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Welcome to Regulatory Strategy

In March 2008, a group of senior officials spent an evening discussing regulatory strategy with several scholars and experts. We agreed easily that significant forces were reshaping the field and on the need to reinvent what many see as “old government” to ensure its vital role in shaping Canadian society continues.

There is a growing role for regulation in shaping our actions with respect to the environment. A series of events over the last year brought the issues of food security and safety to the forefront. The more recent financial crisis has also underscored not only the importance of regulatory oversight but the increasing need for a global framework. With so many challenges, there are questions about the continued relevance of practices that have worked well but may have become obsolete. At the same time,

we wonder whether our science which informs regulations can manage the level of complexity now confronting us.

The internationalization of risks, emerging technologies, environmental concerns, new governance instruments, and the rise of activist non-government non-business stakeholders are dramatically modifying the context in which regulations are created and implemented.

It is with the aim of bringing some insight and starting to address questions raised during an evening conversation that this issue of *Horizons* was developed.

Horizons - Regulatory Strategy offers articles on critical issues across a wide range of subjects germane to regulatory development. The goal is to encourage discussion and possibly generate new approaches.

The questions examined can be clustered under a set of themes: What forces are shaping and changing the regulatory landscape? What, is happening in regulatory governance? What are new developments in institutional capacity?

Two authors explore drivers of change by addressing the questions:

- Why is the need for international risk governance increasing? How can it be best supported within the context of national governments' own policies?
- How will the emergence of private politics affect the policy environment and the strategy of governments? How do governments promote transparency, quality, and utility?

Christopher Bunting (foreword by the Hon. Donald J. Johnston), argues that a responsive and participative risk governance function is vital to address public concern about risks and their management. Numerous emerging global issues, such as nanotechnology and bioenergy, require an integrated approach to risk assessment and management across all governments and among all sectors of society. This has led to the development of a risk framework by the International Risk Governance Council (IRGC) to help decision makers better understand and manage risk. The big follow-up question is what are Canada's options as an active international player?

Daniel Diermeier explores the influence of private politics on the public sector's ability to govern effectively. Private politics consists of the use of market mechanisms by activist groups to change business practices rather than the more traditional regulations. However, private politics is a double-edged

sword for governments that can work at odds with existing public policy. Government must ask how it can influence the rules of private politics? In an ideal scenario for government, activist groups would become an efficient mechanism of the democratic process.

Three authors look at governance and attempt to answer:

- Can a regulatory agenda and budget provide more effective prioritization and management?
- How should regulators develop strategies to rank the risks they face and are trying to mitigate?
- What are the models and criteria for gauging the effectiveness of a regulatory proposal challenge function in Canada?

Bruce Doern explores the concept of regulatory budgets and agendas. A regulatory budget would set limits on the costs of new regulation on the private sector with a view of maximizing the regulatory net benefits. Internationally, the United Kingdom has come close to this type of approach with a commitment to create a regulatory budget in its 2008 budget. Professor Doern argues that a regulatory agenda and budget could contribute to achieving regulatory benefits at least cost, with greater

transparency for Canadians, and better allocation of science-based capacity and resources.

Richard Belzer examines the challenge function. In addition to promoting transparency, quality, analytical rigour, and utility for decision making, challenge functions are needed because regulatory bodies and stakeholders often disagree about certain fundamental issues. Several models (e.g., centralized review, persuasion and co-option, peer review, separation of policy and analytical functions, competitive supply) and principles (e.g., clarity of purpose, institutional capacity, independence, timing of intervention, transparency, the extent of challenge function authority) are being examined and assessed.

Baruch Fischhoff and Granger Morgan outline the potential role of risk ranking to better understand risk. While the list of risks to the health and safety of Canadians may seem endless, the resources available to governments are bound by the requirements of many competing priorities. These limited government resources require focusing attention on the risks that pose the

greatest threat, or that generate the most public concern. Hence, risk ranking can help regulators set effective priorities.

What forces are shaping and changing the regulatory landscape, what is happening in regulatory governance and what are new developments in institutional capacity.

