suffering from boom-bust, but its economy is far from predictable. Saskatchewan has diversified, but not enough.

PART III: BENEFITS OF DIVERSIFICATION

From the experiences of diversified or specialized economies described above, the values of diversification at every level of society are seen to be the following.

Diversification of an economy makes it more predictable. This is because not all types of businesses are likely to suffer difficulties at the same time. Renewable resources provide long-term continuity to an economy but their availability may be highly unpredictable on a year-to-year basis. Supply of non-renewables is more uncertain in the long-term but more predictable on a year-to-year basis. Thus an economy with a mix of both has less uncertainty of resource supply in the short-term than does a purely renewable resource based economy and less uncertainty of supply in the long term than does a purely non-renewable based economy.

A diversified economy is more creative in finding new ways to generate wealth. Producers of different kinds of products or using different techniques find ways to combine their efforts to create new products or techniques; competitors in producing the same kind of product look for ways to become more efficient in its production and ways to profitably extend the product mix.

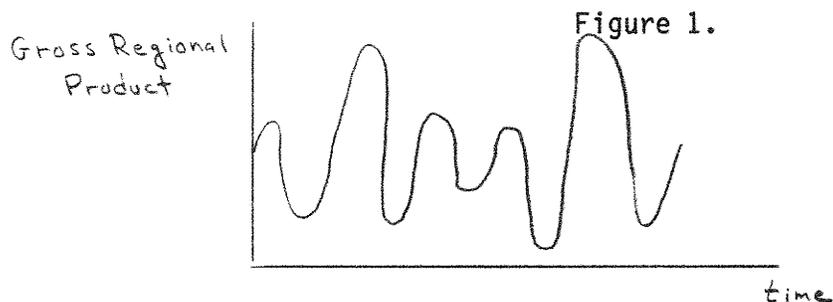
A diversified economy is resilient, i.e., more stable over the long run. If one sector declines, the inherent creativity of the diversified economy means that it possesses the capacity to overcome this adversity through the generation of new activities. Furthermore, when an economy has a healthy non-cash component as well as a cash-based component, the economy will not suffer as much in the depressions and recessions which are a feature of the cash economy. Non-market activity generates at least a low level of wealth even in depressions. On the other hand, market activity provides more wealth, i.e. is more productive, during boom times.

A well-diversified economy is fairer. It provides opportunities for all kinds of people: natives and non-natives, parents staying at home, disabled, retired, youths, university graduates and people with little formal education, urban, rural, etc.

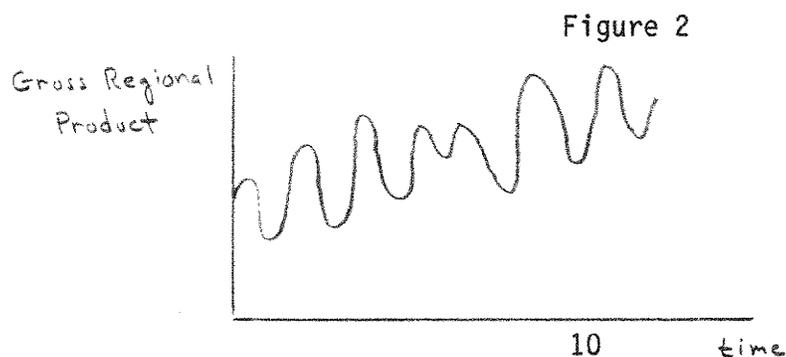
A diversified economy is more responsive to opportunities. The wider the range of products produced by an economy, the more the economy can respond to opportunities which arise in external or internal markets. For instance, if some people in the labour force are experienced hunting guides, they are in a position to capture any new surge in demand for guided hunting trips.

A more diversified economy, because it is more certain, creative, resilient, fair, creative and responsive, is more productive in the long term. There are fewer periods of unemployment. There are not boom years and bust years. People are engaged in both summer work and winter work. All kinds of people have the opportunity to work. More time is spent doing work, less is spent looking for it. Outside owners bring new capital to an economy; local owners are more likely to keep their capital in the economy. More certainty and stability permit better planning by entrepreneurs. A better planned economy is more productive because resources are used more efficiently. For example, there are fewer costs of building towns and buildings which have to be abandoned in a few years. More opportunities to produce wealth are captured. A diversified economy permits greater internal trade of goods and skills with or without cash, because there is more to trade. This internal trade generates jobs and wealth.

The trajectory of a non-diversified economy tends to look like this:



The trajectory of a diversified economy tends to look like this:



A diversified economy is more independent because it is less dependent on any one internal or external actor. Not only is it more productive, it can decide better what it wants to produce, with what impacts on environment, family and quality of working life, and what it wants to do with its wealth. An economy dependent on one big corporation, one big government, one big union, one big commodity market, one big bank, etc., has difficulty setting its own course. In a diversified economy, the environment can be kept clean and enjoyable, resources can be husbanded for the long-run benefit of the residents, rules can be set democratically, wealth can be fairly distributed, families can be protected, communities can be promised a future, and work can be kept safe and meaningful. The greater degree of internal trade permitted by a diversified economy reduces dependence on external markets, capital or institutional decision-making.

A diversified economy offers more occupational and locational choice. In a diversified economy there is a wider variety of job opportunities, and a greater choice of work locations. Traditional and modern, rural and urban, white-collar and blue-collar, indoor and outdoor, business and government jobs are all available. This gives people more opportunity to live in the territory of their choice and in the community of their choice. An area with a diversified economy also offers a greater range of services and products to consumers which again increases the residential attractiveness of the area. Retirees, business persons, workers, and others who are prone to leave an area deficient in services are thus also induced to stay. In turn, these people contribute to the purchasing power, production and diversity of the economy.

In summary, experiences of various communities and regions indicate that compared with highly specialized economies diversified economies are likely to be more predictable, creative, resilient, fair, responsive, productive, and independent, and to offer more occupational and locational choice.

Diversification of the Yukon economy will contribute to the Yukon' strategy goals outlined in the Yukon 2000 paper: "the option to stay in the Yukon" (because of stability, productivity, fairness and choice benefits of diversification); "taking control of the future" (because of predictability and independence benefits); "achieving an acceptable quality of life" (because of creativity, productivity and independence benefits); and "achieving equality" (because of fairness benefits).

