An Introduction to Regional Economic Analysis:

Regional Resource Endowments and Inter-regional Trade.

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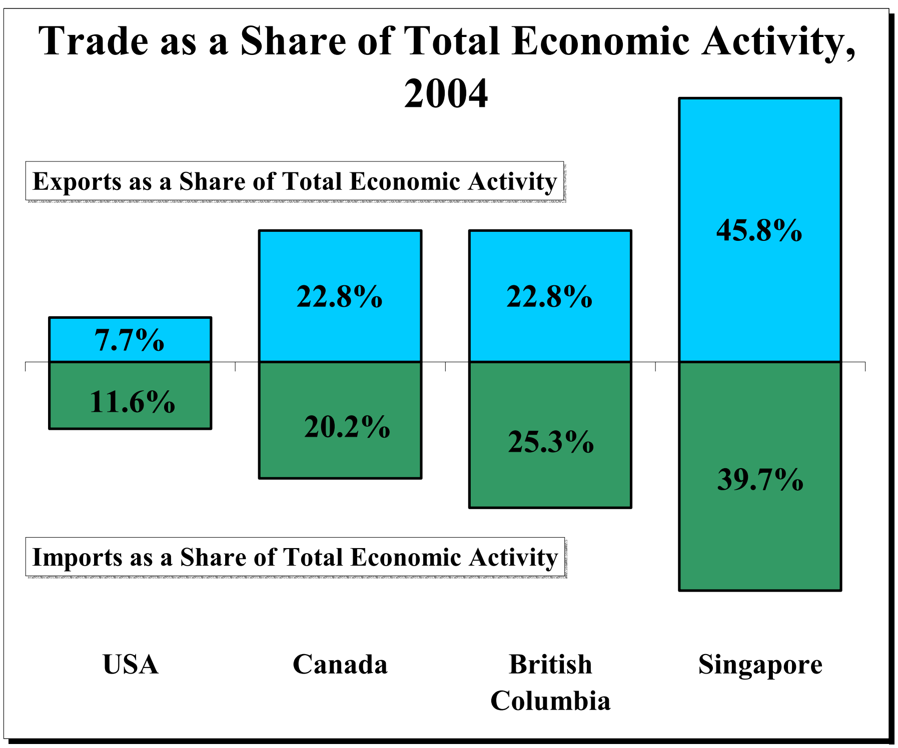

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Background

In January of 2005, the Urban Futures Institute published a report titled *Regions and Resources: The Foundations of British Columbia's Economic Base* (it can be downloaded from www.urbanfutures.com). This report described research that combined time series data on British Columbia's international and inter-provincial exports of goods and services from both balance of trade and customs sources, with labour force by industry and occupation data from the 2001 Census of Canada, to estimate the spatial origins of the province's exports. The report is descriptive, being limited to the presentation of recent data and an interpretation thereof in the context of economic base theory. Based on the data and analysis, the report concluded that approximately two-thirds of the province's exports, and hence of its economic base, originates in rural and resource industries and communities, with one-third originating in the province's metropolitan economies in the Lower Mainland and Capital Region.

Subsequent to the publication of *Regions and Resources*, Northwest Environment Watch commissioned a review of the report and published the review on its website as a guest contribution (it has been appended to this paper for the convenience of the reader). The tone and content of the Northwest Environment Watch's review are exceptional: it is factually wrong, and deeply misrepresentative and misleading about not only the contents and conclusions of *Regions and Resources* specifically, but also of the nature of the economies of the Pacific Northwest, and of regional economic analysis generally. It does not facilitate a deeper understanding of regional economies and, given its tone, detracts from the discourse required to build such an understanding. We remain puzzled as to why Northwest Environment Watch would pursue such a non-constructive approach to the discussion of an issue that is of vital importance to communities on both sides of the 49th parallel.

The fact that Northwest Environment Watch did publish its review does highlight the need for a wider understanding of regional economic structure, as well as the application of economic analysis to regions. A recent commentary on the writings of Jeffery Sachs, Director of the Earth Institute at Columbia University and of the United Nations Millennium Projection, underscores this point:

> ***Sachs argues that economists have generally paid too little attention to geographic factors. In Bolivia, three years into his career as an economic adviser, he met a World Bank consultant named David Morawetz, who pointed out that Bolivia was a landlocked country with high transportation costs. As a result, it had succeeded only in exporting goods with a high value-to-weight ratio, such as silver, tin, and cocaine. Lower value goods, such as foodstuffs, were not worth exporting once the cost of getting them to the market was taken into account. "Morawetz's point about Bolivia's geographical distress was truly (and incredibly)***

> ***something new to me," Sachs recounts. "In all of my training, the ideas of physical geography and the spatial distribution of economic activity had not even been mentioned." (John Cassidy, "Always with Us?", The New Yorker, April 11, 2005, page 75)***

All of the elements of regional economics – resource endowments, the importance of trade, and the cost of market access – are implicit in the description of Sachs' epiphany, as is the reason why these factors are often not considered in discussions of regions' economies.

Given this context, the purpose of this paper is to present an introduction to regional economic analysis, examining a) the role of trade in regions, b) the nature of regional economic structure, and c) the language of discourse concerning regional analysis. This report does not constitute a detailed, point-for-point refutation of the Northwest Environment Watch review – readers may choose to do that at their leisure – but rather it provides a context for, and approach to, regional economic analysis making reference to the review.

Before proceeding, however, it is important to state that *Regions and Resources*, the Northwest Environment Watch review, and this paper are concerned with economics, and specifically, the economics of regional resource endowments and trade. There are many other dimensions of regions and of the interactions between regions - all of which are important and worthy of study, but which are not the subject of this discussion; within this context, the language is that of economics, considering trade in goods and services, and economic well-being.

Thus, for example, when considering a region such as the country of Singapore, the fact that it imports one-half of its water and ninety percent of its food are here seen as part of an economic trade relationship. Given its population of 4.2 million people, living on 697 km^2 of land, one-half of which is devoted to water reservoirs, this trade relationship may also be viewed in cultural, health, environmental, technological, political, military or social contexts.