Our last group of articles deals with institutional capacity.

- How far has the use of benefit cost analysis taken public policy and why should these types of evaluation approaches be instituted more broadly?
- What are the reasons for using quantitative regulatory analysis and market-based instruments? How has Canada performed in their use vis-à-vis other countries?
- Why would economists, analysts, and policy makers be interested in qualitative analysis when quantitative measures yield better information?

Arnold Harberger provides an overview of benefit-cost analysis. Responsible decisions on any proposal involve the weighing of benefits and costs in terms of the impacts on both a well-defined balance sheet and on welfare. Over time, significant strides have extended the reach of benefit-cost analysis into new territory, such as health policy, the environment, and infrastructure planning. But many challenges to applying benefit-cost analysis still exist, for example in areas of social policy, such as education or poverty. There is a potent role for benefit-cost analysis, but further gains will be realized only through additional hard work. The best way to promote objective analysis is to encourage professionalism and transparency (e.g., public regulatory evaluations).

Vic Adamowicz examines the role of market-based instruments and regulatory analysis in Canada. He argues that, over time, the performance of Canada has declined relative to other OECD countries in terms of regulatory analysis, and it has only recently begun embracing the apparent global wave of incentive-based policies. The Treasury Board Secretariat's current efforts in improving the institutional framework (i.e., guidance documents) and in enhancing analytical capacity within the federal government will improve Canada's position.

Andrew MacDonald and Robert Raucher discuss the contributions that qualitative analyses may have on complex decision making. While there are a number of reasons for using quantitative analyses for proposed regulatory proposals, including increased transparency and accountability in decision-making and enhanced analytical capacity, a well-conducted qualitative study can often play an essential analytical role in areas where costs and benefits can only be assessed with significant uncertainty.

We hope that this *Horizons* will encourage readers to think creatively about the future role of the regulatory function and that these ideas will contribute to an improved framework for decision making. ●

André Downs

Director General
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Regulation is a key component of the policy tool kit of governments. As with other components of the tool kit, such as taxation and spending, regulatory approaches have adapted to a rapidly changing environment. Over time, regulatory development strategies evolved with economic conditions, technological change, and emerging social priorities. For example, the emergence of increasingly globalized markets highlighted the need for better international regulatory co-operation (e.g., the regulatory co-operation component of the Canada-US Security and Prosperity Partnership). Greater interest and involvement of stakeholders in regulatory initiatives led to sustained efforts toward greater transparency and more

regulatory outcomes. Among others, new forms of risks arising from new technological developments (e.g., biotechnology, nanotechnology, alternative medicines), the emergence of new types of governance mechanisms (e.g., private politics, corporate social responsibility), and renewed concerns about the impact of regulations on productivity and competitiveness (e.g., climate change challenges) challenge the ways government develops and implements regulations.

Traditional Drivers for Reform: Accountability, Transparency and Effectiveness

Over the last several decades, many countries around the world focused on reforming their regulatory systems in various ways. As in other countries, Canada has in particular also been active in modernizing regulatory processes and approaches to ensure that they are streamlined, effective, efficient, and accessible to Canadians.¹

As a result of significant efforts to enhance the accountability, transparency, and effectiveness of the regulatory system, the Canadian regulatory process is now characterized by an inclusive approach that relies extensively on consultation and the involvement of stakeholders, increased reliance on quantitative analysis (e.g., benefit-cost analysis, regulatory impact assessment, and distributional impacts), improved instrument selection, and outcome-based approaches. As a result, decision makers are better informed

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extensive consultation (e.g., the new Cabinet Directive on Streamlining Regulations - 2007). Concerns about the increasing administrative burden on businesses, and the potential negative impact on competitiveness has led to initiatives to reduce the regulatory burden (e.g., the Paperwork Burden Reduction Initiative - 2007).