PART IV: DIVERSITY, STABILITY AND RESILIENCY

As discussed in Appendix 1, a strong correlation between indices of economic diversity and cyclical instability has not emerged from empirical research to date. This lack of a significant statistical association can be traced to either or both of two factors: 1) the impossibility of reducing to a single quantifiable index the various concepts or dimensions of economic diversity; and 2) the inability of economic diversity, however conceptualized, to insure a regional economy against short-run cyclical fluctuations. It is likely that both these factors play a role. Because of the shortcomings of diversity indices discussed in the appendix, it is extremely difficult, if not impossible, to associate statistically with these indices the benefits of economic diversity. Furthermore, the primary benefit to be derived from diversity is not protection against short-run cyclical swings in the national economy but the contribution to stability in the long-run economic growth process. Over time diversity translates into economic resilience.

In time, any of a region's activities will suffer arrested growth and perhaps decline or even extinction, either because the product itself becomes obsolete (as in the famous case of buggy whips, which sorely affected Westfield, Massachusetts, the principal whip-making center of the country) or because the region loses out competitively (as, for example, New England lost to the South in textile manufacturing, and Pittsburgh in the nineteenth century successively lost out as a leading producer of salt, wagons, cotton textiles, and refined petroleum products.

If a region is narrowly specialized, such a loss can be at least temporarily disastrous; in a diversified region, it is unlikely that a major proportion of the total activity will suffer at any one time. Equally significant is the fact that a narrowly specialized region is likely to show less resilience in recovering its stride by developing new activities to take the place of those lost. (Edgar M. Hoover, An Introduction to Regional Economics, New York: Alfred A. Knopf 1975, p.268.)

This resiliency stems directly from diversity of employment in the economy which in turn promotes a diversity of knowledge and skills in both management and the labour force and also among bankers, educators and entrepreneurs. As a general rule then, increased diversity in the economy contributes to long-run economic stability.

It is important to emphasize, however, that this general rule is just that: a general rule. It is not an inviolable principle that increased diversity will

always pay direct benefits. Rather than pursue any course of action that would lead to a favorable quantifiable change in a measure of economic diversity simply for the sake of a numerical change in that measure, each economic opportunity should be evaluated on the basis of its net contributions to all established economic goals. For this task there is no substitute for intimate knowledge of the structure and functioning of the regional economy. Effective economic planning is based on analyses of each individual sector with respect to income generated, past growth rates and future growth potential, occupational requirements, patterns of instability and relationships with all other sectors of the economy.

PART V: MEASURES WHICH CAN BE TAKEN TO ENHANCE DIVERSITY

There is no one quick fix to creating a diversified economy. Creation of a diversified economy requires a diversification of effort. Some efforts will be effective at one level at one time, some in another place at another time. What is important for government and community leaders at all levels to bear in mind is the range of measures which they can take to enhance diversity and to take these one or more at a time as the opportunities to do so arise or can be created.

1. Diversify the export-oriented economy

An economy which is diversified in its export sectors has a variety of products to offer, is able to grasp a range of external opportunities, and is buffered from the effects of collapse in any one commodity market--assuming all markets do not collapse at once. The following measures to increase export-oriented diversity can be taken by the Yukon as a whole or by individual communities.

a. Encourage businesses to offer new products

Rewards in various forms--from recognition to loans to tax breaks to grants--can be given to businesses which think of, develop and successfully market new products for export.

b. Encourage businesses to expand production of currently minor exports

Rewards in various forms can also be given to businesses which successfully market expanded production of goods or services which form only a minor part of Yukon's export base at the present time.

c. Assist businesses to find new markets for their products

Senior governments may be able to assist small businesses to identify new markets for existing or potential products. Market diversification is sometimes as valuable as product diversification, as B.C.'s lumber industry has found out in recent years.

d. Enhance demand for off-season tourism

Yukon tourism business is presently highly concentrated in the summer months. The attractions of the Yukon in other seasons could be promoted. Off-season visitors would likely fly rather than drive to the Yukon. Naturalists, cross-country skiers, and persons interested in old mines and towns are not only attracted to summertime driving tours.

e. Diversify tourism geographically by encouraging diversified travel routes.

Tourists presently confine their travel first to the Alaska Highway and Whitehorse, and secondly along the Klondike Highway to Dawson City. Expansion of promoted and serviced tourist destinations to include say Mayo-Keno would provide more geographical diversity in the tourism industry and give reason to tourists to stay longer in the Yukon and to visit more often. It would also increase the diversity of tourist attractions and tourists attracted to the Yukon. For example, old mines, equipment and buildings in the Keno area could be developed and promoted to history and technology buffs.

f. Balance mineral exploitation with exports based on renewable resources

A mix of renewable and non-renewable resource activities contributes to long-term stability. While non-renewables can be exploited intensively and with great cash income where rich deposits are found, the supply can quickly end. Renewables, if properly managed, can last forever--though their annual supply is subject to natural forces and cycles. The dominance of the mining industry in the Yukon is already balanced to some extent by tourism and crafts. Other possible renewable exports are luxury-priced game and berries.

g. Support the development of custom mills

Small mine operations could have their transportation costs reduced and thus become more competitive if they could mill their ore in the Yukon. A stronger small mine sector would balance the present high dependency of the mining industry on two big operators. Portable mills have been actively considered by the B.C. Kitimat-Stikine's regional planners and their potential is being investigated by a group in Elsa/Keno. Ore processing in the Yukon does not reduce the Territory's dependency on a specific commodity market, but it does make its operators more competitive in that market and reduces their dependence on external mills.

h. Expand sectors with the greatest linkages to other sectors

An input-output table indicates how much each sector purchases from every other sector. Government will get the highest leverage in their efforts to expand the economy by supporting expansion of those sectors which the input-output table shows have the largest overall multipliers, i.e., those sectors that generate the largest total impacts on the economy for each dollar of sales.

Insofar as the induced expansion takes place in sectors under-represented in the Yukon economy, the expansion will contribute to diversity. A more precise approach to diversifying the economy is to focus on those sectors, particularly those underrepresented sectors, which have strong linkages to other under-represented sectors. An input-output table can suggest the sectors to focus on to induce diversity.

i. Analyze carefully the effects on the Yukon of free trade with the U.S.A.

Free trade would in general benefit Canada's exporters, but not necessarily all exporters. If the terms of a free trade agreement required Canada to change programs and policies which the Americans deem to constitute subsidization of exports, then some of Yukon's major exports could be threatened. Furthermore, free trade would in general hurt existing Canadian producers for local consumption and import substitution efforts, including perhaps efforts which might be taken by the Yukon such as those described below .