Similarly, an economic focus on standard of living is used in this report, wherein a wider range of goods and services (commodities) being available to residents of a region is equated with offering its residents a greater degree of economic well-being than that which would be offered by a narrower range of goods and services. In this context, an Artic region whose residents have access to chemotherapy for pediatric cancer patients, and citrus fruits and Vitamin C for everyone, and perhaps the odd coffee bean or two, is seen as offering a higher level of economic well-being than if its residents did not have access to these commodities. There are clearly other perspectives by which the range of goods and services in a region may be considered, many of them useful and interesting, but these perspectives are not the focus of this discussion of regional economic structure and inter-relationships.

Trade and Local Production

In the context of regional economic analysis, trade involves the exchange of goods and services across the boundaries of a region, where the region is generally defined as being a functional one (defined by geographic or economic criteria) or a jurisdictional one (such as a province, state, or nation). Imports are the goods and services that are produced outside of a region and purchased by residents living within it; this takes money out of the region. Exports are the goods and services that are produced in a region and sold to residents living outside of it; this brings money into the regional economy.

The fundamental premise of economic base theory, and hence of *Regions and Resources*, is that trade allows a region to import those goods and services it does not, or cannot reasonably, produce itself, and that exports are necessary to pay for these imports. In this equation, a region's relative standard of living (in economic terms), as measured by the extent and diversity of the goods and services that are available to residents of the region, is determined by the degree to which it is able to pay for (by way of export earnings) what it cannot produce locally. Within this framework, the larger the range of goods and services that can be produced within a region, the less it needs to import, and hence the lower the relative amount of exports required to pay for them. Conversely, the smaller the range of goods and services produced locally, the greater the need to import and hence to export in order to have the same range of goods and services available to the region's residents.

The dependence on exports to pay for imports leads to the characterization of exporting activities as region-sustaining, or region-supporting, and hence as the region's economic base, while non-exporting activities, including both internal transactions and importing, are referred to as region-serving, or population-serving, activities. Economic base theory is only one of the economic approaches to the examination of the structure and change of regional economies: as it is the approach that is most focused on trade, it was used in the analysis presented in *Regions and Resources*, and is discussed here.

In contemporary inter-regional trade, little in the way of actual physical trading of commodities[1] occurs; rather, *money* is exchanged for commodities. This use of money as a surrogate makes trade much more economically efficient, but it also makes the connection between imports and exports less obvious. As such, this separation often means that people do not see the connection between the latte they sip in Seattle or Vancouver and the box of apples from the Okanagan Valley, or the computer software from Seattle or Vancouver, that is sold to people in Asia that indirectly, but ultimately, provided the money to pay for the imported coffee beans used to make the latte. The absence of a physical connection does not deny the existence of imports' and exports' underlying economic interrelation.

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[1] Commodities span the entire spectrum of economic resources, from apples and televisions to tourism and internet advertising. Generally-speaking, trade focuses on merchandise trade (i.e., trade in goods and services), but, as is shown later, it also ties into inter-regional financial flows.

The use of money in the facilitation of trade deserves further comment. In exchange for the commodities that ultimately become a region's imports, the sellers of these commodities must receive something that is of comparable value to what they are selling. The value of what they receive in exchange for their commodities (that is, the amount of money they are paid) is measured when they in turn spend the money to acquire goods and services for themselves. Thus, while a country may print the money that it uses to pay for imports, the value of this money in a trade context depends on its *purchasing power* in the hands of people outside the country. This is the reason that the value of a country's currency is affected by the relationship between its imports and exports.[2]

Boundaries and Trade

The primary importance of trade to a region is that it allows it to import what it does not produce locally, and the extent to what it can produce locally is largely determined by the region's boundaries, in terms of the resources (human, capital, and natural) that are found within them, as well as how easily goods and services can move across them. All other things equal, to have the same diversity of goods and services available to residents:

a) a region with a greater diversity of resources within its boundaries will be relatively less engaged with trade with other regions than one with a more limited resource endowment (e.g., a desert region will be more dependent on trade than a tropical one);

b) a spatially large region will be relatively less engaged with trade than a spatially small one to the extent that diversity of resources increases with geographical size;

c) a populous region with relatively high domestic demand will have a smaller proportion of its economic activity associated with trade than a sparsely settled one to the extent that demand thresholds and economies of scale apply in production; and

d) a region which is easily accessible to other regions, so that goods and services can move across boundaries with relative ease (a function of the relative degree of transportation accessibly and jurisdictional boundary restrictions) will be more engaged in trade than a region with a more closed or less accessible economy.

[2] A country can print as much money as it chooses; however, more *currency* does not equate to more *value* in the country's economy. All else equal, the more money that is printed the easier it is to come by, and as a result the less each unit of currency is worth (as more units of currency are exchanged for a constant economic output). Such a devaluation would be expressed in trade by someone in another currency area requiring more units of currency in exchange for the same quantity of imports sold to the country's residents. Further, a country can borrow from other countries to pay for imports, but as the borrowed money must eventually be repaid, and interest must be paid, this merely shifts the need to export to pay for imports from today to someday in the future.

These factors are generally summarized in the context of regional economic analysis by saying trade accounts for a larger share of economic activity in smaller and relatively open economies than it does in larger and relatively closed economies.

This means that definitions of boundaries are of critical importance in regional economic analysis. *Regions and Resources* is concerned with British Columbia as a region, a geography determined by the reality that, as a province, it is a singular political entity with jurisdiction over the resources, labour standards, health and social spending, and taxation within its boundaries. The report also considers the contribution of smaller regions within the province to the provincial economy, with a particular focus of the differential contributions of the province's two metropolitan regions and its eight non-metropolitan and natural resource regions.