Today's economic and social realities have placed additional pressures on the performance expectations surrounding

1 Examples of initiatives that occurred in the last two decades include the Departmental Regulatory Review, the External Advisory Council on Smart Regulations 2004, and the Cabinet Directive on Streamlining Regulations 2007.

and equipped to select a course of action on justifying the need for action, choosing appropriate instruments, and minimizing negative competitiveness impacts. In particular, those efforts have improved regulatory analysis, evaluation, and accountability capacities to the extent that human health and environmental risks mitigated or abated by regulation are more often quantified and even monetized.

In addition, regulators have generally moved away from “command-and-control regulations” to more outcome-based approaches. Instead of regulations specifying how industries must change their operations, the trend is toward outlining a performance objective where the compliance approach used is chosen by the regulated. For example, the *Regulations Respecting the Sulfur Content in Gasoline*, which were first introduced in 1998, outline the maximum level of sulfur content concentration in gasoline, but do not prescribe any specific process changes.

Also, more concern is placed on understanding the dynamic implications for industry and employment patterns as well as accounting for the regional distribution of the impacts across Canada. That is, in addition to examining the advantages and disadvantages of a proposed regulation, more consideration is placed on how projected benefits and costs are distributed among the population (e.g., plant closures, job losses).

Emerging Drivers: Globalization, Nature of Risks and Regulatory Governance

Policy research efforts to enhance accountability, transparency, and effectiveness must continue to be a focus of governments. However, Canada and its trading partners are adapting to emerging drivers that are changing the environment in which governments operate and creating new challenges for regulators.

The recent evolution of globalization, with its increasing emphasis on trade in services and in tasks, focused further attention on the role of regulations as a potential determinant of productivity and competitiveness, because of their impact on the international movement of goods, services, and factors (i.e., capital and labour), and on innovation. An increased emphasis on international regulatory co-operation has been a key response to this challenge, but the complex ramifications between regulations and globalization will require further efforts to ensure the adequacy of the regulatory function to the new international distribution of labour and tasks.

The changing nature of technological, economic, and social risks also constitutes a key emerging driver that requires a re-examination of the role of regulations and regulatory processes. Rapid technological change and new technological platforms (biotechnology, nanotechnology etc.) are creating new forms of risks that need to be understood and managed through regulatory frameworks. Economic agents

(i.e., firms, managers, workers, consumers) need to adapt to an increasingly fluid economic landscape, and their capacity to adapt is largely determined by the regulatory environment in which they operate.

Another important emerging driver is the emergence of new regulatory governance mechanisms. Rapid changes in information and communication technologies facilitated the involvement of stakeholders in different mechanisms that aim at altering the behaviour of economic and social agents for the purpose of attaining economic and social outcomes traditionally sought through directive regulatory instruments, such as regulations specifying the content of products or the way services are rendered. In today’s environment, economic agents and stakeholders can mount strategies, pursue alternative legal actions, implement boycotts, or launch information campaigns to influence behaviour and ensure that chosen outcomes are reached. This has a major impact on how regulations are developed and implemented, and it offers new avenues to regulators to attain economic and social objectives.

New approaches to regulatory governance acknowledge the reality that globalization and the flourishing information communication technologies have transformed “rule making” from the unique purview of domestic governments to potentially the collective responsibility of numerous international governments, communities, interest groups, and citizens. This reality necessitates an emphasis on under-

standing inter-dependencies and developing approaches to fostering co-operation and collaboration domestically and internationally.

How regulators respond to these emerging challenges and opportunities will be critical for the functioning of economies and societies, and a key ingredient of the well-being of citizens. In this issue of *Horizons*, a number of articles explore these themes to inform and support Canada's regulatory community in assessing the potential impacts of these trends on the regulatory process.

Beyond the topics in this issue, however, a number of emerging complexities are surfacing (or in some cases re-surfacing) that may deserve special focus in the research work plans of government and non-government policy research organizations. These emerging complexities may require additional attention to ensure that the Government of Canada remains at the forefront of regulatory governance.

One complexity may be the understanding of strategic considerations regarding Canada being a "first mover" on introducing major regulatory initiatives. Notwithstanding small economy and competitiveness arguments that have been addressed empirically in the literature, clarifying the conditions

when moving first would be beneficial to Canadian strategic medium-term policy planning.

