Canadian Public Policy in a Knowledge Based Economy

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1. Good Government in a Knowledge-Based Economy

The basis of Canadian freedom is the right to "peace, order and good government." In an information-based economy, "good government" is a more tightly defined concept than what many Canadians are used to. Since the 1970s, the federal government has justified an activist and interventionist public role in the economy as a way of fostering a unique Canadian identity, equalizing incomes across the country, and differentiating Canada from the United States. In this section, we argue that these undertakings seriously compromise Canadians' economic security in a knowledge-based economy, and are therefore no longer "good government" by any definition.

This does not mean that good government in a knowledge-based economy must be small government. Rather, a good government is a "competitive" government. A competitive government delivers only the public goods and services people want and at prices they are willing to pay. A competitive government is also an innovative government, always searching for ways to bring down costs to taxpayers and for new public goods or services they might be willing to pay for.

Canada's government hardly fits the description of a competitive enterprise. While the real costs of airline travel, computer power, and many other goods have declined markedly with a succession of innovations, the cost of Canada's government has risen. While quality and consumer satisfaction have risen with each innovation in car making, music distributing, and telecommunications, Canada's government delivers more or less the same public goods and services it delivered twenty years ago to an increasingly unappreciative public. While many other governments are little more competitive than Canada's, accidents of geography and history make the United States Canada's primary competitor for capital and talent. Therefore it is by that economy that we must gauge our government's performance.

The US economy illustrates the sorts of trade-offs that are feasible in the public sector. States like Massachusetts, Minnesota, and California have relatively large public sectors and high taxes. Others, like Arkansas, Oklahoma and Texas, have small public sectors and low taxes. Yet entrepreneurs, skilled workers, and savings do not drain from Minnesota to Arkansas. Enough people think that life in the higher tax state is worth the price. An even larger public sector could be competitive if it provides public goods and services people want at prices they are willing to pay, though we suspect that most Canadians are coming to prefer a less intrusive government.

As Canada becomes a more thoroughgoing knowledge-based economy, the need for competitive government will grow more pressing. Many traditional activities of government will have to be discarded if their costs, including the capital investment, knowledgeable workers, and entrepreneurs they discourage or drive out, fail to justify their benefits to Canadians who are growing accustomed to continually improving and expanding consumer choice. We argue that economic nationalism already falls into this category for the average Canadian, let alone the highly skilled and talented Canadians we most need to retain and motivate. Good government

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must offer the public goods and services *these* people view as valuable at a lower cost than they would have to pay elsewhere.

2. Canada's National Economic Security and National Identity

Canada is not guaranteed a leadership role, or even a comfortable supporting role, in the global knowledge-based economy. Our stage fright stems from some deep, underlying insecurities that we seem unable to exorcise. We believe that two problems in our national psychology cause the greatest dysfunction.

First, Canadian nationalists have sought to build a national identity around a web of redistributional social programs. Many of these are both deeply dysfunctional in today's economic environment and ineffective in their stated goals of eliminating gross inequality. For example, our high income taxes prod our brightest young people to flee, while our aboriginal people live in third world squalor and fill our jails. The result is a lack of new domestic competition for Canada's established wealth and a rising gap between tax revenue and demands for more social spending.

The idea that Canada's uniqueness lies in an egalitarian tradition is a very recent notion. Twentieth century Quebec was, in many ways and until recent decades, an appendix of prerevolutionary France, and British North America was founded by United Empire Loyalists – Tory refugees from an egalitarian republic. It is also delusive, for Canada is not now, and never was, an egalitarian society. Old and wealthy families control the Canadian economy in a way that is the envy of US billionaires, using mazes of inter-corporate ownership unknown in the republic to the south. Rather, our egalitarian rhetoric conceals an unwholesome fear of change. Economic nationalists demand that foreign capital be kept out of this country, perhaps unwittingly defending the power and status of our old wealth. In return, they insist that the nobility recognize their feudal duty to employ their workers, regardless of changes in supply and demand. The fact that this deeply conservative philosophy is most strongly ensconced on the left of formal political spectrum makes it both tenacious and virulent.

Second, Canadians are unable to appreciate the consequences of Canada being a small economy. The essence of a knowledge-based economy is that competition is, first and foremost, competition to innovate. The profit from an innovation depends on the size of the market into which it is sold. To justify the cost of conceiving, developing and commercializing new products, their markets must often become very large very fast. Modern science requires huge amounts of capital, and people who have front-line knowledge are scarce and able to command high pay throughout the developed world. The costs of innovation are similarly high in modern finance, auto making, tourism, and virtually every other industry at the beginning of the 21st century.

Innovation and globalization are therefore inextricably intertwined. To know whether it is innovation or globalization that harmed this industry or benefited that one is to know the sound of one hand clapping. In a small economy like Canada's, nothing happens unless both are present. This means that Canada's prospects hinge on Canadian firms' access to foreign markets, and most especially the American market. It is therefore no surprise that Canadian nationalism is also deeply protectionist, or cryptoprotectionist in arguing for more diversified trade. Without innovative goods and services, Canadian business cannot draw European and Asian consumers, and without a huge market to sell into, innovation is financially perilous. This inescapable logic motivated many Canadian businesses, politicians and academics to support Free Trade in the 1980s. It must continue to dictate Canadian public policy if future generations of Canadians are to be protected from penury.

Canadian public policy must shed its dysfunctional attachment to the *status quo.* The attempt to create a national identity around income redistribution to preserve that *status quo* has become a clear danger to Canada's national economic security in the era of the global knowledge based economy. Inward looking policies may preserve the *status quo* for a while, but only by denying Canadians both the new jobs an internationally competitive economy would generate and the income to buy the new goods and services it would produce. Genuinely liberal social policies must supplant our cryptoconservative nationalism and protectionism. Canada's national identity should be as a vibrant microcosm of the new century's global civilization, not an echo of defunct doctrines like socialism, nor of even older fables of *noblesse oblige*. These conclusions follow from mundane econometric studies, yet they bring within our grasp a meaning of "Being Canadian" that transcends ideology and political fashion.

3. The Republic to the South of Us Shall South of Us Remain

A political slogan in the 1844 US presidential election, "Fifty Four Forty Or Fight," epitomized many Americans' dissatisfaction with border at the 49th parallel, and prompted the title to this section as a subsequent election slogan in Canada. This refrain equally nicely encapsulates many Canadians' feelings. Canadians seek a free and just society without the violence, extremism, and dogmatism they associate, rightly or wrongly, with the United States. The fact that the United States has become the world's leading information-based economic powerhouse consequently creates an unpleasant psychological tension in the Canadian identity. This tension has had unfortunate influences on Canadian public policy.

The key to a healthy Canadian identity is a healthy psychological distance from the United States. When a sequel to the war of 1812 never came, and the 49th parallel seemed secure, nationalists saw a secret economic conquest happening all around us. These cherished delusions prevent us from looking at modern America objectively. The United States is the foremost knowledge-based economy in the world. Why?

The idea that Americans are more entrepreneurial and more enterprising than Canadians is both offensive and empirically wrong. Canadians and Americans show broadly similar approval ratings for various aspects of entrepreneurship, and roughly equal proportions of the populations of the two countries are owner/managers.[2]

Canadian public policy need not match US policy law for law. Rather, we must give careful thought to which aspects of US public policy have been most important in fostering knowledge-based economic activity. We first identify these policies and then explain why they matter.

First, the United States has, except for a brief period in the 1960s and 1970s, avoided high personal income taxes.[3] These policies most likely represent lobbying by the wealthy, but their accidental consequence is that US entrepreneurs can start out poor and become rich. This possibility induces creative people to gather information, create knowledge and commercialize innovations. Consequently, the US economy sustains a higher level of creative destruction than most other economies.[4] The continual destruction of old firms by dynamic new upstarts prevents an ossified economic elite from forming as easily as it otherwise would. In contrast, Canada's relatively high income taxes prevent innovators from becoming rich, and therefore from out-

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[2] This is based on 1,000 interviews done in each of several countries on behalf of the London Business School and Babson College. Both North American countries score markedly better than western European countries on these measures. Source: Global Entrepreneurship and Opportunity Index, P.L.C.

[3] For a concise introduction to the US tax and a comparison of the US and OECD countries' tax burdens, see Ch. 2 in "Taxing Ourselves: a citizen's Guide to the Great Debate Over Tax Reform," by Joel Slemrod and Jon Bakija, MIT Press, Cambridge: Mass, 1996.

[4] Empirical studies have failed to find a clear link over time between US taxes and entrepreneurial activity. This does not refute the existence of such a relationship, as our measures of entrepreneurial data are very unsatisfactory and "expected future taxes" may matter as much as actual current taxes.

competing old money.[5] The result is a hereditary family compact that governs corporate Canada more or less unchallenged.

Second, Americans have long been suspicious of concentrated economic power. This fear is manifest in a series of powerful anti-monopoly laws beginning in the first decade of the 20th century. These laws may or may not have discouraged monopoly pricing. Their critical unintended consequence was to break the link between family fortunes and massive corporate control. There was no point in breaking up Standard Oil in 1911 if all the resulting pieces were still owned by John D. Rockefeller or his heirs. Antitrust rulings also necessitated divestiture orders. This created large, widely-held firms. While widely-held firms are subject to well-known governance problems, we have shown elsewhere that the governance problems that accompany extremely concentrated wealth are probably worse.[6] American anti-trust law thus, entirely by accident, led to a better system of corporate governance. In Canada, inherited family firms preserve 19th century U.S. corporate governance problems.