Limitations to diversifying exports

Unfortunately, in recent years the price cycle of basic commodities have been synchronous. After booming in the late 1970's and early 1980's, prices have fallen drastically in the markets for base metals, precious metals, oil, wheat, beef, lumber, etc. Thus diversification in terms of basic resource commodity sectors has only modestly increased stability during this period, as the Saskatchewan example shows. Where export-oriented sectoral diversity has more significantly paid off is in those economies where there is balance between the resource sector group on the one hand and the manufacturing and service sector groups on the other hand (e.g., Washington State), or where there has been diversification within the latter groups of sectors (e.g., Massachusetts). As a recent article (Oct. 17) in the Globe and Mail put it:

The traditional nightmare of a resource economy is that most of the commodities that generate its income will suffer downturns at the same time. That, in a nutshell, is 1986 for much of Western Canada, where energy, grain, potash and uranium have all declined in either price of demand or both... Manitoba, the only western province that can boast of a manufacturing base, has been bubbling along merrily ahead of the pack, a state of affairs that simply reinforces the lure of diversity. 'The rest of the western provinces look at Manitoba and see what diversification can do for them,' said Richard Allen, chief economist for the B.C. Central Credit Union.

2. Preserve, expand and diversify the local market economy

The previous group of measures relate to enhancing the range of Yukon exports. This group relates to diversifying the present export-oriented Yukon economy by enhancing the degree of Yukon activity which is oriented to production for local markets. This form of diversification makes the economy less dependent on exports to generate income with which to purchase imports. Needing fewer exports, it is less at the mercy of outside market forces and decision-makers.

a. Support the production of more agricultural products for local consumption

Yukoners presently produce only about 3% of the some \$45 million worth of food they consume annually. The long summers and favourable micro climates in places would support more agricultural production for local consumption. One report has identified the following "reasonable opportunities for expansion": "vegetables (field vegetables such as potatoes and greenhouse gardening such as tomatoes, sprouts and lettuce), elk husbandry (as a source of meat), poultry and eggs, and grain/forage." (DPA Group Inc., "Assessment of Import Substitution Opportunities", prepared for Department of Economic Development, Mines and Small Business, Yukon Territorial Government, March 1986)

Note that with the exception of grain/forage, the possibilities in this list do not require large tracts of land and therefore are not contingent upon the settlement of Indian land claims. Still, the DPA report noted the following problems.

While some vegetables such as lettuce and tomatoes could be grown in greenhouses close to the [Whitehorse] market, availability of reasonably priced land and overcoming rigid zoning bylaws remain the key problems. Production of field vegetables such as potatoes near Whitehorse may be constrained by the summer frosts and the fragile soils... In Yukon, the most productive areas for potatoes and other field vegetables are near Dawson City and Watson Lake. This represents a distance and cost constraint on the expansion of the industry and adequate storage facilities close to the major market may be required.

Dairy product imports were seen in this report as "probably the most difficult to replace with local production due to the small size of the Yukon market and the demanding nutrient and shelter requirements of a dairy herd." Meat production was seen as a possibility provided feed is economically produced or available in the Yukon, and provided the necessary government regulations are established in such areas as farm inspection, standards for slaughtering and meat inspection. The report suggested that "Yukon could support at least one small to medium sized slaughtering facility".

From the DPA report, it appears that governments could assist diversification through increasing agriculture by bringing in food processing regulations, zoning land to permit farming and/or greenhousing, providing loans, promoting local products, revising tax laws in favour of small and part-time farmers, and permitting the sale of domesticated wild animals.

The report notes that the Yukon Livestock and Agricultural Association has estimated that "Yukon has approximately 2 million acres of land which has moderate to moderately high capabilities for agriculture and that only about 4 percent of this would be needed for... producing the amount of food consumed currently by Yukoners".

b. Support the substitution of fuel imports with local fuel wood, hydro or solar energy

The DPA report discusses the prospect of substituting local wood for petroleum products in space heating as follows.

Approximately \$30 million of petroleum products are used for space heating each year in the Territory. This represents a significant opportunity for wood substitution as the annual sustainable yield of wood waste (wood not usable for lumber) has five times the heating capability of the volume of petroleum products now used. While Whitehorse does have a pollution problem with residential wood-burning units, larger units for commercial or institutional use operate at sufficiently high temperatures to significantly reduce this problem... In the smaller communities, 56% of heating needs is provided by wood products but the potential exists for more as fire burn areas exist close to most communities. Other important sources for energy conversion are non-commercial and over-mature timber, forest logging residue and wood industry residues (i.e. sawdust)...

[T]he major constraints to this opportunity are public acceptance, government regulations and the capital requirements. The major bases for market development are commitments by government and industry to use wood as the fuel for central heating.

The DPA report also addresses the possibility of substituting oil used for space heating purposes with hydro-electricity or steam turbines.

The steam turbines might be used by sawmills, mines, etc. while hydro might be more appropriate for small businesses such as placer mines and resorts. There are numerous possible hydro sites throughout the Territory but two key constraints make realizing these import substitution possibilities difficult. One is the long and cumbersome process of government approval. The second is the high capital cost of installation... the approval process is long and complex and it does not recognize the difference in size between micro-hydro projects and the megawatt operations of the Northern Canada Power Commission... [but] micro-hydro projects can offer a good opportunity for import substitution, and can be very profitable, as long as finances are available and a market for its power is secured over a long term.

The potential for direct solar energy is not discussed in the DPA report but it bears consideration as a partial substitute for imported oil.

c. Produce manufactured products presently totally imported

The DPA report offers the following suggestions and analyses:

The major opportunities identified in [a workshop of 30 business people and 10 government representatives held in Whitehorse, in March 1986] revolved around meat and fish processing (and complementary industries), wood products, production of bricks and other clay products, industrial products such as sheet metal and fiberglass and various food products using local materials

If [a] slaughter house and meat processing plants... are developed... a tanning industry could be established as well as a fur clothing industry... Fish products could also be developed into a number of products including a fish-based fertilizer...

[W]ooden fence posts appear to be an import substitution opportunity. However, based on the B.C. experience, fence post manufacturing is a very capital-intensive operation and the market is very competitive... Therefore either a substantial export market would have to be developed or the market for untreated and partially treated poles would have to be explored because the preserving process is the capital intensive component.

... [There is a] very narrow range of Yukon woods that would be suitable for furniture. Nevertheless, there is an opportunity for local specialty items such as cutting boards, wooden toys and mobiles with a Yukon theme... [and] the possibility of using local materials for such things as bar and hotel tables.