Trade and the Globe

The general tone of Northwest Environment Watch's review is that trade is not particularly important. It begins its commentary on the unimportance of trade by ignoring boundaries, with an observation that the world's economy has grown for decades, even centuries, without commercial transactions with extraterrestrials[3]. Interesting perhaps, but the fact that Earth does not trade with Mars or Venus is totally irrelevant to the discussion of trade on Earth, as such an approach ignores the non-uniform spatial distribution of resources and of economic activity, and the jurisdictional boundaries, that exist on Earth.

Within the framework of regional economic analysis, the globe would be classified as the biggest, most diverse closed economy - an interesting but irrelevant construct. At the other extreme is the individual human, the smallest, least diverse, and most open economy in existence, whose day-to-day survival requires extensive trade with other humans near and far. Between these extremes lies the diversity and hierarchy of regional economies, from households, through communities, geographic regions, provinces and states, to nations and to continents. The importance of trade to each of these will depend upon three factors: a) what they can produce with the resources located within their boundaries; b) what they import to supplement their local production; and c) what they can trade (export) to acquire these imports.

In raising the point that the world's economy has grown significantly over the past many decades, the Northwest Environment Watch review fails to acknowledge that much of this growth has been directly attributable to trade, not extraterrestrial, but rather terrestrial. Increasing trade among the world's regions, brought about by increased specialization, interdependence, and accessibility (through both transportation improvements and the reduction of trade barriers), has allowed regional economies to realize the potential offered by their particular resource endowments, comparative

[3] We certainly agree that *Men in Black* was not a documentary, even though that still leaves us trying to find an explanation for Dennis Rodman.

advantage and scale economies, leading to aggregate growth in the world's economy that would not have occurred without increased trade. Increased trade has allowed the regions of the world to expand the range of goods and services available to their residents beyond what is available within their boundaries by importing from other regions – so long as they are able to export to pay for their imports.

Having said this, the discussion of aggregate global trade and its costs and benefits, like the discussion of extraterrestrial trade, is fascinating but irrelevant to the discussion of the role of trade in the economy of a relatively small and unique portion of the globe. What applies for the globe does not necessarily apply for the province of British Columbia or the state of Alaska, which are relatively small, open economies with relatively limited resource endowments.

Self-sufficiency and Trade in the Economy of the United States

Pursuing its theme of the relative unimportance of trade, the Northwest Environment Watch review turns its attention to the economy of the United States of America with an astonishing comment:

> ***"It is possible to have a totally self-sufficient economy with an elaborately sophisticated economy with extensive specialization and division of labour all facilitated by an internal money supply. The US economy for a good part of its history fit that description, with little more than 5 percent of its total economic activity associated with international trade"***

This statement is wrong, both historically and contemporarily, in both theme and fact. The economy of the United States has never been, is not now, and never will be if it wishes to maintain its current standard of living, "a totally self-sufficient economy". Its history is full of examples of international trade and its consequences and politics: the Boston Tea Party, the Virginia Tobacco Plantations, Boss Cotton and Slavery, the Pacific North West Fur Trading Posts and Manifest Destiny, the Annexation of Hawaii, the Bay of Pigs, and Los Braceros are all part and parcel of a nation deeply involved in international trade, not of a "totally self-sufficient economy".

Just as trade defined much of the history of the United States, so it defines much of the present circumstance of the country. This is specifically evidenced by the treatment it accords to those who are on the receiving end of its trade restrictions, be they the tra and basa farmers of Viet Nam, the prawn farmers of Thailand and China, the sugar producers of the Third World, or the softwood lumber producers of British Columbia. Anyone who follows the extensive debate in the United States over the topic of outsourcing, immigration and "American" jobs, or the impact of its trade deficit on the value of its currency, is fully aware of the importance of trade to that country. The consumers in the United States certainly see trade as important, with Walmart annually importing, from China alone, $50 worth of consumer goods for each man, woman, and child in the United States.

One could perhaps let these facts slide as quibbling about the difference between the meaning of "totally self-sufficient" and "little more than about 5 percent of its total economic activity associated with international trade" if not for the fact that 19 percent of the economic activity in the United States is associated with trade, four times what the Northwest Environment Watch review says it is. Although comparisons of the measured dollar contributions of the various sectors of an economy suffers from a number of limitations, the Northwest Environment Watch review uses this approach as a way of measuring the importance of trade, so it is therefore useful to see what such measurements actually show about trade relative to other dimensions of economic activity. According to the US Department of Commerce's Bureau of Economic Analysis[4], measured economic activity[5] (the production, consumption, and trade of goods and services) in the United States in current US dollars was comprised of:

Personal consumption expenditures (C)	$8,230 billion (53.8%)
Government consumption expenditures and gross investment (G)	$2,184 billion (14.3%)
Gross private domestic investment (I)	$1,927 billion (12.6%)
Imports (M)	$1,782 billion (11.6%)
Exports (X)	$1,175 billion (7.7%)
Total Economic Activity	$15,298 billion (100%)

The import component of international trade accounts for 11.6 percent of the economic activity in the United States' economy, while the export component accounts for a further 7.7 percent; thus, international trade (the total of importing and exporting activity) accounted for 19.3 percent (where "trade" is the sum of imports and exports in total economic activity). Over the past decade, international trade has accounted for roughly this share of economic activity, moving within an 18 to 20 percent range that represents the highest levels recorded. The five percent range alluded to by the Northwest Environment Watch review, the lowest level recorded in the BEA data series (which includes the 1929 to 2004 period), occurred only from 1942 to 1945.

There are two more points about this analysis that are important to note, both of which concern net trade (or the trade balance), which is calculated by subtracting the value of imports from the value of exports. The first point is that net trade does not measure the importance of trade, as a region with balanced trade flows (imports equal exports) has a zero net trade balance regardless of the level of trade that the region is engaged in.