Third, the United States, since the 1930s, has born a number of populist banking laws that stifled the development of its banking system. These laws were most likely due to lobbying by borrowers, who feared powerful lenders. As recently as the early 1980s, the largest US banks were barely comparable to Canada's large chartered banks, despite the ten-fold larger size of the US economy. Ill conceived legislation cosseted US banks from competition and laws against branch banking created a multitude of small and inefficient local banks. The unintended consequence of this sickly banking system was a set of alternative financing channels that have proven more amicable to knowledge-based ventures. Stock markets, junk bond markets, venture

[5] The tax burden on "upper middle class" Canadian professional is particularly high. That discourages both the accumulation of human capital, the cornerstone of knowledge based activities, and innovation *per se*.
[6] See "Inherited Wealth, Corporate Control and Economic Growth: The Canadian Disease" (1998) by Randall Morck, David Stangeland and Bernard Yeung, NBER working paper.

capital funds, and all the other components of the US financial system grew to take the place of its weakling banks.[7] In Canada, the big chartered banks have always been the central pillar of the financial system, and now control most aspects of the finance industry. Their reliance on collateral-based lending has probably starved Canadian innovators of funds.

Fourth, the United States is a large market. This is the result of a series of territorial purchases and wars of conquest driven by coarse jingoism. Their unintended consequence is a market large enough that entrepreneurs can recoup their costs by selling their innovations to many buyers. American businesses did not need access to a global economy to make money from innovating. Their domestic market was big enough.

Fifth, the United States has maintained a set of elite private universities, which compete vigorously with each other. Their origin was most likely the illiberal desire of the elite to let their children socialize only with their peers. These elite universities built up huge endowments, but depend on continued private support. They now compete globally for the best professors and the most brilliant students to develop unmatched reputations as centers of knowledge creation. Many of these students became innovators, and some became very wealthy. The unintended consequence of the elite US universities was thus unprecedented class mobility and increased creative destruction. In contrast, Canadian universities are all state run. They are sound, but unexceptional institutions that educate our middle classes well and sporadically produce good research in isolated departments. But our best universities are only slightly better than our worst ones. Many brilliant Canadians look south for professional fulfillment, and Canada can retain them only with great difficulty.

[7] The allocation of capital through financial markets rather than through banks appears to allow a quicker shift of funds from non-innovative to innovative firms and industries. See Morck and Nakamura (1999).

Finally, the United States, almost alone among liberal democracies, has limited the growth of social programs, and thus the size of the government. This is perhaps due to its legacy of slavery and the racism that continues to plague US society. In other liberal democracies, social programs, though often proposed originally by well-meaning idealists to benefit the poor, were ultimately sold to median voters as transfers of wealth to them from the rich. In the US, however, social programs have been successfully portrayed as wealth transfers to a parasitic and violent underclass. The unintended consequence is that the US public sector is, proportionately, unusually small. Since governance problems in the public sector have been shown to be generally worse than in the private sector, this has benefited the US economy.[8]

These public policies, almost wholly accidentally, created an environment uniquely conducive to creative destruction, and consequently to a knowledge-based economy. This in no way suggests that brilliant American economists were unaware of the likely effects of these policies. Many understood perfectly their probable consequences, and supported them fervently. Our point is only that equally fervent arguments along the same lines elsewhere fell on deaf ears. The political economy of the United States, by fortuitous circumstance, was uniquely receptive to them, and might well have followed the same policies even in the absence of support from academia.

Nor should these arguments suggest that US voters and politicians are more self-interested than voters and politicians in other countries, or than other people in general. Modern economic theory assumes that the average person is both self-interested and altruistic. Empirical economics largely confirms this. It should surprise no one that public policy partially reflects the perceived self-interest of voters and politicians.

[8] See Boycko, Shleifer and Vishny (1996) A Theory of Privatization. Economic Journal 106(435) 309-319.

The United States, by historical accident more than mindful design, established the institutional underpinnings that make a knowledge-based economy work. By geographic accident, the Unites States is both the measure by which Canadians mete their own economy and the sanctuary to which Canadian savings, talent, and resources can most readily flee. By mindful design, Canada is a free society and will not forbid such flight, though it surely could not in any case. The Canadian economy and government must therefore be competitive with the US over the longer term. Our challenge is to chart a path to that goal that Canadian voters will embrace.

4. Some Suggestions

We described earlier, in the chapter entitled "Economic Underpinnings of a Knowledge-Based Economy", that knowledge-based economic growth happens through the process of creative destruction, the creation of new knowledge-based economic processes that render established firms obsolete – and so destroy them. Knowledge-based growth, because of the increasing returns to scale typically associated with it, can lift the economic fortunes of more people more rapidly than conventional growth through capital accumulation.[9] So far, in this paper, we have argued that certain properties of the Canadian economy impede creative destruction, while other properties of the US economy nurture it.

This framework now allows us to consider specific public policy suggestions that might spur creative destruction in Canada. These suggestions do not require that Canada ape US policies, for that country's historical development shaped its economic institutions in ways that Canada cannot replicate. Rather, we must consider the economic destination we want, a

[9] This is the basic result of the economic literature on "endogenous growth".

knowledge-based economy, and how best to get there from here. It is in this spirit that we propose some rough and preliminary policy suggestions.

I. Empowerment as Equality

English Canada was founded to preserve inequality. The United Empire Loyalists, who fled the thirteen colonies at the end of the War of the American Rebellion (1776-1783), included their wealthiest citizens. Called "Tories" by other colonists, they included the elite business class, especially of New York and Virginia Colonies. Some were rich because of class or political connections, but most were wealthy through hard work and ingenuity. Many Loyalists were Scots merchants, representing the great merchant houses of Glasgow, who lent money to colonial land-owning aristocrats, like the Washington and Jefferson families of Virginia. The local gentry apparently resented their economically dependent positions. Indeed, much of colonial politics was unsuccessful ploys by landowners to gain power over their creditors. Unsurprisingly, these Loyalists distrusted the egalitarian and democratic rhetoric of the revolutionaries.

In all, about one quarter of the population of the thirteen colonies were Loyalists. At the war's end, despite explicit clauses protecting Loyalists in the Treaty of Paris, their civil rights were curtailed, they were subjected to confiscatory taxes, and their homes, businesses and other assets were expropriated by self-appointed revolutionary tribunals. These seizures amounted to a vast transfer of wealth. Indeed, ambitious colonial politicians, like Isaac Sears of New York, may well have fanned the war, hoping to get rich quick by confiscating Tory property.[10]

Rather than accept their fates in the new republic, upwards of 100,000 Loyalists fled to Canada. Their absence played no small part in the new republic's depressed post-war economy.

It would no doubt surprise these dispossessed pilgrims to learn that the essence of Canada's national identity is now supposed to be social programs that take money from people with higher than median incomes and give it, net of administrative costs, to everyone else. Canadian taxes are surely less crude than confiscation by revolutionary mobs, but there is still a disturbing resemblance. We forget the lesson of the United Empire Loyalists and, by degrees, relieve our own most ingenious citizens of burdensome wealth, or send them into exile.

In the "Underpinnings of a Knowledge Based Economy", we argued that entrepreneurs in a knowledge-based businesses must be able to accumulate great wealth quickly to cover their often large up-front costs and to justify the great personal financial risks they take. High income taxes make this hard, and so prevent new wealth from displacing old wealth. High income taxes are "barriers to entry" around existing businesses and existing wealth. High income taxes discourage the creation of new knowledge-based businesses, and unnaturally preserve the lives of old, stagnant businesses.

Many Canadian politicians see unequal wealth as an injustice to right. This would not entice such popular support if it did not resonate truth. Many wealthy families have dubious pedigrees, with slaving, opium, alcohol, weapons, smuggling, whaling, and pillage all counting heavily. Perhaps taking their wealth and their heirs' to help poor honest folk is wise and just. But we tax the heir to a 19th century opium trading fortune and the star neurosurgeon by the same laws; and the neurosurgeon is perhaps less able to evade them.

Something seems amiss in our concept of equality. Perhaps not all income is equally fair game for redistribution, and perhaps all income inequality is not necessarily undesirable. We have argued that knowledge creation is different from other economic activity in that it stimulates broader, more self-sustaining growth. Ideally, we might want to tax incomes that

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[10] See Charles A. Beard (1915) *Economic Origins of Jeffersonian Democracy*, pp. 270-72.

arise from knowledge creation less heavily than those from labor or capital holdings. However, our political system is surely unable to launch or sustain such a system. How are the tax authorities to decide whose income fits which category? What happens if job characteristics evolve? Are auto mechanics and secretaries not knowledge workers in the 21st century? Clearly, fine tuning the income tax system to make it impede knowledge creation less would be an administrative, political and legal nightmare.

A simpler way of avoiding these problems is to define the equality we would see in terms other than income. One candidate, popular with right-leaning politicians, is “equality of opportunity.” This is the argument that everyone should have the same opportunities, and the freedom to grasp them or shrink from them. Unfortunately, true equality of opportunity is a subtle and slippery concept. Everyone does not have the same opportunity to be born rich, strong, smart, attractive and healthy. The words “equality of opportunity” often disguise a smug satisfaction with the *status quo*. Children born to poverty, the physically and mentally disabled, the repulsive, and the infirm may simply lack the power to grasp the opportunities before them.