Many manufactured items such as fiberglass tanks, sheet metal products, and windows have been specifically designed for northern conditions and there is an opportunity to expand this market if the products were better known by northerners and if approvals could be obtained from the appropriate agency setting the standards...

Yukon also has a good supply of quality clay which might serve as the basis for the production of various types of bricks and ceramic tiles...

The different levels of government represent a major segment of [industrial manufacturers'] markets and the various tendering regulations represent a major barrier or constraint. Tenders are often overspecified, have unrealistic tender deadlines or work completion deadlines. The tenders are structured for the larger southern firms and do not recognize the small size and owner-operator characteristics of the Yukon firms.

Elsewhere the report notes that

There is some opportunity for rough lumber but the primary opportunity is for graded lumber. The key requirement here is the installation of a dry kiln and planer while the constraints are quality control, tenure for timber rights and inventory costs...

In 1983, 1984 and the first three quarters of 1985, 76.2% of the value of all building permits issued in Whitehorse was for the institutional sectors. This percentage will likely remain high in the next few years despite the indications the mining sector will recover somewhat with the reopening of the Cyprus Anvil mine. Thus the reasonability of the estimate of demand for and the viability of the dry kiln and planer depend on the willingness of the different levels of government to commit to using local materials in construction.

d. Promote local products and support inter-community trade

The DPA report recommended that an annual "Made-in-Yukon" trade show be developed and that more use be made of Yukon insignia on local products.

e. Link buyers of imports to existing and potential local suppliers

Portland, Oregon found that many buyers in the city were unaware of local suppliers who presently produced, or could produce, products they needed at a competitive price. Producers were ignorant of local markets. It was found worthwhile to actively help suppliers and buyers become aware of each other. While the Yukon is much smaller it may be worthwhile to investigate the need to help buyers and producers not only to become aware of each other but also aware of each other's needs. The DPA report suggested that the formation of a Yukon Manufacturers Association may be warranted. It could work on such common concerns as improving the tendering process or improving general awareness of locally manufactured products. The report also recommended that Yukon Government purchasing information be made publicly available in order to assist local manufacturers and suppliers improve their planning and competitiveness

f. Expand sectors with the greatest linkages to other sectors which involve primarily production for local consumption

The discussion on sectoral linkages in the previous section on measures to diversify exports can also be applied to increasing and diversifying locally-oriented production. Sectors which have significant spinoffs for sectors primarily oriented to local production could be enhanced so as to indirectly increase activity in these latter sectors.

g. Analyze carefully the effects on the Yukon of free trade with the U.S.A.

As noted above, free trade would hinder import substitution efforts.

3. Preserve, expand and diversify the non-market economy.

While a balance between the market and non-market economy, the former is strongly dominant in most jurisdictions. The Yukon, including many of its communities, has an advantage over others in that it has a relatively stronger non-market economy. A diversified economy with a strong non-market component is less dependent on cash, which is controlled by outside markets and governments. An economy with a strong non-market component is less badly hurt in times of market collapse, government deficit cutbacks, or tight-money policies. As well, the non-market economy has the benefit of offering satisfying work (fishing, gardening) and promoting social responsibility and identification (through non-monetary sharing and exchange).

The non-market economy can be preserved, expanded and itself diversified, by governments and communities taking the following measures.

a. Respect and support the native economy

Besides the important household economy, volunteer sector, and self-help recreation activities which are found everywhere in Canada, the Yukon still has a significant traditional native economy in which hunting, fishing and fuel wood gathering contribute a great deal of wealth to the 25% of the population living in Bands. These activities are conducted without requiring much expenditure of cash and without requiring cash to distribute the produce.

Seen in this light, the traditional native economy is worthy of support not only for reasons of self-determination but because it is a positive feature of the Yukon economy which significantly contributes to diversification. It follows that Indians should be supported in their attempts to maintain their culture, social organization, political autonomy and land rights which are integrally connected to their traditional economic pursuits.

b. Respect and support non-native informal resource harvesting

Many Yukon non-natives as well engage in hunting, fishing and fuel-wood gathering, and many would like to do more. Having due regard for Indian rights and unresolved land claims, policies could be framed to permit and facilitate non-natives to benefit from the wood, animals and fish of the Yukon.

c. Maintain strong conservation policies

The above measures are not meant to suggest conservation efforts be weakened. On the contrary they need to be maintained and perhaps even strengthened so that informal renewable resource activity can continue in perpetuity and with stability.

d. Nourish renewable resources

Fish stocking, salmonid enhancement and forest management practices which maintain and increase stocks are important means of supporting diversity and its attendant benefits because they support the informal renewable sector. Protection of habitat from industrial, agricultural and urban development is equally valuable from this perspective, though in any actual situation the benefits of development may outweigh the costs to the informal renewable resource sector and therefore should be permitted. The recommendation here is not to protect the informal renewable sector at all costs, but rather to take the long run diversification benefits into account when considering government expenditures on renewable resource enhancement and whether to permit proposed industrial, agricultural and urban developments.

e. Encourage home gardening

Gardening contests, greenhouse subsidization, crop experimentation, development of community garden plots, are examples of measures which various levels of government could take to encourage non-market home gardening. Several residents of Mayo for example grow greenhouse tomatoes. While at present they figure this involves a net monetary cost, more active development could make this production profitable in financial terms. In the meantime, people will continue to enjoy fresh produce and the satisfaction of production. Hardier vegetables could be grown profitably as the experience and studies in Fort Good Hope indicate. Poultry and egg production have been found to be a good informal sector activity in many parts of the world.

f. Promote informal exchanges of labour through co-ops

Examples of successful co-ops involving significant exchanges of labour without using cash are baby-sitting co-ops, women's health collectives, and housing co-ops.

g. Encourage and support the voluntary sector

Volunteers produce wealth without needing the incentive of cash rewards to do so. Volunteers in social services, community recreation and, in the hamlets, even community administration are already common, very active and effective in the Yukon. These people and their organizers should be recognized as non-market wealth producers and in the interests of diversification should be supported as such.

h. Experiment in the development of local exchange trading systems

Local Exchange Trading systems have been established in at least five communities along the Vancouver Island coast, and the concept is receiving increasing attention world wide. In essence, they are systems of accounts which allow members to do business with each other without using cash. Members receive credits or debits in a ledger for all or part of the goods or services traded. LETS permit community members to do business even when they are short on cash. They permit more complex interactions than can take place through simple two-way barter. For instance, a dentist may receive part of his fees in "green" (as the B.C. LETS call their credits) and use part of this credit to eat in a local restaurant or buy locally produced eggs.

i. Encourage community identification and commitment

When people strongly identify with their community they are more committed to it. When they identify with and commit to a community they are more willing to work together without pay in co-ops, as volunteers or through local exchange trading systems. Organization of festivals, and respect for community decisions, are examples of measures which government at all levels as well as the informal communities themselves, can take to strengthen community feeling.