The second point is that if the trade balance is negative, as it is with the $607 billion negative difference between imports and exports in the United States in 2004, this merchandise trade deficit must be offset by a corresponding financial outflow if the

[4] http://www.bea.gov/bea/dn/nipaweb/SelectTable.asp?Selected=Y#S1, Table 1.1.5 Gross Domestic Product (Q) (A) 1929 to 2004.

[5] Note that the measure of the level of economic activity in the US used here is **not** Gross Domestic Product, a measure which focuses on production rather than economic activity, and hence subtracts, rather than adds, imports. If GDP were used as the base in the calculation of trade's relative contribution, then it would account for a much greater share than using the total economic activity measure employed above.

country is to pay for its imports. The only way this can occur is if other countries either give or lend money to the United States' economy. To the extent that the trade deficit is financed by borrowing, the deficit represents a contingent future liability that will affect (and in fact is already affecting) the value of the US dollar.

It is appropriate to compare the role of trade in the US economy, the world's largest, to that in other economies, as the comparison clearly demonstrates the role of boundaries, and hence the extent of the included resource endowment, on the relative role of trade as discussed earlier in this paper. With only 32 million people, compared to the United States' 296 million, and with both a different and, given its more northern location, more limited range of resource endowments (particularly with respect to climate and soils), trade accounts for a much larger share of economic activity in Canada. In 2004, according to Statistics Canada,[6] economic activity measured in current Canadian dollars was comprised of:

Personal consumption expenditures (C)	\$723 billion (33.3%)
Government consumption expenditures and gross investment (G)	\$282 billion (13.0%)
Gross private domestic investment (I)	\$232 billion (10.7%)
Imports (M)	\$437 billion (20.2%)
Exports (X)	\$495 billion (22.8%)
Total Economic Activity	\$2,169 billion (100%)

With a smaller economy and a less diverse resource endowment, international trade accounted for 43 percent of economic activity in Canada, twice the share in the United States. Both imports (20.2 percent) and exports (22.8 percent) account for a greater share of Canada's economic activity than of the United States'. Note that Canada's positive merchandise trade surplus is one of the reasons its currency is appreciating.

British Columbia, with a population of only 4 million, accounts for 13 percent of Canada's population. As Canada's pacific and mountain province British Columbia has a unique resource endowment, something that is reflected in the composition of its trade flows. As a result, trade (including both international and inter-provincial flows) accounts for a larger share of economic activity in British Columbia than it does in Canada as a whole. In 2004, according to Statistics Canada[7], measured economic activity in the province in 1997 constant Canadian dollars was comprised of:

Personal consumption expenditures (C)	\$89 billion (31.9%)
Government consumption expenditures and gross investment (G)	\$26 billion (9.4%)
Gross private domestic investment (I)	\$30 billion (10.6%)
Imports (M)	\$70 billion (25.3%)
Exports (X)	\$63 billion (22.8%)
Total Economic Activity	\$278 billion (100%)

[6] http://www.statcan.ca/english/Pgdb/econ04.htm
[7] Statistics Canada, Provincial and Territorial Economic Accounts, 2003 (Ottawa, 2004), Page 16.

In total, trade between British Columbia and the rest of the world accounted for 48.1 percent of the province's total economic activity, compared to a 43 percent share for the country as a whole. The province's imports account for 25.2 percent of its economic activity, compared to 20.2 percent at the national level, indicating that its more limited resource endowment means it must import a wider range of goods and services to supplement local production. Unlike the nation, with its trade surplus, in 2004 the province ran a trade deficit.

The country of Singapore, with such a limited internal resource endowment that it imports half of its water and 90 percent of its food, provides an extreme example of the importance of trade in an economy. According to the Singapore Department of Statistics,[8] economic activity in Singapore in 2004 measured in current Singapore dollars was comprised of:

Personal consumption expenditures (C)	$76 billion	(8.6%)
Government consumption expenditures and gross investment (G)	$19 billion	(2.2%)
Gross private domestic investment (I)	$33 billion	(3.8%)
Imports (M)	$349 billion	(39.7%)
Exports (X)	$403 billion	(45.8%)
Total Economic Activity	$880 billion	(100%)

The need to import the wide range of goods and services that cannot be produced locally results in imports accounting for 39.7 percent of the total economic activity in Singapore; the need to pay for these imports means that Singapore must export a matching amount, with exports accounting for 45.8 percent of the economic activity in this island nation. In total, international trade accounts for 85.5 percent of the all of the economic activity in Singapore. Largely as a result of its success in trade, Singapore has the highest standards of living, of health, and of education, in South East Asia: no one in Singapore would suggest that because Earth does not trade with Mars, trade is unimportant to Singapore.

While Singapore's high dependency on trade may be not be the norm for most nations, this city-state is representative of cities and metropolitan regions everywhere. Cities survive only because of trade: given their density and limited land area, they cannot feed, cloth, or house their populations without trade with other regions and countries, and can never be self-sufficient, although they can be sustainable.

Further, as exemplified by Singapore's imports water and food, comparison of the dollar value of imports, exports, and domestic economic activity leaves out consideration of the strategic importance of commodities. Returning to the Northwest Environment Watch review's characterization of trade's relative unimportance in the US economy, one cannot, at this point in history at least, fail to comment on the United States' dependency on imported fossil fuels. This single dimension of trade, regardless of how big or small a share of total economic activity it may comprise in the United States, is of fundamental

[8] http://www.singstat.gov.sg/keystats/mqstats/ess/aesa71.pdf,
http://www.singstat.gov.sg/keystats/mqstats/ess/aesa14.pdf.

importance not only to the US economy, but also to its domestic and international political policy as well. In 2003, the United States imported $20.3 billion worth of natural gas,[9] less than one-half of the $43.7 billion that its residents spent in barbershops and beauty parlours[10]: one learns nothing about the strategic importance of natural gas imports from the fact that they are less than one-half the dollar spending on haircuts and pedicures.