Such unequal access to life’s opportunities is perhaps the deepest and most pernicious form of inequality. If we accept that remedying this is the proper goal of social policy, striving for greater income equality *per se* is once more questionable, for it leaves more fundamental inequality unaffected. Government action aimed explicitly at tempering such deep set inequality is perhaps best called “empowerment.” We believe that empowerment, rather than simple redistribution, can be as a unifying and economically sensible theme for social programs in a knowledge-based economy.

Policy Implication: The purpose of social programs should be the empowerment of individuals. Government should open the greatest number of doors for the greatest number of people.

Thus quality public education, laws and programs to assist the disabled, equal rights laws and basic healthcare all come within the legitimate sphere of good government. Indiscriminate income leveling does not. Universality for all social programs amounts to indiscriminate income leveling and so makes no economic sense.

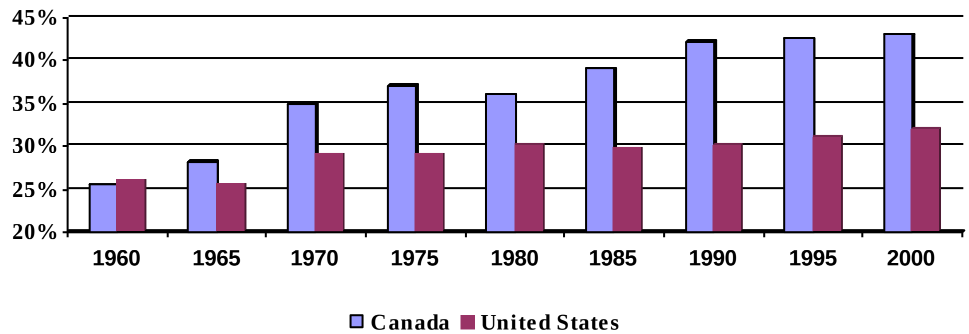
II. How to Improve the Tax System, and Replace the GST

The main mechanism for indiscriminate income leveling in Canada is the progressive personal income tax. If our aim is to empower people, and to let knowledge creators keep the fruits of their work, such an income tax is unwise for it impedes creative destruction.

Policy implication: New taxes should be vetted and old ones replaced according to how seriously they impede creative destruction. Progressive personal income taxes are arguably the worst by this standard, and should be transformed into low, flat taxes. If a progressive tax system is desired, it should tax luxury consumption, bequests, land holdings, or other aspects of personal inequality that are less related to knowledge creation and wealth creation.

In our view, a comprehensive reform of Canada's tax system is long overdue. Canada is steadily losing its most talented and best educated people to the US. Figure 1 shows the total tax bite the Canadian and US governments each take out of their economies. The Canadian government has been growing steadily more expensive. Table 1 compares the net inflow of top scientists across countries. Canada is clearly losing talent at a hemorrhagic rate. Unfortunately, the outflow of talent in the sciences, economics, medicine, and law suggests that too many people have come to regard it as not worth the money. Although Canada is also attracting highly qualified immigrants from Asia and elsewhere, the US is both keeping its own best people *and* attracting top people from everywhere else. Canada must do this too. Living in Canada has to become less of a financial sacrifice for high income, professional knowledge workers.

Figure 1. Growth in the Total Tax Burden (Total Government Revenue over G.D.P.) in Canada and the United States Compared



Source: OECD Economic Outlook

Table 1. Net Immigration Of Star Genetic Researchers As Of 1990.

Country	*Net Migration Rate (%)*
United Kingdom	32.3
Belgium	14.3
Japan	9.6
Australia	7.1
France	4.0
United States	2.9
Germany	8.3
Canada	-30.0
Switzerland	-40.0

Source: Lynne G. Zucker and Michael R. Darby, Star Scientists and Institutional Transformation: Patterns of Invention and Innovation in the Formation of the Biotechnology Industry, Proceedings of the National Academy of Sciences, November, 1996, Vol. 93, p.12,715.

Highly skilled people like star geneticists can demand high salaries, for the worldwide demand for their skills currently outstrips the supply. High income taxes in Canada make it unnecessarily difficult to retain the best such people in this country. To give them after-tax salaries commensurate with those they could earn elsewhere, their before-tax salaries in Canada must be very high indeed. Since such people usually have access to prepaid health care and quality education for their children anyway, the costs of Canada's public sector usually outweigh its benefits to them. Consequently, corporations find it less costly to locate their knowledge creation operations elsewhere. The most attractive alternative location for these operations is, of course, the United States.

Policy Implication: Canada's personal income taxes should be adjusted from time to time to be competitive with those in the United States from the points of view of people with skills that are in high demand. We believe such an adjustment is critically needed now.

Since giving tax breaks to individuals in some professions, but not others, is probably politically undoable, the entire tax system must adjust to accommodate these sought-after people.

In recent years, tax experts have debated the viability of shifting from income taxes to consumption taxes, with consumption defined as income minus savings. The chief virtue of a consumption tax is that it encourages savings, which is essential to growth in a traditional economy. Savings finance investment in new plant and equipment, which produces more output. Since growth in a knowledge-based economy arises from innovation rather than capital accumulation, this argument is perhaps less urgent in our context. However, much commercialization of innovations does require capital expenditure, and this is more forthcoming if savings are not taxed. The argument for a consumption tax therefore remains valid in a knowledge-based economy.

A comprehensive consumption tax could be implemented either as an income tax that exempts savings or as a sales tax. They are equivalent, the only difference being whether the tax is calculated by consumers and remitted like a personal income tax or tacked onto each purchase and remitted by merchants.

Canada's provincial sales taxes (PST) and federal goods and services tax (GST) are examples of consumption taxes. The provincial sales taxes are uncontroversial and no less popular than any other tax. The GST was a federal move in this direction that was seriously flawed economically and badly bungled politically. The economic flaw is the long, growing and irrational list of exemptions. The political bungle was presenting it as a tax on goods and services.

The GST and corporate income tax should be scrapped and replaced with a single flat tax (SFT) on business revenue net of costs. A 7% tax of this sort would be algebraically identical to the GST. It could be extended to a broader base than the GST's because political populists cannot easily argue that Safeway should pay no corporate tax as they argued that food should not be taxed. An SFT could be implemented at a higher rate than 7% so that it would be revenue neutral *vis B vis* all existing corporate taxes. Packaged in this way, a consumption tax could be sold as a way to make corporations pay "their fair share", though it would still logically be a tax on consumption. The SFT should be simpler and cheaper to administer than the GST because there would be no need to classify particular goods as taxable or exempt. This is because the SFT is a tax on businesses, not a tax on goods. Also, a flat tax with few or no deductions is more transparent and immune to wasteful lobbying by special interests.

Policy Implication: The GST and corporate income tax should be scrapped and replaced with a Single Flat Tax on business revenue minus costs.

The precise structure of the SFT can be altered in a number of dimensions. It should treat R&D as an expense, just as the current corporate income tax does. However, the treatment of depreciation could be similar to the current Capital Cost Allowance (CCA) system. More sorts of capital expenditure could be made expensable to spur business investment. Indeed, the logic of the consumption tax argument, pursued further, implies that all capital expenditures might be expensed the year they are incurred. Again, the flat rate would have to be adjusted accordingly if the switch to the SFT were to be revenue neutral.

III. That It Rise Again, the Sun Must Also Set

A knowledge-based economy is capable of sustained self-reinforcing growth through creative destruction. Innovative new firms continually displace existing firms, keeping the economy on the technological frontier. This economic effervescence is most vigorous in a highly flexible economy.

Knowledge creation, innovation, and commercializing innovations are costly high-risk activities that take concentrated effort. To see them through, people need to foresee very substantial rewards. Employees do not generally propose innovations unless they receive real compensation for them. Managers do not implement them unless they too have an economic stake in the winnings. Consumers cannot buy new products if their buying patterns are artificially restricted or distorted. Their purchases should be the signals that guide the direction of innovation.[11] In markets with better signals, the search for innovations is less costly and more fruitful. These are all calls for flexibility.

Regulatory and legal hurdles to new ventures should be minimized. Innovators must be free to enter the market, and consumers to choose goods and services they see as useful. The consequence is that a good innovation generates high demand and so high returns.

Labor market flexibility is equally important. Innovations often require that firms hire new workers with new qualifications, and these often displace existing workers. Or innovation can call for a restructuring, and the laying off of workers in one location and as more are hired in another. Creative destruction requires that divisions, firms, and industries with improving business prospects grow, raising wages and employment, while firms whose business prospects sour shrink. Workers must be freely able to relocate and switch jobs in response to wage changes. A flexible labor market allows all this, a rigid one does not.

Managers must support promising innovations, and not try to suppress them out of fear for their jobs. This is most often a problem in rigid hierarchical corporations built around "command and control" management. This is why innovators are often happier and more productive in smaller, more flexible firms.

It is therefore important that public policy not induce artificial rigidities into the economy, and enhance its pliancy whenever possible. Unfortunately, many well-intentioned public sector initiatives induce cumbersome economic rigidity. Because government programs are mainly needed where free markets incentives fail to function properly, they must use "command and control" management, which is inherently inflexible. They rely on laws, regulations, and administrative rulings enforced by police, courts and lawyers.

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[11] See Friedrich August von Hayek, "The Use of Knowledge in Society," *American Economic Review*, Vol. 35, 1945, pp. 519-30.