4. Diversify the structure of the economy

a. Support small business

Small businesses, by virtue of their large numbers for a given amount of economic activity, inherently add to the diversity of an economy. Small businesses can be supported through grants, loans, expeditious permitting processes, entrepreneurial training and "incubators" where space and basic support services are provided at subsidized rates.

b. Encourage different forms of business

Some people feel most comfortable working as self-employed owner-operators, others prefer working as employees, partners or in co-ops. Some bands may choose to operate band enterprises on broad rather than narrow definitions of profitability and on principles which recognize traditional work patterns and the role of band members in governing the enterprise. Government policies which support all forms of business encourage diversity of business forms. A diversity of business forms gives individuals and communities choice in how they work.

c. Support the development of credit unions in small communities

Banking services are unavailable outside the major centres of the Yukon. For instance, there is no bank even in the Mayo/Elsa/Keno area with its combined population of over 800. Communities' attempts to attract banks have met with the response that it is too expensive for banks to locate in small communities. The development of government regulated and insured credit unions in small communities would expand choice in saving and borrowing money and cashing cheques. Consequently, local credit unions would improve locational choice for businesses, retirees and others.

An added benefit is that savings funds would be locally controlled and perhaps, depending on the credit union's policies, more likely to be invested in Yukon communities. Finally, it would be a source of employment for a few people, though in order to be viable for the most part the credit unions may have to be run by bonded volunteers or as part of the regular administration of a municipality, band, union, or even large corporation.

5. Increase diversity by increasing the size of economy

In a diversified economy there is a wider variety of job opportunities, and a greater choice of work locations. This gives people more opportunity to live in the territory of their choice and in the community of their choice. People who might otherwise leave a desirable community for job reasons are induced to stay. An area with a diversified economy also offers a greater range of services and products to consumers which again increases its residential attractiveness. Retirees, business persons, and others who are prone to leave an area deficient in services are thus also induced to stay. In turn, these people contribute to the purchasing power, production and diversity of the economy

The benefits of diversity apply at the level of the Territorial, regional and community economies, and often at the level of the household economy.

While the advantages of diversification apply at all system levels, the possibilities for diversifying are greater the larger the system in terms of land area and population. A larger land area has a better chance of holding a wide range of resources and can support more activities and therefore potentially a wider range of activities. Similarly a larger population can produce a wider range of products and can provide the market to permit the production of a wide range of goods at competitive prices because of economies of scale. Thus the bigger the social unit, the more diversified it can be in all categories. The Yukon as a whole can be more diversified than Whitehorse or any other community; Whitehorse can be more diversified than Dawson.

Thus population growth can, under the proper policies, contribute to diversification and thus to the attendant benefits of diversification. On the other hand, population growth can also create economic, environmental and social problems and challenges which may outweigh the benefits of growth. In short, from a diversity point of view, population growth for the Yukon would be good. How much, if any, population growth would be good on balance for the Yukon must be decided with reference to the complete set of economic, environmental and social criteria by which alternative Yukon development policies are assessed.

At the regional and community level within the Yukon, the benefits of a larger more diversified economy may be gained by encouraging existing settlements to grow to serve new mines rather than allowing new settlements to be built.

6. Establish planning processes which lead to enhanced diversification

a. Include diversification as a criterion for assessing proposals when allocating funds or giving permits

Environmental impact assessment processes have been developed to ensure that environmental (and now social) impacts are taken into account when projects are being planned. Similar processes could be established to assess government projects, actions or decisions which have impacts on the structure of the economy. These processes need not be overbearing or time-consuming. They need not be seen as regulatory or even as involving the public. It is simply a matter of adding specific consideration of economic diversification to the many factors which government already considers in its decision-making.

b. Monitor progress in implementing measures and trends in diversification

The other side of impact assessment is monitoring. Impact assessment attempts to predict and evaluate consequences of proposed actions, monitoring looks at what has been happening once the decision is taken. Just as impacts of actions on diversification can be assessed, so too can they be monitored. As well, general indicators of diversification can be computed at regular intervals. Information from the monitoring and from indicators can be used to improve future decision-making with regard to diversification.

c. Develop planning processes which encourage creative thought and synergy

Impact assessment and monitoring are reactive approaches to planning. Given the uncertain nature of the world and the diversity of initiatives which comprise an economy, they have an important place in the overall planning picture. Governments at all levels can also assist the diversification process by proactively developing internal and interest-based planning processes oriented to increasing economic diversity. For instance, any of the earlier identified measure for increasing diversity could be the subject of a planning process oriented to determining concretely how the measures could be implemented.

CONCLUSION

There are limits to diversification as a solution to the problems of instability in a regional economy, as a generator of wealth by making an economy more predictable, responsive, and creative, and as a contributor to making a region fair, independent and choiceful.

As we see from the American statistical analyses of diversity, and from the case studies of Alberta's and Saskatchewan's approaches to diversification, simple diversification of activity among sectors in an economy is not a guarantee of stability and growth in regions in the short run. This is especially true, as the Alberta and Saskatchewan experiences with diversification show, if the diversification is only among closely related sectors--e.g., sectors linked by processing sequence such as oil field development and petrochemical manufacturing or sectors which are vulnerable to the same disruptive forces such as export-oriented agriculture and potash mining which are subject to the same world wide price fluctuations in the agricultural commodity markets.

Diversification does, however, increase the long-run stability, what we have called resilience, as well as the productivity, fairness, independence and choice offerings, of formerly highly specialized regions. These benefits are enhanced if the diversity is more than simply intra- or inter-sectoral. Even more important than sectoral diversity is the diversity which involves a balance of activities between market and non-market exchange, between export-oriented and locally oriented production, between winter and summer work, between urban and rural locations, between renewable and non-renewable resource exploitation, and between high-tech and low-tech skills.