It is also important to note that the discussion of the role of trade in the aggregate United States' economy ignores the role of trade among regions within the country. Trade with other states and countries plays a greater relative role in the economies of Washington State and Oregon than international trade does for the United States as a whole. The fact that Washington's lumber sales in Illinois do not show up in the United States' international trade data does not deny the reality that interstate lumber sales form part of Washington's economic base, just as inter-provincial lumber sales are, as *Regions and Resources* empirically demonstrates, are part of British Columbia's economic base One cannot draw conclusions about the composition or structure of a region's economic base by simply describing the economic base of the nation in which it is located.

A discussion of the relative magnitude of trade in one economy has no applicability to the subject of the magnitude of trade in another region. As was shown earlier, in comparison to the United States, British Columbia has a relatively limited resource endowment, and hence has a greater reliance on trade. This is not to say that comparisons are not useful: from a research perspective it would be most interesting, for example, to compare the economic base of the state of Alaska to that of the province of British Columbia to see not only the relative importance of trade – both inter state/province and international – to these two jurisdictions, but also to see the ways in which the composition of their trade flows differ, and the possible economic strategies that could be adopted in each region in light of the findings of such a comparision.

Resource Endowments and Self-Sufficiency

British Columbia has a relatively limited resource endowment, a reality largely dictated by its climate and physical geography (tea, coffee, bananas, and citrus fruits do not grow easily in this province, but it is long suited in evergreen trees, rocks, and water, and has a relatively pleasant climate in some places sometimes). This means that in order for its residents to have access to relatively the same range of goods and services as residents of regions with more diverse resource endowments, it has to import a relatively greater range of goods and services, which in turn means it also has to export proportionately more.

This does not deny that British Columbia *could* have a "totally self-sufficient" economy; however, in order to do so its residents would have to forego consumption of all goods

[9] US Energy Information Administration http://www.eia.doe.gov/emeu/international/gas.html#USTrade
[10] US Bureau of Economic Analysis, http://www.bea.gov/bea/dn/nipaweb/SelectTable.asp

and services that could not be produced within the province. The limited range of goods and services that a "self-sufficient" region would offer to residents would not likely be appealing to most of them and, to the extent that they could move to regions which offered a wider range of goods and services, they would do so: self-sufficiency might sound attractive, but only up to the point that someone wants a coffee or needs chemotherapy. . Further, the reduction in domestic demand that would result from a significant number of people moving out of the region would lead to a significant decline in local economic activity: this is the downward spiral that small communities fear will result from economic change.

This does not imply that the non-trade (population-serving) dimensions of a region's economy are unimportant – it does mean, however, that unless a region has a wonderful diversity of resources situated within it boundaries, the non-trade dimensions would not likely survive to any significant degree without trade, as people would not remain in the region if their economic well-being was limited to locally produced goods and services.

There are three ways in which participants in the population-serving portion of a region's economy can measure the importance of exports to their economic activity, each of which is made with reference to the role imports play, directly or indirectly, in their economic activity:

> a) To what extent do they, and their suppliers, use imported goods and services in their economic production: does the brain surgeon use imported equipment?
>
> b) To what extent do they and their customers consume imported goods and services: does the brain surgeon drink tea?
>
> c) To what extent would their customers leave the region if imported goods and services were not available: will the brain surgeon have enough patients to stay in business in a region where economic well-being is limited to locally produced goods and services?

The greater the direct and indirect reliance on imported goods and services in each of these three contexts, the greater the importance of exports in the lives of those people and businesses working in the population-serving sector of the economy, even if they are not direct participants in exporting sectors.

On Sustainability and Self-Sufficiency

Northwest Environment Watch's review touches on the concepts of sustainability and self-sufficiency, two topics that are worthy of comment in the context of the importance of trade in a regional economy. To the extent that self-sufficiency means providing residents with goods and services entirely from local production, it is necessary to repeat that this will limit what is available to the region's residents to those products and services that can be produced with the regional resource endowment.

This raises the concept of what "can" be produced within a region. Technically-speaking, if enough resources are applied to the task, almost anything could likely be produced in a region. However, in such a circumstance resources would not be employed in the most efficient manner: it would take a great deal of energy, and contribute more to global warming, to produce coffee in northern British Columbia than would be required to produce the coffee in a sustainable fashion in Brazil and transport it to northern British Columbia. Allocational efficiency – using the least cost combination of resources (including internalizing external costs and benefits) to produce products – suggests that self-sufficiency may not be sustainable if it means trying to grow pineapples in the Yukon or Alaska.

Sustainability, in contrast, does not require limiting the standard of living to regionally produced goods and services; rather, it means producing and accessing goods and services in a way that does not limit the opportunities of future generations as a result of today's actions. This implies being as economically efficient as possible by ensuring that all costs and benefits are accounted for in using the fewest resources to produce each commodity. A sustainable community would likely be involved in significant levels of trade, ensuring that goods and services were produced in a way that promoted sustainability, with the most appropriate regions following their comparative advantages rather than wasting resources in attempts to produce everything everywhere.

An example of one of the possible unintended consequences of pursing self-sufficiency is, in the name of energy self-sufficiency for the United States, the contemplation of drilling for oil in, and construction of a pipeline through, the Alaska National Wildlife Refuge. Better-managed energy trade relationships might turn out to be more sustainable than this go-it-alone approach to energy self-sufficiency. As a further example, the recent tariffs imposed on shrimp imports to the United States from South East Asian countries will make the United States more self-sufficient in shrimp, but it will do so by reducing the economic well-being of both consumers in the United States (who will pay higher prices) and shrimp farmers in South East Asia (who will have lower incomes). This misallocation of resources in both countries will lead to more shrimp being caught by US producers and fewer being raised by South East Asian farmers solely as a result of an effort to increase the income of shrimp producers in the United States.

If self-sufficiency is meant to be achieved not by local production of what would otherwise be imported but by reducing the range of goods and services available to residents of a region, then at some point imports, and hence exports, are not necessary. Perhaps people in Whitehorse and Juneau should not consume tea or coffee or should move to some place where they could consume these commodities without inter-regional trade – an interesting normative concept, but not one that is likely to gain much traction as a policy in most communities.