Moreover, such laws, regulations and rulings are usually not repealed when their *raison d'Λtre* fades. Our tax laws, industry regulations, and labor laws arguably gather anachronisms as the studies that justified their particulars gather dust. Many argue that whole government programs are no longer needed. Yet these public initiatives do not die gracefully. People to whom they are economically advantageous lobby for their continuation long after their original purposes are forgotten.

Canada currently has complex regulations about who can own radio and television stations, and about what percentages of the broadcast hours must be devoted to what sorts of offerings. As Internet television becomes increasingly available, viewers can point and click to watch whatever Star Trek episode or Jerry Lewis rerun they want whenever they want. It will be impossible to control what viewers watch without blockading the Internet, which will be impractical in a knowledge-based economy.

Canada also has Byzantine marketing boards that still attempt to administer markets for agricultural produce. These were designed to bail out desperate depression era farmers. By forcing all farmers to sell at the same price, the boards prevent efficient and innovative farmers from driving inefficient ones quickly out of business. The boards now amount to a tax on efficient sophisticated agribusinesses to subsidize old-fashioned dirt farms. This is not helpful in moving Canada towards a knowledge-based economy.

To loosen this legal tenacity, we must consider building flexibility into our laws, rules, and regulations.

Policy Implication: Laws, regulations and administrative rulings on economic issues should always include sunset clauses, and should become void if not explicitly renewed. The main

criteria for renewal should be the continued urgency of the problem they address, their efficacy in correcting it, their drag upon knowledge creation and implementation, and the absence of new approaches that lead to better tradeoffs in these dimensions.

In general, our hope is that laws and regulations that limit business's actions would usually not be renewed, for the problems they address often fade from public concern. Laws and regulations that continue to be useful should be updated as they are renewed. Where possible, new approaches to correcting the original problems should be tried. Other laws and regulations should die in peace.

It is especially important in a knowledge-based economy to clear out legal overgrowth regularly. Laws, rules, and regulations that are not enforced, incomprehensible, or inconsistent complicate business dealings unnecessarily, especially for new, small and rapidly growing businesses. The result is that such legal quack grass protects the economic positions of large existing businesses and deters the new innovative businesses we need in a knowledge-based economy.

IV. Economic Disestablishmentarianism

Creative destruction, the basic process of economic growth in a knowledge-based economy, requires that creative new firms continually rise to displace old stagnant ones. Does this actually require the creation of entirely new firms? Or can old firms become innovative and displace their former peers?

The answer appears to depend on what sort of innovation we are talking about.[12] Radical innovations, the kind that start whole new industries, generally require brand new, up-start companies. Established firms appear better at improvement and extension of existing ideas.

Examples of radically innovative start-ups in recent decades are Apple Computers, Microsoft, and Walmart. Earlier decades produced Ford, Standard Oil and International Harvester. Each of these companies either sold a product that had never been sold before, or did business in a way that was completely original in some important dimension. These innovative businesses all grew by overthrowing the existing economic establishment.

Existing companies were either incapable of or uninterested in developing these innovations. Often, this was due to the hierarchical nature of large existing firms, but the way property rights were allocated to vested interests within firms also mattered. In 1980, IBM had all the technology necessary to build PCs and to dominate PC software. Top management consciously decided not to, apparently because senior managers and technicians saw their careers as dependent on mainframe computers. Moving into PCs would have required giving new people key positions in IBM's hierarchy, possibly sidelining many current decision makers. Therefore, IBM missed the initial phase of the PC revolution.

Innovators also usually have little wish to work within large existing corporations. When John D. Rockefeller came up with the idea of standardized oil products, he founded his own firm, Standard Oil, and became a billionaire. Had he instead persuaded an existing oil company to implement his idea, he would have had a few years of salaried employment while the firm's owners got rich.

[12] See "The Internationalization of Small and Medium Size Firms: A Policy Perspective," Zoltan Acs, Randall Morck, Myles Shaver, and Bernard Yeung. *Small Business Economics*, Vol. 9, No. 1, February 1997, pp. 7-20.

For an economy to become a spawning area for radical innovation, it must be conducive to the formation of new companies. The main problem entrepreneurs usually face in setting up and expanding new companies is obtaining capital. Investors are understandably leery of handing their life's savings over to unknown alleged geniuses.

Government can help here by giving entrepreneurs the privileges of being open to lawsuits, going bankrupt, and going to jail when they are dishonest. Honest entrepreneurs do see these as "privileges" because they keep rascals away from investors' money, raising trust in entrepreneurs and lowering costs of capital. The money that rascals steal, after all, should be reserved for bankrolling the ideas of honest entrepreneurs.

Public investors' rights should be firmly ensconced in law. They should have clear rights to sue nefarious insiders, to inspect meaningful financial accounts, and to invest in a climate of general law and order. Corporate insiders should be held to a higher standard than outside board members because they are the true decision-makers. Outside board members should be liable too, but should have a "due diligence" defense, for they can often be duped by corporate insiders. The stronger and more discriminating these laws are, the bigger the advantage honest entrepreneurs have over rascals. Of course, arbitrary, obtuse and onerous laws have just the opposite effect, as they are as likely to hamper honest entrepreneurs as dishonest ones.

For new firms to rise quickly, capital markets and institutions must work efficiently. This mainly means that it must be made as easily as possible to tell good investment opportunities from bad ones. Fortunately, corporate and securities laws can induce entrepreneurs to disclose this information themselves. This happens when these laws deliver swift and sure punishment to rascals who misuse investors' money.

Policy Implication: Laws that protect investors should deliver swift and substantial penalties against fraudulent, reckless and negligent disregard of public shareholders' trust.

These laws include effective shareholder rights laws, meaningful financial disclosure, and efficient courts capable of dealing with complex financial matters. Insiders who violate investors' trust must quickly become outsiders.

If punishment for financial misdeeds is certain, rascals will find other venues for their scams and leave capital markets to honest entrepreneurs. This is important because mistrust of the financial system harms overall economic growth and so hurts everyone, not just its direct victims.

Perverse laws and practices that let people control corporate assets they do not own invite abuse, even from the most saintly insiders. These situations, called "entrenchment" arise in Canada in three main ways.

The first is multiple classes of common stock. These typically give insiders many votes per share and outsiders few or no votes per share. The result is that the insiders control the firm though they own little of its stock, and decisions that cost the firm money have little financial effect on their own wealth.

The second is equity cross-holdings. These arise when a wealthy individual controls more than one firm and has these firms issue large amounts of stock to each other. Often, this is done so that net dividend payments between firms are zero, but this is not required. If the majority of each firm's stock is held by other firms, the initial insiders retain voting control of all their firms even though they may own little or no stock on their own accounts.

The third is control pyramids. These are perhaps the most common method of entrenchment. Insiders own 51% of one holding company, which owns 51% of another, which owns 51% of another and so on. Ultimately, the final firm in this chain of holding companies owns firms with actual productive assets. The initial insiders control these assets because they control every firm in the chain. However, their actual ownership stake in the production companies is 51% of 51% of 51% of … of their value. This usually works out to very small number.

Equity cross holdings and control pyramids both rely on corporations owning stock in other corporations. This is common in Canada and virtually unknown in the United States. The reason U.S. firms do not own shares in other publicly traded U.S. firms is that dividends paid by one firm to another are taxed. Canada, in contrast, taxes dividends paid by a firm to a person, but not dividends paid by one firm to another.

Policy Implication: Different classes of common stock with different voting rights should be banned. Dividends received by a corporation should be taxable as part of that corporation's income.

If any distinction is defensible between dividends paid to a corporation and dividends paid to people, it is that the former should be taxed (to deter cross holdings and control pyramids) and the latter left untaxed (to avoid double taxation).

Innovative businesses, whether implementing radical new ideas or valuable incremental innovation, must be able to grab market share quickly. They must be able to push non-innovative firms aside posthaste. Bankruptcy laws and merger laws are important here.

Policy Implication: Bankruptcy laws should force quick and clean transfers of control from the previous owners to new owners. Ownership should immediately pass to creditors, and they can then decide whether to liquidate the firm or restructure it. All credit contracts should contain clauses indicating how many shares the lender, supplier, or prepaid customer gets in the event of bankruptcy.

Bankruptcies can often happen for reasons that are beyond managers' control, but when this happens, the creditors can usually be convinced to give the managers' a second chance. "Kind" bankruptcy laws that give incumbent management a court mandated second chance are costly, for they also protect managers who frustrated or ignored innovation in their firms. Chapter 11 of the U.S. Bankruptcy Reform Act of 1978 allows for very kind and gentle bankruptcies, which may end up protecting inefficient operations.

The origins of debtor friendly bankruptcy laws in the United States lie in the American Revolution itself. Virginia tobacco farmers faced a mounting debt crisis in the mid 1770s, as they had borrowed much more from British (mainly Scottish) creditors than they thought themselves able to repay. Had the American Revolution not occurred, many of the new republic's most famous founding fathers would have lost their farms. When Alexander Hamilton proposed that the tobacco growers should honor their debts, George Mason, in a letter to tobacco farmer Patrick Henry, quotes the planters as complaining, "If we are now to pay the debts due British Merchants, what have we been fighting for all this while?" Once freed from Westminster, the thirteen states immediately placed sever restrictions on creditors' remedies.[13] "Fresh start" bankruptcy laws have been intimately tied to American populism ever since.

[13] See Charles A. Beard (1915) The Economic Origins of Jeffersonian Democracy. 270-72.