There is a downside to diversification. It takes investment to create a diversified economy--investment which if focussed on a sure winner would pay bigger dividends. The problem is that we never know what the economic winners and losers will be. There is too much uncertainty in world markets, in the weather, in the environmental and social impacts of development, and in the policies of powerful governments, unions and businesses for anybody to be able to predict with confidence which products will be producible, transportable and salable at a competitive price at any given time. Were it otherwise, there would be no stock markets or commodity markets since these are based on differences of opinion.

The Yukon suffers in three major respects from the standpoint of diversification: i) the private sector of the economy is highly dependent upon one industry--mining (see Appendix 2); ii) this sector is totally export oriented; and iii) the next most important sector--services--is, apart from the government, also strongly export oriented (i.e., oriented to the export of services to tourists).

On the other hand, the dominance of the mining sector has been lessening over the last two decades, and the diversified resource base and culture of the Yukon provide particular opportunities to maintain and enhance the diversification of the economy.

The implications of this is that the Yukon should and can diversify its economy and its diversification efforts. Lower priority should be put on diversification which involves simply adding industries which are linked to currently dominant industries through a process chain or through closely associated markets. For instance, developing metal milling operations, while desirable from a productivity point of view, does not as such increase stability unless there is an increase of diversity in terms of ownership, technology, or plant size and consequent throughput requirements. Building up a construction industry based on tourism or mining similarly does not as such contribute to stability.

The highest priority should be put on diversifying the economy in ways which reduce dependence on exports in general and any one sector in particular. This can be accomplished by planning and adopting measures to develop a balance between export-oriented and locally oriented production, between market and non-market exchange, and in the seasonality, location, and types of economic activity.

APPENDIX 1. Statistical Measures of Economic Diversity: Problems and Implications

It is a shibboleth of conventional wisdom that diversity is a desirable objective to pursue in the context of personal finance in that it is thought excessively risky to "put all one's eggs in one basket." Similar views pertain to pursuing the goal of diversity at the regional level. It is generally assumed that both economic stability and security, in addition to an increased range of employment opportunities, can be achieved through greater economic diversity. How then does a region go about defining this objective of diversity and how will it know if it is making progress over time toward meeting this objective--in short, can we formulate a measure of economic diversity that will serve as a satisfactory quantifiable objective?

Economic diversity can be defined in a number of ways. The task of establishing a measure or set of measures of diversity is further complicated by the fact that there is no commonly accepted approach to the quantification of this concept. For purposes of narrowing the discussion, let us concentrate on the customary or most frequent focus: sectoral or industrial diversification. There are four basic approaches to constructing a quantifiable index of industrial diversity: the percent of production or employment in non-durable goods production; the national average; the ogive; and portfolio variance. Each will be briefly discussed in turn.

It has been well established that durable goods production is more sensitive to fluctuations over time than non-durable goods. Income elasticities for durable goods tend to be relatively high. During an economic downturn, consumers will readily postpone purchases of durables such as automobiles and major kitchen appliances and continue with their present goods. Assuming that durable goods production in a region is primarily for export, the proportion of durable goods employment to total employment in a region is taken to be an indicator of the vulnerability of the region to national economic fluctuations. A simple measure of economic diversity then, and one which leads to a greater probability of economic stability, is the percent of total employment in the region in non-durable production.

A second measure of economic or industrial diversification pertains to how closely the region's economic structure resembles that of the nation. By means of this measure a diverse regional economy would be a microcosm of the national economy: all industries present in the nation are proportionately represented in the region. Such a circumstance would presumably minimize the region's inclination to import from the rest of the nation, thereby reducing the sensitivity of the region to fluctuations in the national economy.

An index of diversity constructed in similar fashion to the one above is the so-called ogive index. According to this index a perfectly diverse economy would have equal percentages of

employment in all n sectors. Deviations from this pattern move the economy closer to the undesirable polar extreme in which all economic fortunes are tied solely to those of the single industry.

A more recently developed approach to constructing an index of economic diversity is the portfolio variance method (Conroy 1975; Brewer 1985; Brewer and Moomaw 1985), which borrows from the field of finance. This approach assumes that the region's employment in the various economic sectors constitutes the region's industrial portfolio of assets. Every sector of the economy is then considered to contribute to instability or aggregate statistical variance in the economy both through its own variance and through its covariance with other industries in the portfolio. This approach to diversity measurement thus implicitly incorporates interindustry linkages in the economy and is defined as the weighted sum of sector variance and covariance measures over time. The magnitude of the resulting index is dependent on both the observed variance within each sector and the average covariance of each sector with every other sector.

In a recent comprehensive study of industrial diversity and economic performance, Attaran (1986) attempted to establish with data from the fifty states and the District of Columbia for the ten-year period from 1972 to 1981 statistically significant correlations between an index of diversity and measures of per capita income, unemployment, growth rates in both unemployment and per capita income, and measures of instability in both unemployment and income. For purposes of the study, Attaran abandoned the above four measures of diversity and adopted an "entropy" index.

While it is both useful and satisfying to be able to express a social objective in quantitative terms so that progress toward meeting that objective is indeed measurable, there are, however, a number of problems common to all such diversity measures. First, the magnitude of the index is a function of aggregation, i.e., of the number of sectors into which the economy has been conceptually divided. The upper bound to this number is provided by the availability of data. To illustrate the influence of the level of aggregation of the data with the ogive index, suppose employment data were available for four sectors and alternatively for only 3 sectors as shown in the table below.

Sector	Case #1		Sector	Case #2	
	Employment	Ogive		Employment	Ogive
1	20	0.60	1	20	0.53
2	40		2	40	
3	10		3	60	
4	50				

In Case #2 in the above table sectors 3 and 4 are aggregated into sector 3. It is immediately seen that this aggregation changes the value of the ogive index of economic diversity. (Had

the second formula for the ogive--the sum of the squares of the deviations--been used, the differences in the two indices above would have been even more pronounced). As further evidence of the influence of aggregation on the index, suppose that the sector 3 (Case #1) employment total of 10 goes to zero because of the bankruptcy of the firm(s) in the sector. Diversity in the economy has obviously been reduced. However, if the data are aggregated as shown in Case #2, employment in sector 3 simply declines from 60 to 50 and the ogive index declines to 0.44 indicating a significant increase in industrial diversity. The other three measures of diversity are similarly affected by varying levels of aggregation. The magnitude of the portfolio measure is additionally affected by the selection of the time period in which trend values are established.