In reality, there are few regions in the world (and most certainly not Alaska or British Columbia) where the region's resource endowment makes self-sufficiency feasible, desirable, sustainable, or economically reasonable. If Northwest Environment Watch is advocating such a dramatic measure of significantly reducing the range of goods and services available to regions' residents, it should advocate that, rather than self-sufficiency per se. Even at a reduced level of consumption, the most efficient use of resources will come not from isolationism, but rather, given the world's non-uniform distribution of resources and accompanying pattern of comparative advantage, through trade.

Comparative Advantage and Trade

The nature of a region's resource endowment not only determines its relative reliance on trade to achieve a level of economic well-being comparable with other regions: it also influences the nature of trade in which it will be engaged. In an economic context, a region should produce those goods and services that it is relatively most economically efficient at producing (i.e., it should produce those commodities which it can produce at the lowest opportunity cost, or in which it has a *comparative advantage*), export these goods and services to other regions, and buy other goods and services from those regions that have comparative advantages in the production of those commodities. It is the matching of comparative advantage through specialization and interdependency, whether it is at the level of an individual, a community, a region, a province or state, or a nation, that a given level of economic well-being can be attained using the fewest scarce resources. A region attempting to go it alone - trying to produce everything – may, or may not, lead to self-sufficiency, but it will certainly waste resource.

While there are many factors that determine the activities in which a region has a comparative advantage, one that plays a fairly significant role is a region's natural resource endowment. It is relatively, but not absolutely, likely that a region with significant coastal exposure to substantial marine fish stocks and abundant forests will be capable of producing goods and services that draw on those resources at a lower full economic cost than would forestry and fish production in land-locked prairie and grassland regions.

Changing Resource Endowments

Obviously, regions have different resource endowments, which leads to a differential pattern of comparative advantage (which is why we have trade); less obviously, resource endowments and comparative advantage changes, both as a result of economic development within the region and the changing valuation of the region's resource endowments by the rest of the world. In a historical context, a pattern of changing resource endowments (human, capital, and natural), and accordingly, a pattern of changing comparative advantage, has long been observed, as economies that were originally characterized by primary resource harvesting becoming characterized by goods manufacturing and then by the production of software and services.

In articulating this progression it is important to note that the pattern of development that underlies this changing characterization does not necessarily imply the replacement of one industry by another, as most it often reflects the addition of new industries **and** the adaptations of existing ones. The fact the Washington and British Columbia have changed from being characterized first as fur trading regions, then agriculture and forestry regions, then adding mining and port/trade functions, expanding into manufacturing, and then into high-tech and service sectors does not mean that there are no forestry towns in Washington or British Columbia, nor that they no longer have communities dependent on fishing, farming, or mining. In spite of the on-going development of the provincial and state economies, the source of income, wealth and comparative advantage for some communities and regions remains embedded in their foundations in fishing, farming, forestry, or mining: their livelihoods continue to "spring from the earth" or, in the case of fishing, from the sea.

Thus, while Microsoft and Electronic Arts sell their software globally, and Vancouver and Seattle compete for cruise ship traffic and movie shoots, in the markets of Bangkok one sees boxes of apples from the Okanagan Valley of British Columbia and Washington State. For farmers in the orchard communities of our interior valley, the fundamentals of economic activity are as they were in these communities one hundred years ago. For these communities, their dependence on the earth and on exports as a source of wealth, income, and the ability to purchase goods and services produced elsewhere is not, as Northwest Environment Watch's review puts it, "long discredited and abandoned historical curiosities", but rather a living reality.

This is not to say that other economic activities have not been added to the economies of the Okanagan Valley, but merely that traditional primary economic activities remain a part of the economic base of these regions and must be recognized as such. As *Regions and Resources* demonstrated, in the case of the province of British Columbia, two-thirds of the income that the province earns to pay for its imports comes from export activity that is directly linked to rural and resource activities such as farming, timber harvest, mining, and fishing. Metropolitan economies account for one-third of the income the province earns to pay for the imported goods and services. This in no way characterizes the greater Vancouver economy as, in the colourful language of the Northwest Environment Watch's review, "simply an avaricious parasite living off the wealth generated by the hardworking folks in the hinter land", as the empirical evidence presented in *Regions and Resources* clearly shows that the Lower Mainland and Victoria economies account for a full one-third, but only one third, of the province's export income.

Note that the rural and resource industries have not remained unchanged in the face of economic development. The green chain is gone from most mills, replaced by computer-driven saw lines that optimize the cut of the wood to match market pricing for dimensioned lumber. However, the mills are still sawing up trees harvested from the forests, and the communities dependent on these mills for employment still acknowledge that the wealth of their community comes from the land, together with the skills of residents and the capital assets that they have to work with.
Further, it is also import to note that much of the evolution of regional economies has been part of a process where some of the "old" economy merely moved, not disappeared.

The fact the Microsoft and Electronic Arts represent the "new" parts of the economies of Seattle and Vancouver does not negate the corresponding fact that somewhere else in the world the "old" economy that supports the high tech sector continues in the mines, smelters and factories that make the hardware, and power plants that generate the electricity, that are necessary for the software and games to run on.

It is important to again state that, while empirical evidence clearly shows that British Columbia is primarily a resource dependent region, this reveals nothing about other regions. Just as the United States' economy cannot be used to characterize British Columbia's, so British Columbia's cannot be used to characterize Alberta's or Oregon's. In each case, empirical research must be carried out to determine the extent to which each economic activity contributes to the region's ability to import the things it needs and wants that it cannot reasonably produce locally by exporting the things that it *can* most efficiently produce.

How big is local?

The Northwest Environment Watch review invokes the writing of the great economist Adam Smith in a very curious fashion. It correctly characterizes Smith's concepts of specialization and the division of labour, and the importance of webs of "increasingly sophisticated economic interdependencies that create more and more niches for economic actors to deploy their skills and resources". It is exactly these specializations and interdependencies that generate the importance of and reasons for trade.