This philosophy appears to have impeded economic growth in that country.[14] Chapter 11 should not be copied by other countries, least of all by Canada.

Another mechanism for dislodging established firms is corporate takeovers. Existing managers may be unable to cope with the changed market conditions that arise when a rival introduces an innovation. Bankruptcy is a costly and disruptive way to replace them. A less socially disruptive way of doing the same thing is for another firm, with more flexible and imaginative managers, to take the struggling firm over.

Policy Implication: Corporate takeovers are necessary and useful in a knowledge-based economy. Laws and regulations that restrict them, either directly or indirectly, are costly and should be avoided.

For example, Ontario's 20% takeover trigger rule indirectly makes takeovers less attractive by preventing control block trades. The 20% rule gives public shareholders a piece of the action in any takeover, but probably reduces the number of such takeovers. The legality of poison pills, poison puts and other anti-takeover devices is also highly problematic in a knowledge-based economy. So is the legitimacy of voting caps on privatized crown corporations and banks, for these are *de facto* poison pills.

Of course, some takeovers are poorly planned and ultimately destructive. To avoid such disasters, the directors of firms contemplating takeovers should ask hard questions about whether their firm really has the expertise needed to add value to the target. When the answer to this is negative, or unclear, the takeover should be stopped dead. Corporate insiders who waste

[14] See "It's Time to Scrap Chapter 11" by Michael Bradley and Michael Rosenzweig, *Business Credit*. v94n8. Sep 1992. p. 40. See also Francis H. Buckley (1994) "The American fresh Start". *Law &.* 4(1) 67-97. And Francis H.

shareholders' money on ill-conceived takeovers should be liable to legal action. Their defense to such action should be a clear and economically reasonable explanation of how the takeover should have added value.

Corporate takeovers also can create market power. When one or a few firms control most of a given market, they can raise prices to monopoly levels and extract whatever the market will bear for their output. In a knowledge-based economy, market concentration *per se* is not necessarily bad. A large market share that results from a successful innovation, whether achieved through greenfield expansion or acquisitions, is generally in the public interest. Also, market power in a globalized economy is not defined by percent sales in one single market. A firm occupying a large market share may still be threatened by foreign entrants. As long as barriers to entry are kept as low as possible and another innovator can enter and grab market share from the previous dominant firm, any monopoly power will be short-lived and will, in fact, spur innovation. In a knowledge-based economy, a series of temporary monopolies with constant turnover is expected. Only long-term monopolies protected by artificial entry barriers are clearly undesirable.

Policy Implication: In a knowledge-based economy, anti-combines powers should be triggered by artificial barriers to entry, not by market share.

In a knowledge-based economy, it is important that productive assets be transferred quickly from less to more able hands. A sentimental attachment to family control is often inconsistent with this. Intelligence is, at most, only partially hereditary. Entrepreneurial talent is certainly a dimension of intelligence, so most of the time, the son will be a less able entrepreneur

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Buckley (1994) "The American Stay" *Law &.* 3(3) 738-779.

than the father. The transfer of control from one generation to the next in a family firm should therefore not be encouraged, and perhaps should be discouraged. The economy as a whole is often better off if the heirs are encouraged to sell out.

Policy Implication: A tax on inheritances makes sense in a knowledge-based economy.

This tax should be effective immediately. Devices like family trusts that postpone taxes due on death are inconsistent with the tax's goal of quickly getting productive assets into the most innovative hands. The idea is to create a tax liability large enough that the heir can only pay it by selling control.

Inheritance taxes are subject to evasion, but probably not more so than are income taxes. Certainly, gifts that look like evasions of the inheritance tax should be taxed as inheritances. Revenue Canada auditors would have to develop skills at assessing property values and at valuing private firms.

Since inheritances are clearly not the result of the recipient's knowledge creation, a tax on such income is minimally distortionary in a knowledge-based economy.[15] Inherited small family businesses, farms, and fishing boats should not be exempt. These assets too belong in the hands of those most able to use them in the most innovative way. An inheritance tax encourages heirs to sell out for cash, and so forces more productive assets onto the market. In this respect, an inheritance tax is more effective in a knowledge-based economy than a realization of capital gains on death, which (with some exceptions) is currently the law in Canada. The latter does

[15] Some tax experts have argued that founding a business dynasty is an important motive for many entrepreneurs. Other evidence suggests that people use bequests as a way to control the behavior of their prospective heirs. For example, Bernheim and Shleifer (1985) find that the number of visits nursing home residents receive is highly correlated with their wealth. Clearly, further research in this area is needed.

nothing to encourage the sale of assets whose value has stagnated, as they have posted no capital gains, yet these are the assets we most want in other hands.

Implementing a strict and effective inheritance tax would allow a reduction in the income tax. An inheritance tax also gives entrepreneurs an incentive to endow concert halls, hospitals, and scholarships and otherwise provide for the public good in their wills, as such beneficence should be tax exempt.

V. Globalization

In the long, or even medium, run a small open economy like Canada can control the pace of innovation no more than it can control the interest rate. Global forces set both. As a knowledge-based economy, Canada can either keep up or fall behind.

Our chapter "Economic Underpinnings of a Knowledge-Based Economy" argued that knowledge-based commercial activities frequently, indeed usually, have increasing returns to scale. Once created, productive knowledge can be applied over and over again, improving the way many businesses in many countries function. These increasing returns to scale are the reason a knowledge-based economy can sustain self-reinforcing growth. Since innovation is often difficult, expensive, and risky, these huge returns to scale are important incentives to innovators.

The domestic Canadian market is much smaller than the U.S. market or the European Union market. Consequently, the returns to Canadian innovators would be correspondingly low if innovators were restricted to their domestic markets. Global trade and capital liberalization are especially important to innovators in smaller economies, for these reforms effectively give them access to the same markets innovators in large countries can reach.

Policy Implication: Trade and capital flow liberalization are critically important to a small knowledge-based economy.

Paradoxically, many small knowledge-based firms in small countries can "go global" without exporting. This is because they sell their products to multinationals that operate in their countries. The multinationals then ships these goods to their worldwide operations, where they either use them as inputs in their own production processes or resell them. We have called this "intermediated globalization" in other writings.[16] The advantage to the small firm is that it retains control of its production process and keeps its technology at home, yet avoids the costs of running its own exporting operation.

Thus "export subsidies" and other government programs aimed at helping small domestic firms tap foreign markets on their own may not always be necessary. Intermediated globalization may be cheaper and more efficient in many cases. This is especially true if many multinationals are competing with each other to act as conduits to global markets for local producers. If only one multinational is present, it might try to extract monopoly prices for acting as a conduit. All multinationals, not just Canadian multinationals, can serve as conduits to global markets for small Canadian firms. To make global access as cheap as possible for small Canadian firms, Canada should welcome foreign multinationals.

[16] See "The Internationalization of Small and Medium Size Firms: A Policy Perspective," with Zoltan Acs, Randall Morck, Myles Shaver, and Bernard Yeung. *Small Business Economics*, Vol. 9, No. 1, February 1997, pp. 7-20.

Cross-fertilization in ideas encourages innovation. Multinationals, both Canadian and foreign-owned, not only serve as conduits by which small Canadian firms can reach global markets, they are also pipelines that bring knowledge of foreign innovations to Canada, and these often stimulate Canadian innovations. This two-way flow makes openness to multinationals important.[17]

Policy Implication: Canada should remain fully open to multinational firms. Local knowledge-based firms benefit from the presence of many competing multinationals, whether Canadian and foreign-controlled, and can use them as two way conduits to world markets.

Free capital flow is as at least as important as free trade in goods and services. This is because initial investments in knowledge-based firms are risky and hard to value appropriately. Large U.S. venture capital funds retain specialized technical experts to evaluate requests for capital. Good experts are expensive. Also, since venture capital funds want to keep their discoveries secret from rival funds, outsourcing such expertise is undesirable. This means venture capital funds must be large enough to spread the cost of such expertise across many investments, or highly specialized so they can get by with a smaller number of technical specialists. This means venture capital funding works best in a very large economy, like the United States, where such economies of scale and economies of specialization can be achieved. In a smaller country, like Canada, venture capital funds have difficulty flourishing.

[17] See also "The Corporate Governance of Multinationals," with Randall Morck, in Corporate Decision Making and Governance in Canada, Ron Daniels and Randall Morck (eds.), Industry Canada, Canadian Government Printing Office, 1995, pp. 433 - 456.

To be economically viable in the long term, a Canadian-based venture capital fund should be able to invest much of its capital outside Canada. Similarly, Canadian entrepreneurs will have to rely on foreign venture capital funds. This cross-fertilization is the only way the necessary scale and specialization can be brought to bear on the Canadian economy.

Policy Implication: Capital, including venture capital must be allowed to flow freely across national borders, especially if it is to be available to entrepreneurs in small economies.

The Canadian government's support of the Multilateral Agreement on Investment is therefore justified, and whatever successor treaty emerges from the World Trade Organization should be steered, if possible, towards national treatment for venture capital funds worldwide.

The current rules that limit tax-exempt investment funds, such as R.R.S.P.s and pension funds, to 20% foreign content are costly to Canada. They effectively prevent these institutional investors from fully entering the venture capital field by restricting the feasible scale and specialization of their venture capital operations. Canada just isn't big enough to support such high cost financing. Canadian entrepreneurs need access to globally competitive venture capital funds. Canadian savers should also be able to hold such funds in their R.R.S.P.s and pension funds.