Similarly, another possible driver for change worth exploring further is the potential for governments to motivate other players to help achieve public policy objectives. While this strategy has commonly been used discreetly in government, a more structured look at the considerations of establishing more formal mechanisms to motivate other players would also be deserving of further policy research.

Another strategic response by government worth additional structured policy research is to better understand the potential impact of declaring the intention of providing government leadership to encourage actors in society to modify their behaviour voluntarily. These tactics have also been used routinely at all levels of government. Understanding the conditions where maximum success can be achieved using this tactic may be helpful in developing strategies.

Finally, while the analytical treatment of evaluating proposed regulatory options has been more and more encouraged over time (and achieving reasonable success) in Canada, attention to broader considerations of regulatory strategy and policy may have

been diverted as a result. That is, an interesting question worthy of policy research may be to explore the impact of having applied scarce government resources toward the technical analysis of risks and economic considerations at the expense of creating a gap in the strategic and forward-looking needs. ●

Today's economic and social realities have placed additional pressures on the performance expectations surrounding regulatory outcomes.

Foreword by:
The Honourable
Donald J. Johnston

Chair, International Risk Governance Council

Article by:
Christopher Bunting

Secretary General, International Risk Governance Council

Foreword

These personal comments introduce the International Risk Governance Council (IRGC) to readers not familiar with the nature and purpose of this important non-governmental organization. In the following pages the Secretary General of the IRGC, Christopher Bunting, sets out in some detail the “modus operandi” of the IRGC and how it contributes to the understanding and governance of critical issues that must (or should) preoccupy policy makers around the world in both developed and developing countries.

international implications and inadequate regulatory frameworks. I was invited to become a member of the founding Board when I was Secretary General of the OECD, a directorship I readily accepted because I saw important synergies between the OECD and the new IRGC. I especially liked the fact that it was not dominated by either corporate interests or government, but represented a healthy balance that was globally dispersed.

As a former politician and cabinet member at the federal level in Canada, I was very sensitive to the primary responsibility and role of government to ensure the safety and security of the public. This has been the case for centuries, but globalization and the rapid pace of scientific innovation has created challenges that exceeded anything we faced even in the early 1980s when I was the minister responsible for science and technology. This point became very evident to me shortly after joining the OECD in 1996.

To underscore that observation, think of genetically modified food (GMOs). Here, genetic material has been altered through genetic engineering, which is then transferred to an organism giving it new or different characteristics. Proponents saw this as a huge breakthrough promising, for example, a new generation of disease-resistant crops that, could be resistant to disease, and in some cases, to levels of drought and salinity, and would contribute to meeting the challenge of agricultural shortages.

Globalization meant that such products would enter the international trade of agricultural goods. Opposition to

The International Risk Governance Council, its Approach to Risk Governance and How Public Policy Could Benefit from Improved Risk Governance

Currently, I am the Chair of the Board of Directors of this remarkable organization, which came into being in 2003 to fill a perceived gap in international public policy by identifying risks with

GMOs was striking and immediate. Were they dangerous to human health? The environment? Why were they needed? It seemed that the global benefits to be derived from these extraordinary technologies could soon be destroyed, because of the absence of credible, independent, scientific judgment on the risks and benefits of GMOs and, hence, the appropriate regulatory framework that should be established to guarantee those benefits and mitigate those risks, if there were, indeed, risks.

As a veteran of the battles over GMOs, I was immediately attracted to the role of the IRGC, even arguing that had it existed at the time of the GMO debate

and controversy, we might have been spared that sad chapter and moved ahead with agreed upon regulatory frameworks for GMO crops around the world, which would have satisfied proponents and opponents alike.

I cite that example because it well illustrates the important role the IRGC must play, especially in areas of emerging technologies: synthetic biology, bioenergy, nanotechnology or carbon capture and sequestration (so essential to the climate change challenge) come to mind. Without the IRGC's independent assessments, some very promising technological developments could find themselves mired in ideological and political debates, while others

might create concerns for public health and safety which have not been identified.