But Northwest Environment Watch's review adds something to this concept not found in Smith's work by characterizing these webs as "local" ones, whatever "local" may be. While they certainly can be, there is no basis in either Smith's writings or subsequent economic research that says that they are, or should be, "local". Resources are not uniformly distributed, and allocational principles of economic efficiency encourage the pursuit of comparative advantage, which in turn leads to increasing specialization and interdependency: this applies at every level of economic activity, from the individual, to communities, regions, nations, and continents. The existence of specialization necessitates trade, be it down the block, up the road, or across the ocean, and trade creates interdependencies - exactly the opposite of the notion of self-sufficiency.

In the context of "increasingly sophisticated economic interdependencies that create more and more niches for economic actors to deploy their skills and resources" there is no local limit: what applies to the individual applies to the world. The narrower the distribution of resources within an economic entity, the greater the opportunity for "increasingly sophisticated economic interdependencies" with other economic entities by trade relationships "that create more and more niches for economic actors to deploy their skills and resources".

No matter how fine and complex the local webs of interdependencies are woven in the economies of Fort Saint John or Anchorage, they are not places where it makes any sense to grow pineapples. And the economic leg of the sustainability stool argues that scarce resources should not be wasted attempting to do so, but rather that these city regions should produce the commodities they most efficiently can, and trade them for pineapples that originate where they can be grown in the most sustainable manner.

On Building a Better Understanding

In the context of an introduction to regional economic analysis, it is important to consider **why** and **how** the discussion of regional economics might be conducted. The answers to the question of **why** are many, ranging from satisfying curiosity, to gaining better understanding of change and risk, to gathering better information in order to make better decisions, to fostering discussion or supporting an advocacy position. Each of these are valid reasons and should be respected. There are no criteria for saying who may, and who may not, conduct research on regional economics, nor for saying what are, and are not, acceptable reasons for doing so.

There are, however, criteria for **how** research is conducted: it should be done in an honest and respectful fashion. In both these regards, the approach presented by the Northwest Environment Watch review is one that other researchers might chose to avoid.

The Northwest Environment Watch's review attempts to dismiss, rather than discuss, other research. In the case of *Regions and Resources*, its review resorts to calling the report's authors "self-interested parties flogging … theories rather than treating them as long discredited and abandoned historical curiosities". While colourful, it is not readily apparent what contribution such language makes to the understanding of regional economics. Clearly, one neither can, nor need to, defend oneself when charged with self-interest, as self interest lies at the base of all research. The only reason people do research is to get something out if it, whether it is a satisfied curiosity; better understanding; support for arguments; tenure; peer adoration, fame and glory; funding; or a fat government consulting contract. The **why**, however mysterious or obvious, is not important – it is the quality of the research, not of the persons doing it, that should be the focus of the discussion of regional economic analysis.

It is puzzling that Northwest Environment Watch would raise the issue of "self-interest" as a criterion for the judgment of the quality of the research of others, as it immediately raises the issue of its own self-interest. If, as implied in their review, research from "self-interest" groups is inherently corrupt, this must apply equally to their research and publications. Is the question of what Northwest Environment Watch is "flogging" to be raised every time they publish something? We hope not – name-calling and innuendo do not further understanding or civil discourse – and besides, it is the quality of the work that is done that is to be judged, not the authors.

We humbly submit that in order to contribute to understanding and civil discourse, research should be respectful, factual, honest, logical, and evidence-based. Again, the Northwest Environment Watch review may not be the best approach, as misrepresentation for dramatic purposes becomes merely self-demeaning once the misrepresentation is identified. For example, the Northwest Environment Watch review characterizes the conclusions of *Resources and Regions* as follows:

> ***"Less than 10 percent of total BC employment is in the natural resource sectors. Is an economic assumption that tells us that 90 percent of the province's jobs and 85 percent of its production are irrelevant a reasonable way to approach public economic policy? Does an economic assumption that urges the Province's rural areas to focus exclusively on natural resource extraction with its accompanying dependency, instability and environmental disruption lay out a safe path for sustainable rural development?"***

Nowhere in *Regions and Resources* are such comments either stated or implied. The report does not state that 90 percent of the employment and 85 percent of the production in the province are irrelevant. *Regions and Resources* is neither normative nor prescriptive: it does not comment on public economic policy, it does not suggest in any way that rural areas should focus on exclusively on natural resource extraction or on any other activity, and it does not encourage following any paths to any form of rural development, sustainable, safe, or otherwise. *Regions and Resources* simply demonstrates that at this point in time two-thirds of the province's export income comes from rural and resource activities and one-third does not.

Note that, a focus "exclusively on natural resource extraction" is in no way is necessarily accompanied by "dependency, instability and environmental disruption", at least no more than a focus exclusively on any single segment of the economy is. Diversification only makes sense if there can be a "more efficient use of scarce resources" case made for it, as otherwise it merely represents waste. Dependency (interdependency) comes with specialization and its accompanying webs of interactions; instability results from not managing, or not being able to manage, change; and environmental disruption is about how - not if - something is done.

While it does not equate natural resource extraction with instability or environmental disruption, *Regions and Resources* does imply that pursing trade in a way that reflects regions' differing pattern of comparative advantage will make regions increasingly dependent on other regions as part of "increasingly sophisticated economic interdependencies that create more and more niches for economic actors to deploy their skills and resources" and the more efficient use of resources.

Finally, Northwest Environment Watch's review states that the conclusions of *Regions and Resources* are "not based on analysis or data": truthfully, *Regions and Resources* presents 29 data charts, 4 data tables, lists all of its federal and provincial government data sources, and is solely concerned with the analysis of these data.