Policy Implication: The 20% foreign content limit on pension and other tax-exempt investment should be eliminated.

Also, tax rules that discourage Canadians from investing abroad make no sense in a knowledge-based economy. Canadian investors should be able to hold many venture capital funds, not just funds based in Canada. Moreover, such arbitrary restrictions on savers' freedom to invest wherever they want risk discouraging private savings and encouraging dependence on government-run old age income support plans.

Policy Implication: Personal income from Canadian and foreign investments should be taxed identically.

Of course, if our earlier advice about switching to consumption taxes is heeded, this point is moot.

Finally, Canada needs technical expertise and entrepreneurial talent. Even if we provide first class education for our children, the technical and entrepreneurial expertise we need to compete in the global knowledge-based economy will be too sparse in our aging population. The simplest solution is to quit exporting such people and to import more of them. We have already argued that lower personal income taxes are the way to dam the outflow of talent. Canada's immigration policy should manage the inflow.

Policy Implication: Canada's immigration policy should be fine tuned to correct economic and demographic imbalances. Specifically we should deliberately target young, educated people for rapid, hassle-free immigration.

To some extent, our current immigration policies do this. These aspects of immigration law should be held sacrosanct. Economically and demographically managed immigration should dominate other considerations in the future.

VI. People First

Ultimately, new knowledge is created by people. Corporations, universities, hospitals, communities, ethnic groups or geographic regions can either support innovative people or frustrate them. Encouraging innovation means, first and foremost, encouraging innovative people. This calls for a more "individual-oriented" political philosophy than many in Canada are comfortable with.

Education should be about empowering individuals to prosper in a knowledge-based economy. Recent experiments with free competition among public schools for students, and between public schools and charter schools have been largely successful, despite some isolated cases of malfeasance and fraud. Alberta, where these programs began, has achieved considerable success, with its students recently ranking third in the world, behind only Singapore and Korea, in basic science competence.[18] This competition has fostered a bounty of educational choices for students, ranging from foreign language immersion to Montessori public schools, to public schools focusing on music and fine arts. The costs, some narrow sectarian religious schools and a few instances of fraud, seem piddling.

[18] In the results of the *Third International Mathematics and Science Study*, released November 20, overall Grade 8 science students in Alberta tied for third place with Japan. In mathematics, Alberta Grade 8 students earned a spot in the top one-third of participating countries. The study was conducted between 1994 and 1996. In Alberta, over 2,240 students from 51 schools were tested in 1995. For details, see the ATA News, Volume 31, Number 8, November 26, 1996.

Policy Implication: Institutions that provide education, including public schools and universities, should have to compete freely for students.

Municipalities and provinces should be encouraged to allow students attend whatever school they want to attend, not the geographically nearest school. Schools should be paid by governments on a per student basis. Schools that fail to attract enough students to be viable should be closed. Their physical premises should be turned over to successful schools as satellite campuses.

Universities, technical institutes, and colleges should also be forced to compete for students. Currently, institutions of higher learning charge out-of-province students high fees and subject them to quotas while offering steeply subsidized education to residents. This prevents competition between universities.[19] Canadian students, dismayed at the poor quality of their local universities, face steeply higher costs if the try to go elsewhere. Canadian universities have correctly come to regard local students as a captive market and government support as their entitlement. This removes any incentive to innovate or otherwise improve the quality of their teaching and research.

Each university should charge one flat fee for all students. Governments should subsidize people, by giving students scholarships good at any approved university, rather than funding universities out of general revenues. Scholarships worth more could go to students with better academic records or greater need, simulating a sliding tuition scale. Provinces whose universities are inefficiently run or academically substandard would pay the price more visibly in

[19] This reflects universities' desire to raise more money and voters desire for cheap education. High out of province tuition is a politically perfect tax. It is a tax on foreigners living abroad – or at least parents living out of province. Canadian universities can do this because many foreign students still see them as competitive with US schools of similar quality.

an outflow of top high school graduates. The federal government's recently announced national scholarship programs are a welcome step in this direction.

Even elite private U.S. universities depend heavily on government funding, especially to support research. Large-scale targeted research projects like the space program, the war on cancer, and so on have provided political support for research and, since they have clearly defined goals, can be evaluated meaningfully. Other agencies, like the National Science Foundation, provide large grants to credible research leaders who then subdivide the funds among junior researchers. Canada's federal research granting agencies dole out relatively small amounts of money to many individual researchers, both senior and junior. To some extent this is necessary because Canada lacks sufficient credible senior researchers in many areas. However, Canadian granting agencies' arcane and complex application and evaluation unnecessarily deter good people from serving on granting committees. This leads to apparently random funding decisions that, in turn, deter good junior researchers from applying[20] The result is a system lacking quality control and exposed to unnecessary academic politics. Unsurprisingly, public support for increased research funding is tepid. These problems appear to affect the social sciences and humanities most severely, but are far from unknown in the natural and medical sciences.

Policy Implication: Research funding in Canada should be subject to better quality control. Simple, objective criteria, like the applicant's track record, should determine what gets funded and what does not. Researchers with world class reputations, not academic bureaucrats skilled in "grantsmanship", should be in charge.

[20] Even researchers need incentives. See "Incentives in basic research," by Lazear, Edward P., *Journal of Labor Economics*, v15n1 (Part 2). Jan 1997, pp. S167-S197.

Attempts to move in this direction have been undermined in the past. For example, a few years ago the rules for one agency were changed so as to rank applications by established researchers two thirds on track record and one third on the granting agency committee's opinion of the research. Unfortunately, the agency imaginatively interpreted these rules as allowing its committees to decide which applications should get funded any way it wanted, and then to rank the approved applications in the required way. This method remains in use to our knowledge. This resistance to quality control underscores the critical lack of world class researchers at most Canadian universities.

Weak universities are a serious problem in a knowledge-based economy. An increasingly persuasive line of empirical research in economics shows that knowledge-based firms in the United States are geographically clustered, mainly around elite universities.[21] Many Canadian universities neither foster frontier research nor deliver stimulating teaching. Rather, a sort of pseudoresearch dominates. Poorly paid, mediocre professors write scores of papers that are never read financed by federal research grants that are given out by committees of the same sorts of professors. The role of peer review in Canada is to make sure too many of our universities never get any better.

If the government is serious about fostering a KBE, the universities should play a central role. That means they should pay higher salaries to attract and keep star professors. It also means that very large research grants should go to such people. This would be a big departure

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[21] This idea was originally proposed by Alfred Marshall in "Industrial organization, continued -- The concentration of specialized industries in particular localities," Chapters X in Book IV (The Agents of Production, Land, Labour, Capital and Organization) of the <u>Principles of Economics</u>, 8th edition, Philadelphia, PA: Porcupine Press. 1920. pp. 223-231. It has been taken up again by Paul R. Krugman in <u>Development, geography, and economic theory</u>, Cambridge, MA : MIT Press, 1995. Empirical support is presented by Henderson, Rebecca Jaffe, Adam B Trajtenberg, Manuel, "Universities as a source of commercial technology: A detailed analysis of university patenting, 1965-1988," *Review of Economics & Statistics*. V80n1. Feb, 1998. p. 119-12 and Adams, James D Jaffe, Adam B, "Bounding the effects of R&D: An investigation using matched establishment-firm data," *Rand Journal of Economics*. v27n4. Winter 1996. p. 700-721.

from the current flat salary structures and egalitarian (or perhaps progressive) distribution of research grants by the federal grant committees. Given these problems, Canadian universities are poorly equipped to lead Canadians into a knowledge-based economy. However, the situation is not beyond help.

Policy Implication: It may be necessary for the government to focus research funding on institutes that are only loosely affiliated with Canadian universities.

In the United States, institutions like the National Bureau of Economic Research, the National Institutes of Health, and the Woods Hole Oceanographic Institution are unrivaled centers of research activity. In Canada, such institutions could be used to attract top quality people without initially breaking the salary norms of sleepy universities. Subsequently, the institutes might invigorate the neighboring universities. Alternatively, top researchers could have university positions with normal Canadian salaries and simultaneous appointments to research institutes to top up their salaries to internationally competitive levels.

A common characteristic of U.S. high technology clusters is a core of competing, geographically proximate universities surrounded by a ring of research institutes and research oriented firms. The center of the Route 128 cluster in Massachusetts is Greater Boston, which contains MIT, Harvard, Boston University, Boston College, Northeastern University, the University of Massachusetts, Suffolk College, Brandeis University, Tufts University, Simmons College, Wellesley College, and many other advanced education institutions. The high technology cluster in North Carolina is built around a “research triangle” encompassing Duke University, the University of North Carolina and North Carolina State University. That in northern California is centered on Stanford, but draws on several universities in the California state systems, most noticeably U.C. Berkeley.

The reasons for this clustering are not fully understood. The right mixture of competition and cooperation between these schools may be critical, or knowledge used in one firm may "spill over" to others, or a critical mass of skilled people may be the essential factor.

Certainly, it makes sense for knowledge-based firms to locate where a pool of skilled labor already exists. This reduces recruiting costs and competition between job applicants keeps salaries more under control. Similarly, risk averse skilled workers are drawn to places where many potential employers are located. First, because competition between employers drives wages up. Second, because high technology ventures are often high risk propositions. If one employer goes broke, or just fails to take off, this is certainly less traumatic with a multitude of other employment opportunities at hand.