A second problem, particularly with the first three measures, is that each has an implied desirable norm which is a questionable target. For example, the percentage producer goods index says the most stable economy would be one in which no producer goods were manufactured. According to the national average index, economic stability is maximized when the industrial mix of the economy is precisely the same as that of the nation. The ogive implies a target of equal proportions of all economic activities. The theoretical basis for any one of these arguments is weak at best. The portfolio approach implies that new economic activities to be developed or expanded within the region should be those whose sum of variances and covariances will be minimal. But how can we be assured that calculations based on past trends will be valid in the future, particularly if the new industry changes the interindustry relationships within the region? Theory seems to be of limited help in choosing among the indices.

A third problem with the indices of industrial diversity is that they are narrowly conceived and mechanically constructed. None gives any indication of the benefits to be derived from the attraction of a new firm. Nor is the cost of attracting that firm considered. Further, none of the indices accounts for the displacement effects of a new activity on existing activities, the potential benefits to potential suppliers in the region, the implications for the demands for public services and public finance, the effects on the wage structure in the region, etc.

In short, existing measures of economic or industrial diversity seriously suffer from the various influences of the level of aggregation, weak theoretical bases, the lack of empirical evidence of a significant correlation with measures of economic instability at the regional level, and the absence of considerable information of relevance to the policy maker charged with the task of increasing industrial diversity.

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APPENDIX 2. Labour Force Diversity in the Yukon Economy, 1961-81

Tables 1-3 below reveal some encouraging indications of labour force diversification over the twenty year period from 1961 to 1981. The dominant sector of Mining, Quarries & Oil Wells declined from 16.2% of the total labour force in 1961 to 14.2% in 1971 to 10.8% in 1981. In contrast the service sector expanded its share of the labour force, as it did in all Western economies over this period. The trades sectors (Wholesale and Retail) grew from a combined figure of 7.7% in 1961 to 10.8% in 1971 to 13.8% in 1981. Finance, Insurance & Real Estate quadrupled its proportion from 1.0% to 4.1%. Community, Business and Personal Services also steadily expanded its proportion, growing from 18.5% (1961) to 22.3% (1971) to 25.0% (1981).

If we consider as an indicator of tourism-oriented activity in the region the labour force in the Amusement & Recreation and Food & Accommodation sectors, it is seen that from 1971 to 1981, the census years in which labour force data for these sectors are explicit, there was very little growth. The 1971 and 1981 proportions were 9.4% and 9.5% respectively.

The government remains a dominant employer in the region. The proportion of the labour force in the sector of Public Administration & Defence accounted for 21.1% of the 1961 labour force and 20.8% in 1981. (The data show a drop to 12.6% in 1971 but in that year there was a sizable increase in the Unspecified sector which on the basis of casual observation appears to have been attributable to a shift from the government sector). Within the government sector, however, a measure of diversification has occurred. The Federal government share of the labour force decreased eleven percentage points over the twenty year period, while the Provincial and Local governments recorded a corresponding eleven point gain.

Female participation in the labour force recorded marked gains in the period increasing from 23% in 1961 to 31% in 1971 to 42% in 1981. Similar to the experiences in other economies, these gains were concentrated in the retail trade, service and government sectors.

Table 4 shows the percentage distributions of the respective 1981 labour forces of the Yukon, the Northwest Territories, British Columbia and the B.C. Interior. The Table readily reveals the similarity of the two northern regions in comparison with B.C. and the Interior. Both northern economies show comparatively high proportions of their labour force in the mining and public sectors, while manufacturing is relatively underrepresented. The Yukon shows a greater degree of diversity than does the NWT, however, since 31.5% of its labour force is in mining and government compared with 38% of the NWT economy.

Table 1. Yukon Labour Force by Industry and Sex, 1961

<u>INDUSTRY</u>	<u>MALES</u>	<u>FEMALES</u>	<u>TOTAL</u>	<u>PERCENT</u>
Agriculture	33	1	34	.5%
Forestry	42	0	42	.7%
Fishing & Trapping	71	6	77	1.2%
Mining, Quarries & Oil Wells	968	42	1010	16.2%
Metal Mines	898	40	938	15.0%
placer gold mines	336	12	348	5.6%
silver/lead/zinc mines	547	27	574	9.2%
other metal mines	15	1	16	.3%
Other Mines & Quarries	22	0	22	.4%
Services Incidental to Mining	48	2	50	.8%
petroleum prospecting	13	0	13	.2%
other prospecting	28	2	30	.5%
other services	7	0	7	.1%
Manufacturing	73	22	95	1.5%
Food & Beverages	23	8	31	.5%
Wood Industries	29	2	31	.5%
Printing & Publishing	8	12	20	.3%
Other Manufacturing	13	0	13	.2%
Construction	433	14	447	7.2%
General Contractors	305	12	317	5.1%
building	201	9	210	3.4%
highway, bridge & street	76	2	78	1.2%
other	28	1	29	.5%
Special Trade Contractors	128	2	130	2.1%
Trans., Comm. & Other Utilities	1055	173	1228	19.7%
Transportation & Storage	892	119	1011	16.2%
air & incidental	89	8	97	1.6%
water & incidental	11	0	11	.2%
rail	76	15	91	1.5%
truck	67	8	75	1.2%
highway maintenance	604	80	684	11.0%

other	45	8	53	.8%
Communications	107	50	157	2.5%
Electric Power, Gas & Water	56	4	60	1.0%
Wholesale Trade	58	28	23	.4%
Retail Trade	284	173	457	7.3%
Food Stores	26	26	52	.8%
General Merchandise Stores	93	99	192	3.1%
Retailers of Auto Products	122	7	129	2.1%
Other	43	41	84	1.3%
Finance, Insurance & Real Estat	36	29	65	1.0%
Comm., Bus. & Personal Services	463	690	1153	18.5%
Education & Related	56	128	184	2.9%
Health & Welfare	45	168	213	3.4%
Religious Organizations	43	18	61	1.0%
Motion Picture & Recreational	5	6	11	.2%
Services to Bus. Management	22	18	40	.6%
Personal	285	346	631	10.1%
hotels, restaurants & tav.	231	284	515	8.3%
other	54	62	116	1.9%
Misc.	7	6	13	.2%
Public Admin. & Defence	1159	159	1318	21.1%
Federal Admin.	1105	150	1255	20.1%
defence services	707	73	780	12.5%
other federal admin.	398	77	475	7.6%
Provincial Admin.	5	7	12	.2%
Local Admin.	49	2	51	.8%
Unspecified	161	69	230	3.7%
TOTALS	4836	1406	6242	100.0%