Having veered perilously close to a point for point refutation of the Northwest Environment Watch review, it is important to step back into the general context of regional economic analysis to note that the review illustrate the shortcomings of replacing research with rhetoric. The most viable approach to regional economic analysis and its discussion are not who did it or why, but how it was done and presented:

a) Does the work document its data, its data sources, and its logic in a way that an independent third party can duplicate the results?;

b) Does the analysis actually lead to the conclusions stated?; and

c) Is the research presented honestly, in that it does not misrepresent its data, its data sources, its methodology, or its conclusions?

These are the criteria that should be applied to any analysis, be it of regional economies or anything else. While no work is perfect, if it adheres to these criteria it can make a valuable contribution to the better information and better understanding necessary to make better decisions.

To close, we anticipate that, while reading *Regions and Resources*, you may find limitations to the application of economic base theory, to the data used, to the analysis of these data, and to the conclusions drawn – we fully acknowledge that such shortcomings exist in all research – but we also trust that you will find that *Regions and Resources* positively responds to the three questions listed above.

A continuing respectful and informed discussion of the issues and dimensions of regional economic structure will be essential to finding the paths to not merely one sustainable region, but to a world of sustainable regions. Good luck in your research.

Cascadia Scorecard Weblog

Northwest Environment Watch's take on the news that really matters

January 26, 2005

BC's Resource (In)dependence?

Editor's note: We asked … {the reviewer} … to comment on a new report by BC's Urban Futures arguing that the province's primary economic engine is its natural resource exports. … {the reviewer} … disagrees--and argues that true economic development has little to do with exports and everything to do with creating a web of local economic relationships.

Two and a half centuries ago, early economists in France postulated that all wealth springs from the earth: farming, timber harvest, mining, and fishing were the sole sources of value, value that then circulated throughout the rest of the economy. It was not a coincidence that the ruling landed gentry who controlled the dominant resource, agricultural land, supported this theory. In England, at about the same time, a different theory dominated: All wealth results from exports that bring in the outside income that circulates through the economy. It was not a coincidence that the rising commercial trading class strongly supported that theory.

Economics as we know it, starting with Adam Smith, developed as a critical attack on such self-serving narrow conceptions of the "origins of the wealth of nations." But two and a half centuries later we still have self-interested parties flogging these theories rather than treating them as long discredited and abandoned historical curiosities. The Urban Futures, Inc. consulting group's "Regions and Resources: The Foundations of British Columbia's Economic Base" (article here; pdf of executive summary here); is the latest example.

The report argues that the BC economy continues to be almost exclusively dependent on natural resource industries operating in the rural areas of British Columbia. The greater-Vancouver metropolitan economy is simply an avaricious parasite living off the wealth generated by the hardworking folks in the hinter land.

This view of the BC economy is not based on analysis or data but on a simple assumption: All income and consumption and, therefore, well-being in BC is totally dependent on the income generated by BC exports to the rest of the world. There is no other source of economic activity and well-being except the income injected into BC by those exports.

This is clearly a false assumption. If it were true, no economic activity would be taking place on our entire planet since we have yet to enter into trade relationships with other worlds. In the economic history of our planet, we have never made a commercial transaction with extraterrestrials. According to this study, then, there must be no economic activity taking place on Earth. Yet, despite the planet's failure to commercially export anything, the world's economy has been expanding at a brisk pace for decades, even centuries.

Let me make a blunt economic assertion: The function of exports is not to "bring money into the economy" to support internal economic activity. Exports have only one function: to pay for the importation of goods and services that we do not produce ourselves. The more self-sufficient our economy is, the less we need exports.

Exports involve combining our work-effort with our savings and the local gifts of nature to produce valuable goods and services that we then send away for other folks to enjoy. How could that improve our well-being? In return we get colorful pieces of paper printed in other countries which are called “money” or, if we are really old-fashioned, a soft yellow metal called gold that we then put in an underground vault somewhere.

How could either of those improve our well-being? There is only one way: We use those foreign-printed colorful pieces of paper or that soft yellow metal to buy from other countries what we cannot easily produce ourselves. Those imports do improve our well-being since they give us access to something that we otherwise would have to go without or produce at a higher cost. So it is the imports, not the exports, that improve our well-being. The exports are a way of paying for the imports.

This is the reverse of the two and a half century old mercantilist theory that Urban Futures Inc. is trying to sell us. We only need exports to cover the cost of our imports and we only need imports to the extent we cannot produce certain things ourselves. Most of our economic activity does not fall into either category.

Where would we get the money that currently circulates within our economy if it were not for exports? The same place we get it now: The government and the banking system would simply create it! Money is, after all, simply colorful pieces of paper, jingling coins, or accounting entries at a bank. Money is a medium of exchange that facilitates internal economic exchange so that we do not have to do all of our trade in barter terms. It is possible to have a totally self-sufficient economy with an elaborately sophisticated economy with extensive specialization and division of labor all facilitated by an internal money supply. The US economy for a good part of its history fit that description, with little more than about 5 percent of its total economic activity associated with international trade. That did not hobble American economic growth.

True economic development does not involve more and more extensive dependence on exports. True economic development consists of weaving a local web of increasingly sophisticated economic interdependencies that create more and more niches for economic actors to deploy their skills and resources in satisfying an increasing range of their fellow citizens' needs and desires. That increasingly sophisticated web of local economic relationships creates economic opportunity while capturing and holding more and more of the money that circulates within the local economy. This is not a new theory. It was basis of Adam Smith's *Wealth of Nations*: The increasing specialization and division of labor.

That, of course, is what the greater-Vancouver economy is all about. It is also that type of diversification that has brought relative prosperity and stability to much of southern BC as the natural resource industries have provided a continuously shrinking fraction of total jobs.

Less than 10 percent of total BC employment is in the natural resource sectors. Is an economic assumption that tells us that 90 percent the Province's jobs and 85 percent of its production are irrelevant a reasonable way to approach public economic policy? Does an economic assumption that urges the Province's rural areas to focus exclusively on natural resource extraction with its accompanying dependency, instability and environmental disruption lay out a safe path for sustainable rural development? I think not!