Labor market flexibility can be increased or decreased by government policies. The allowable vesting rules for pension plans are one factor that appear to prevent workers from moving readily from one firm to another. If pensions are not portable, jobs at high-risk enterprises become relatively less attractive.[22] Is that the right cite? Excessive job security laws both deter companies from hiring people in the first place and lessen employees incentives to keep their knowledge up to date.[23] Ironclad tenure no longer exists in many universities, including the University of Alberta, and is even eroding in the civil service. In a knowledge-based economy, with high bankruptcy rates, and rapid turnover in the ranks of leading corporations, legally mandated job security is a costly anachronism.

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[22] See "Pensions and Deferred Benefits as Strategic Compensation," by Lazear, Edward P. *Industrial Relations* v29n2. Spring 1990. pp. 263-280.

[23] Cite the high unemployment rate in Germany and the poor test results of teachers in public school systems who are required to get recertified.

Policy Implication: Labor laws should aim to reduce the pain of job changes rather than the frequency of them. The focus should be on "risk management", not risk elimination.

As we argued in the chapter on "Economic Underpinnings of a Knowledge-Based Economy" it makes more sense for government to help people manage the inevitable risks in their careers than to Quixotically strive to eliminate those risks.

Many commentators on the knowledge-based economy express grave doubts about the prospects of low skill workers. Canada's unskilled workers have done relatively well off industries like oil, mining and assembly line manufacturing. Are their incomes now at risk? It is too early to tell, but we doubt it. At the turn of the century, the majority of jobs in Canada were in agriculture. Agriculture became more automated in the twenties as companies like International Harvester came of age, and farm labor jobs largely disappeared. Entrepreneurs found other uses for these people - they did not all become permanently unemployed. The wages of unskilled workers probably have to fall until a new knowledge-based industry finds uses for them. In the 1930s, it was hard to predict that GM would hire tens of thousands of unskilled workers in the 1950s.

We do not know who will hire unskilled workers in the 21st century, but unless governments make it impossible, someone will. Perhaps the only opportunities for the unskilled will be in fast food restaurants, but we doubt it. If emerging economies continue to exhibit high volatility and political instability, as Russia and Indonesia now do, companies in the developed world will be reluctant to move production facilities there merely to tap low cost unskilled labor. If emerging economies stabilize and prosper, their wage costs will rise rapidly, as in Singapore, Korea and Japan, and again the advantage of relocating production there will disappear.

Government can help minimize the pain of the transition. Education opportunities for adults, laws that protect the mobility of pensions, guaranteed free movement of workers between provinces, and the removal of artificial barriers to entry around trades and professions all help. Universities and colleges can be encouraged to offer "fast track" degree programs for adults.

VII. Government in the Nordic Tradition

Canada's experiments with social democracy have borrowed heavily from the Nordic countries, especially Sweden. An old Nordic legend tells of the Viking high king, Canute the Great, Lord of Denmark, Norway, Sweden and England, who tired of his ministers' and courtiers' continual flattery and begging for favors. The king ordered his throne and court moved to the beach, and then decreed that the tide should not come in. He ordered the ministers and courtiers to stand by the throne as the tide nonetheless rose, drenching them all. The moral of this story is that there are some things totally beyond the power of government, even in an absolute monarchy like Canute's realm.

Canada needs to learn from the ancient wisdom of the Nordic countries what their own modern history forgot. The power of the state is limited, sometimes severely. Even if the goal of public policy is made more modest, like empowerment instead of equality, tradeoffs still limit the possibilities. Trying to open every door for everyone would require exorbitant taxes that would quickly swing most doors shut. Opening the most doors for the most people implies accepting a trade-off.

In the past, economists regarded government as a power above the economy, an umpire that could regulate and direct it, but not part of the game. This model makes little sense in a knowledge-based economy, for its government is a key part of its economy. If a county's government is not competitive, the economy itself is also not competitive.

We have argued that a competitive government provides only the public goods people want and does so at the lowest possible price. A competitive government in a knowledge-based economy should also be innovative. It should always be searching for more efficient ways of producing existing public goods and for popular new public goods that might replace or supplement existing ones.

Policy Implication: Competitive government is innovative, cost effective government. It need not be the smallest possible government.

People do want publicly provided goods and services. Skilled people and knowledge-based firms do not flee Massachusetts and California for Arkansas and Louisiana, even though this move would reduce their taxes. People and companies value the superior education systems, honest judicial systems, and smoothly paved highways their higher taxes make possible.

The issue is value for money, not the size of government *per se*. Innovators, skilled knowledge creators, and entrepreneurs will locate in jurisdictions that provide the most desirable public goods and services at the best price. The task of government in a knowledge-based economy is therefore to determine what public goods people want and then to find ways to deliver them more cheaply than other governments without compromising quality. Unsurprisingly, this is exactly how knowledge-based companies have to behave to retain their customers. Innovative, knowledge-based economies need innovative, knowledge-based governments.

An example of this is municipal government in Silicon Valley, California. In a typical municipality it can take weeks or months to procure the approvals, stamps and permits necessary to begin construction. Competition between municipalities there has recently come to a pinnacle with Santa Clara County's Internet-based building permit system. Contractors need not even go to city hall, they just have to point and click. Fussy Yuppie residents nonetheless safeguard neighborhood characteristics and quality control by having these characteristics incorporated into the computerized system.

Many of Canada's regional governments appear, at first blush, rather uncompetitive. Canada's attempt to prevent internal migration by equalizing economic outcomes across provinces and regions with equalization transfers has the pernicious side effect of propping up inefficient governments.

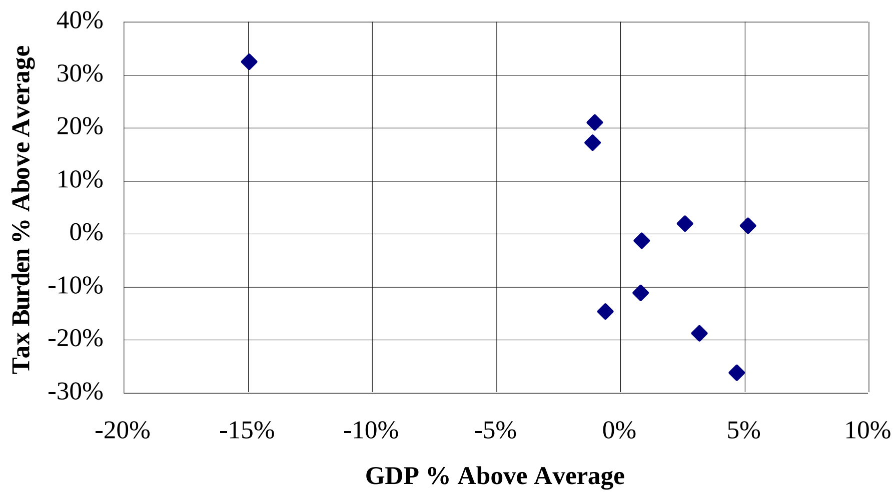
The uncomfortable, and rarely discussed, relationship across provinces between tax burden and economic performance is displayed in Table 2 and graphed in Figure 2. Poor provinces have high tax burdens and rich provinces have low tax burdens.

Table 2. Tax Burdens Across Provinces and Provincial Economic Performance

Province	*Income tax on C$100,000 wages*	*PST and GST based on 10% savings rate*	*Total taxes*	*pretax GDP per capita*
British Columbia	$37,614	$7,861	$45,475	$27,478
Alberta	$35,029	$4,093	$39,122	$31,078
Saskatchewan	$39,572	$7,614	$47,186	$23,895
Manitoba	$38,654	$7,730	$46,384	$23,139
Ontario	$37,013	$8,503	$45,516	$28,376
Quebec	$40,603	$7,751	$48,354	$23,796
New Brunswick	$37,991	$8,371	$46,362	$20,824
Nova Scotia	$37,239	$8,473	$45,712	$19,996
Prince Edward Island	$37,967	$9,491	$47,458	$19,030
Newfoundland	$40,054	$8,093	$48,147	$17,299
Average	$38,174	$7,798	$45,972	$23,491

The income tax calculation uses the computer package Quick Tax and assumes a dependent spouse and two dependent children. The taxpayer's wages are the only source of income.
GDP per capita is from Statistics Canada, 1996 year-end figures.

Figure 2. Above Average Tax Burden versus Above Average Income. Each Observation Corresponds to One Province.



Source: Table 2.

Figure 2 shows a clear negative relationship between tax burden and per capita GDP. Since all Canada's provinces provide roughly similar public goods and services, the vertical axis of Figure 2 can be thought of as the cost premium (or discount) different provinces give their citizens. Cheaper public goods and services accompany higher incomes.

This reasoning suggests that Canada's "have not" provinces might be poor because their governments are uncompetitive. They cost more than governments in the "have" provinces, but produce public goods and services that are, at best, similar to those available in "have" provinces.

The implication is that inter-provincial equalization payments penalize competitive provincial governments and subsidize uncompetitive provincial governments. They thus lower the overall quality of government in Canada.

Policy Implication: Interprovincial equalization transfer payments should be phased out.

Inter-provincial equalization may have another unintended pernicious effect. It may block the natural formation of such local concentrations of innovative businesses and knowledge. This discourages innovative businesses that require such concentrated pools of talent. The shortage of such employers makes knowledge-based industry careers less attractive in Canada than they would otherwise be. Further market-driven centralization of Canada's economic activity may be desirable. Depressed regions of the country should ultimately benefit as emigration and business failures that force their regional governments to provide better public services at lower cost.