Table 2. Yukon Labour Force by Industry and Sex, 1971

<u>INDUSTRY</u>	<u>MALES</u>	<u>FEMALES</u>	<u>TOTAL</u>	<u>PERCENT</u>
Agriculture	5	0	5	.1%
Forestry	70	5	75	.9%
Fishing & Trapping	25	0	25	.3%
Mining, Quarries & Oil Wells	1090	70	1160	14.2%
Metal Mines	735	35	770	9.4%
placer gold mines	30	0	30	.4%
misc metal mines	705	30	735	9.0%
Other Mines & Quarries	250	25	275	3.4%
Services Incidental to Mining	105	10	115	1.4%
drilling for petroleum	0	0	0	.0%
other contract drilling	20	5	20	.2%
other services	85	5	90	1.1%
Manufacturing	125	30	155	1.9%
Food & Beverages	15	5	15	.2%
Wood Industries	60	0	60	.7%
Printing & Publishing	15	25	35	.4%
Other Manufacturing	35	0	35	.4%
Construction	520	35	555	6.8%
General Contractors	380	20	400	4.9%
building	210	10	220	2.7%
highway, bridge & street	150	5	155	1.9%
other	20	5	20	.2%
Special Trade Contractors	140	15	155	1.9%
Trans., Comm. & Other Utilities	990	180	1165	14.3%
Transportation & Storage	785	85	870	10.7%
air & incidental	140	20	160	2.0%
water & incidental	15	0	15	.2%
rail	50	10	55	.7%
truck	335	20	365	4.5%
highway maintenance	175	10	185	2.3%
other	70	25	95	1.2%
Communications	135	85	220	2.7%

Electric Power, Gas & Water	75	10	80	1.0%
Wholesale Trade	170	45	215	2.6%
Retail Trade	370	300	670	8.2%
Food Stores	40	40	85	1.0%
General Merchandise Stores	80	155	230	2.8%
Motor Veh. Dealers & Repairs	125	15	140	1.7%
Gasoline Service Stations	70	15	85	1.0%
Other	55	75	130	1.6%
Finance, Insurance & Real Estat	80	105	190	2.3%
Comm., Bus. & Personal Services	690	1125	1815	22.3%
Education & Related	165	260	425	5.2%
Health & Welfare	45	255	300	3.7%
Religious Organizations	20	5	25	.3%
Amusement & Recreation	25	25	55	.7%
Services to Bus. Management	65	45	110	1.3%
Personal	45	60	105	1.3%
Accomodation & Food	265	445	710	8.7%
Misc.	50	35	90	1.1%
Public Admin. & Defence	715	320	1030	12.6%
Federal Admin.	305	95	405	5.0%
defence services	10	5	15	.2%
other federal admin.	295	95	390	4.8%
Provincial Admin.	360	205	565	6.9%
Local Admin.	45	15	60	.7%
Unspecified	735	360	1095	13.4%
TOTALS	5590	2565	8155	100.0%

Table 3. Yukon Labour Force By Industry and Sex, 1981

<u>INDUSTRY</u>	<u>MALES</u>	<u>FEMALES</u>	<u>TOTAL</u>	<u>PERCENT</u>
Agriculture	60	35	95	.7%
Forestry	70	20	90	.7%
Fishing & Trapping	30	10	40	.3%
Mining, Quarries & Oil Wells	1195	205	1400	10.8%
Metal Mines	1060	170	1250	9.6%
Other Mines & Quarries	15	10	25	.2%
Services Incidental to Mining	115	25	140	1.1%
Manufacturing	215	125	340	2.6%
Food & Beverages	15	5	20	.2%
Wood Industries	95	5	100	.8%
Printing & Publishing	20	40	60	.5%
Other Manufacturing	85	75	160	1.2%
Construction	865	100	965	7.4%
General Contractors	560	75	635	4.9%
Special Trade Contractors	305	25	330	2.5%
Trans., Comm. & Other Utilities	1230	465	1695	13.1%
Transportation & Storage	955	250	1205	9.3%
Communications	195	200	395	3.0%
Electric Power, Gas & Water	85	20	105	.8%
Wholesale Trade	390	85	475	3.7%
Retail Trade	600	705	1305	10.1%
Finance, Insurance & Real Estat	155	370	525	4.1%
Comm., Bus. & Personal Services	1215	2020	3235	25.0%
Education & Related	165	485	650	5.0%
Health & Welfare	150	400	550	4.2%
Religious Organizations	50	10	60	.5%
Amusement & Recreation	45	45	90	.7%

Services to Bus. Management	245	145	390	3.0%
Personal	40	50	90	.7%
Accomodation & Food	350	750	1110	8.6%
Misc.	170	135	305	2.4%
Public Admin. & Defence	1490	1200	2690	20.8%
Federal Admin.	695	460	1155	8.9%
Provincial Admin.	435	505	940	7.3%
Local Admin.	360	230	590	4.6%
Unspecified	55	50	105	.8%
TOTALS	7560	5395	12955	100.0%

Table 4. 1981 Percentage Distributions of the Labour Force in the Yukon the Northwest Territories, B.C. and the B.C. Interior (B.C. le the Census Metropolitan Areas of Vancouver and Victoria)

<u>INDUSTRY</u>	<u>YUKON</u>	<u>NWT</u>	<u>B.C.</u>	<u>B.C. INT.</u>
Agriculture	.7	.2	2.3	3.9
Forestry	.7	.5	2.7	5.4
Fishing & Trapping	.3	1.2	.5	1.0
Mining, Quarries & Oil Wells	10.8	11.5	1.7	3.3
Manufacturing	2.6	2.3	14.7	16.2
Construction	7.4	5.3	7.8	9.0
Transportation & Storage	9.3	7.0	5.9	5.2
Communications	3.0	2.4	2.2	1.9
Electric Power, Gas & Water	.8	1.7	1.0	.9
Wholesale Trade	3.7	1.6	5.0	3.8
Retail Trade	10.1	9.5	12.5	12.2
Finance, Ins. & Real Estate	9.0	3.7	5.6	3.9
Education Services	5.0	8.1	6.2	5.9
Health & Welfare Services	4.2	5.4	7.2	5.9
Business Services	3.0	1.7	4.5	2.4
Accomodation & Food Services	8.6	4.2	6.9	7.3
Amusement & Recreation Services	.7	.6	1.1	.9
Other Services	3.4	5.3	4.2	3.5
Public Admin. & Defence	20.7	26.5	7.1	6.3
Unspecified	.8	1.4	.9	1.1
Total	100.0	100.0	100.0	100.0