I saw and see a close relationship to the OECD as important in this regard because through that channel, the outputs of the IRGC can find their way to decision makers from federal governments around the world. I hope we see ever-increasing participation from these decision makers at the IRGC. This would ensure a broader understanding of how different governments address these critical issues with the IRGC providing a platform for the comparison and exchange of best practices.

About the IRGC

The establishment of the International Risk Governance Council in 2003, at the initiative of the Swiss government and the support of the OECD and several large companies including Electricité de France and Swiss Re, followed heightened public concern about risks and their management in the late 1990s. The cumulative impact of the BSE (Mad Cow Disease) crisis in Europe and particularly the United Kingdom, apprehension about genetic engineering, fears of the global failure of information technology systems (the "millennium bug"), and an increase in the frequency and severity of natural disasters created anxiety within society

and concerns for governments, regulators, and everyone involved in understanding and managing global risks.

The knowledge community – those responsible for providing the best scientific advice on which risk management decisions depend – were encountering difficulties in meeting the demands for factual certainty. Where this was clearly established, there were problems in communicating that knowledge to decision makers. Decision makers were themselves struggling with problems, such as

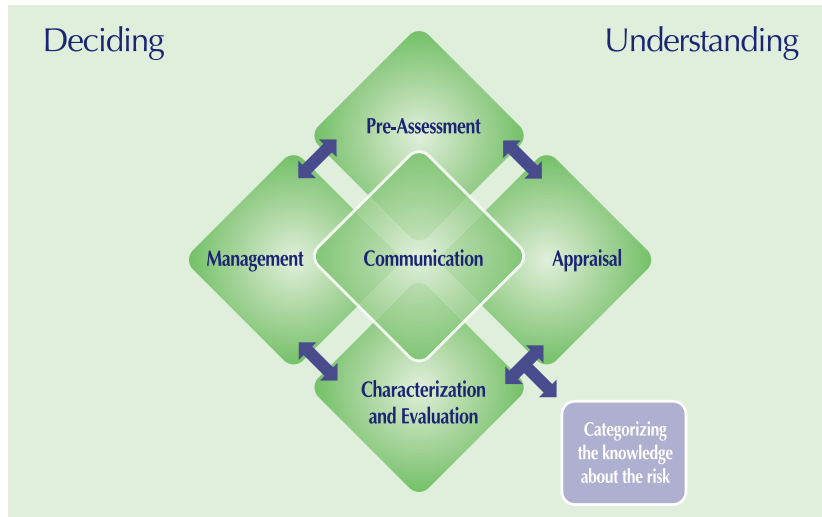
the burgeoning volume of data, the pace of technical and societal developments, and organizational and ownership changes affecting how, and by whom, risk decisions are made.

The challenge of better risk governance lies in enabling societies to benefit from change while minimizing the negative consequences of the associated risks.

The IRGC was created as an independent, international body to bridge the gaps between policy makers, business decision makers, academia and the public and, in so doing, act as the catalyst for improving risk governance strategies. The IRGC's founders¹ felt that a new organization would be better able to do this than the many

1 The IRGC's founders were Donald J. Johnston, then Secretary-General of the OECD, Adolf Ogi, UN Special Adviser on Sport for Development and Peace and former president of the Swiss Confederation, Bennett Johnston, former US senator, Olaf Kübler, then President of the Swiss Federal Institute of Technology Zurich, Switzerland, KunMo Chung, then President of the Korean Academy of Science and Technology, and the World Business Council for Sustainable Development represented by its President, Björn Stigson.

Figure 1
The IRGC Risk Governance Framework



existing risk-related institutions whose single sectoral, disciplinary, and geographic emphases made it difficult for them to undertake such a broad mandate.

More recent events confirm that risk governance remains of the utmost importance. For example, SARS spread rapidly through 27 countries and killed 774 of the 8,096 people infected, demonstrating the capacity of a new pathogenic virus to cause considerable health risks and have a substantial economic impact, including in Canada. There have been massive losses, both human and economic, from natural disasters, such as the tsunami of December 2004 and Hurricane Katrina in 2005 and, more recently, Cyclone Nargis and the massive earthquake in southwest China. The fragility of critical infrastructures was demonstrated in 2003 by the blackouts in the United States and Canada, and across Italy and other European countries.