VIII. No Special Deals

Governments that compete with each other to offer special subsidies and tax concessions to potential new businesses are not providing good government. Businesses that do business by haggling, like car dealers, are regarded with suspicion, even when they are giving the customer a good deal. Businesses long ago learned that fixed prices are an important signal of honesty and impartiality, and these perceptions are good for business. Governments need to absorb the same lessons.

Policy Implication: Do not provide special subsidies or tax breaks to chosen companies.

Aside from the public relations costs of such deals, governments have a very poor track record at picking winners. Even Japan’s once lauded Ministry of International Trade and Industry (M.I.T.I.) has been humbled by careful econometric studies showing that it mainly propped up losers and certainly did not pick winners.[24] Firms that know they are winners do not need such special deals, and generally do not want them so as to avoid owing favors to politicians. Offering such subsidies and concessions therefore tends to attract only weak, uncompetitive firms.[25] Conceivably, the negative relationship across provinces between above average taxes and below average per capita GDP shown in Figure 2 might reflect such an attraction of weak firms to provinces with generous subsidies and correspondingly high taxes. Innovative firms flourish in a competitive environment with cost effective government that provides sound legal and economic institutions.

When the public learns of multimillion dollar subsidies to businesses, they are understandably upset.[26] (The feeling is much the same as learning that a neighbor bought the same car you did for $5,000 less.) If the subsidized firm goes under anyway, politicians generally end up taking the blame for wasting taxpayers' money. Allegations of corruption usually follow.

To some extent, these popular misgivings are justified by the track record. The Alberta Treasury branch, a provincial bank founded to relieve Alberta farmers during the depression, has recently become involved in bribery and corruption scandals.[27] In our view, the basic problem is that subsidies attract troubled businesses. Sound ventures neither need nor want them.

Government in a successful KBE must be especially deaf to lobbying by special interests. Creative destruction of necessity destroys non-innovative firms. Out of desperation, many of these turn to lobbying. Where the lobbying is clearly for special favors, it is relatively easy for

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[24] See "Growth, economies of scale, and targeting in Japan (1955-1990)," by Richard Beason and David Weinstein, *Review of Economics & Statistics* v78n2. May 1996. pp. 286-295.

[25] Conceivably, the negative relationship across provinces between above average taxes and below average per capita GDP shown in Figure 2 might reflect this attraction of weak firms to provinces with generous subsidies and correspondingly high taxes.

[26] The ongoing press coverage of subsidies to Montreal aerospace firms featured headlines like "Billions in Federal Loans Unpaid" (*Globe and Mail*, June 13 1998) and "Ottawa May Hike Bombardier Subsidies" (*Globe and Mail*, September 8, 1998).

[27] See "A Black Mark for Alberta" *Globe and Mail*, May 19, 1998.

politicians and civil servants to resist. Therefore, much corporate lobbying by non-innovative firms is for "level playing fields". Such demands should be viewed with suspicion. They are too often euphemisms that really conceal demands for special favors and subsidies. Studies have shown, using both theoretical arguments and empirical data, that “rent-seeking”, or investing in lobbying to gain preferential legal or regulatory treatment, is seriously detrimental to economic growth.[28]

Policy Implication: We need a treaty here.

Canada's concentrated capital ownership affects government-business relationships by altering the dynamics of political lobbying. Control pyramids, cross holdings and restricted voting shares all let controlling shareholders lobby government with other people’s money. These altered dynamics make political rent-seeking exceptionally menacing to Canada's success in the global KBE.

VIII. Regulating the Internet

On July 31 1998, the Canadian radio and Television Commission (CRTC) asked Canadians to tell it whether it should regulate Internet video and audio real-time services. The CRTC said regulation could be used to promote Canadian culture and to protect youngsters from pornography. While parents groups reacted enthusiastically, the CRTC itself seemed more concerned about its role in promoting Canadian content than about policing smut on the Internet.[29] The CRTC statement said that its role is to “ensure the availability of high quality and

[28] See Murphy et al. AER and QJE
[29] See “CRTC Asks if it Should Regulate the Internet” *Globe and Mail*, August 1, 1998.

diverse Canadian programming …" and pointed out that the "substantial growth and development of new media, and their delivery over both global and domestic networks, have not altered this fundamental objective." The CRTC suggests that one way to do this is to force Internet access providers to contribute to a fund for developing Canadian content. This would essentially be a tax on Internet access.

Canada has hate laws and pornography laws that apply to the Internet as well as to any other media. If voters feel they are too weak, these laws can be strengthened. Special laws for Internet smut are probably unnecessary.

Canadian content regulations have become obsolete and no attempt should be made to revive them. The Canadian culture industry has been protected from foreign competition for a full generation now. It can no longer credibly claim to be an infant industry. Canadian cultural industries should now be weaned. It should be exposed to global competition. In our opinion, many Canadian cultural businesses will succeed in this forum. Canadian radio and television are now mature commercial businesses capable of holding their own.

Taxes on Internet access would unnecessarily discourage Canadians from using on-line businesses. This is bad for two reasons. First, access taxes are most likely to deter low-income families from gaining Internet access, widening the gap between their children and the computer literate children of high-income families. Second, Internet commerce, entertainment, and information access are a potential boon to small, isolated Canadian towns and cities. Anything that artificially deters people from using the Internet only unnecessarily adds to their problems. A geographically dispersed country like Canada is where Internet services are likely to be most valuable.

Policy Implication: The Canadian government should not regulate or restrict Canadians' access to the Internet in any way. The rule in a knowledge-based economy is to facilitate rather than to impede information flow.

The CRTC's old mandate, to promote Canadian content, is fulfilled. It is understandably anxious to move on. We suggest that the CRTC's mandate should be changed to one of insuring that Canadians have the widest possible access to radio, television, and Internet access at the lowest possible price. It could be charged with investigating fraud claims against Internet businesses and with insuring orderly Internet commerce. In this capacity, the CRTC might well come under the administrative umbrella of Industry Canada. Certainly, the transformation of the CRTC we are suggesting would be as abrupt and dramatic a change as the transformation of the Foreign Investment Review Agency into Investment Canada in the mid-1980s.

IX. A Compassionate Society?

Canada has a self-image of being a "kinder, gentler" North American society. Canadians feel sorry for losers and envy winners. This is a costly philosophy. The hard nosed approach of leaving the shareholders and managers of losing firms to swing in the wind probably does work out well in the long run. The workers can find jobs if the economy is buoyant enough and shareholders and corporate managers are incongruous recipients of dole money. Unfortunately, the long run is often too long for many voters.

The problem is therefore to find social programs that deal compassionately with its destructive side, but that do not undermine the essential process of creative destruction.

We admit that we do not know how to do this. Clearly, there must be welfare for the unemployable and the seriously ill. Clearly, welfare should not be available to able-bodied loafers. But who is in which category? What should be done with people who are neither loafers nor unemployable? Dealing with these problems will require innovative thinking.

Governments must find ways to deliver social assistance more effectively and at lower cost. Paying private contractors to run social assistance programs for flat fees should encourage such innovation. Different provinces should be able to try workfare, retooling programs, and other promising innovations. Whistle blowers who expose corruption or waste in the delivery of social assistance should be rewarded and protected from reprisals. Most importantly, different provinces should be free to try radically different approaches. This lets us try ten times as many alternatives as would be feasible under strict national standards.

Policy Implication: Adherence to national standards in social programs should not be an absolute requirement of provinces. Deviations should be legal if they might lead to innovative new approaches in the delivery of social programs.

4. Conclusion

Canada is part of the global knowledge-based economy, whether we like it or not. We can either restructure our economy on our own terms, or delay change until our economic retardation becomes a crisis. Improving the competitiveness of our government is a key part of the required restructuring.

Economically essential people and everyone's savings can and do choose governments. Our government has to out-compete other government to retain mobile people and capital. It must do this by providing better public goods and services at a lower cost. This is the same goal any other enterprise anywhere must strive for to out-compete its rivals.

In steering towards this goal, our public policy makers must safeguard the essential features of a knowledge-based economy we sketched out in the chapter "Economic Underpinnings of a Knowledge-based Economy". These are individual empowerment, incentives, and continuous change. The basic idea is that empowered individuals should get rich when they come up with innovations that consumers value. This process of economic growth is called creative destruction, because creative new innovators are continually rising to destroy stagnant old firms.

Public policy should support these basic workings of a knowledge-based economy. In particular,

1. Public policy should promote and protect an institutional environment that empowers individuals, creates sensible incentives, and accommodates change. Creative destruction requires both the rise of new businesses and the fall of old ones.
2. Government should provide the public goods and services people want, and only those, at the lowest cost, measured in terms of both actual costs (taxes, fees, the deficit, and the like) and hidden costs (perverse economic incentives, waste, dealy, red tape, and the like).
3. Government should be innovative in the same way businesses in a knowledge-based economy must be innovative. It should constantly be searching for ways to deliver better public goods and services at a lower cost.

These points all require government to recognize that a knowledge-based economy is a people-oriented economy. Knowledge is stored in people more than in companies, ministries, universities, communities, or ethnic groups. It takes human effort to create and apply knowledge. Public policy must be based on how human beings actually behave, not how brainless robots follow instructions. Actual human beings respond to incentives – positive and negative, not government's wishes.