There are concerns about maintaining secure energy supplies and developing sustainable sources of energy. Most prominent of all are those risks that derive from our changing climate, with side effects in many unanticipated areas. All such risks have rippling effects and secondary impacts, and they all exceed the capacity of any one country to manage them, reinforcing the need for an organization, such as the IRGC, to propose governance approaches with global validity.

IRGC and Risk Governance

At the core of the IRGC's work is its approach to risk governance, fully explained in the IRGC's 2005 White Paper *Risk Governance – Towards an Integrative Approach*. Sound risk governance can minimize the inequitable distribution of risks and benefits between countries, organizations, and social groups, assure a thorough

consideration of risk-benefit and risk-risk trade-offs, avoid costly and inefficient regulations and, through taking appropriate account of public perceptions, retain public trust in the decision-making process.

Risk accompanies change. In most cases, the potential benefits and risks interconnect. The challenge of better risk governance lies in enabling societies to benefit from change while minimizing the negative consequences of the associated risks. The IRGC's Risk Governance Framework (illustrated in Figure 1) is designed to help decision makers both understand the concept of risk governance and apply it to their handling of risks. It comprises five linked phases: pre-assessment, appraisal, characterization and evaluation, management, and communication.

The IRGC's approach begins with risk pre-assessment: "framing" the risk in order to provide a structured definition of the problem and how it may be handled. Crucially, it captures and makes transparent the variety of issues that stakeholders and society may associate with a certain risk (or opportunity).

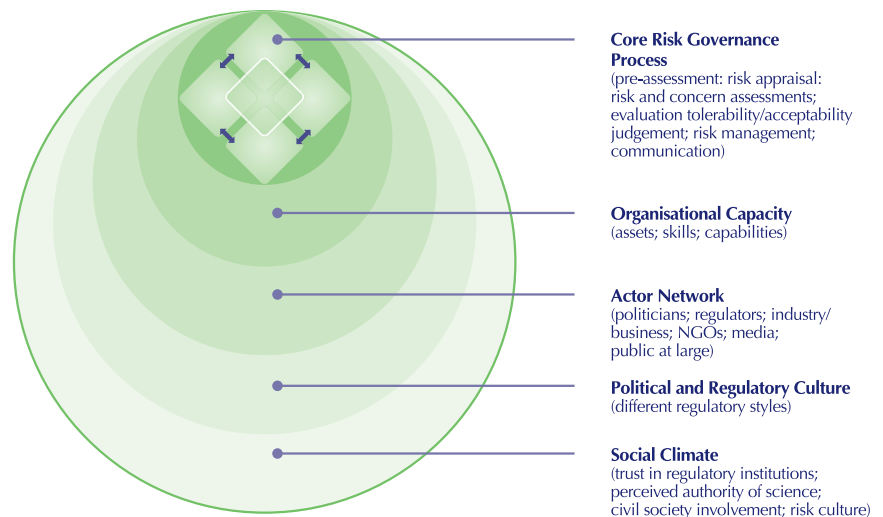
The main questions in pre-assessment are: What risks and opportunities are we addressing? Are there signs there is already a problem? Is there a need to act now? Who are the affected stakeholders? How do they view the problem? What existing scientific/analytical tools can be used to assess the risks? How do current legal/regulatory systems potentially affect the problem? What is the organizational capability of the relevant governments, international organizations, businesses, and people involved?

Risk appraisal develops the knowledge needed to decide whether a risk should be taken and, if so, how it can best be managed. Risk appraisal comprises both a risk assessment (a scientific assessment of the risk's factual, physical, and measurable characteristics including the probability of it happening) and a concern assessment (a systematic analysis of the associations and perceived benefits and risks that stakeholders, individuals, groups or different cultures may associate with it). The concern assessment is a particular innovation of the IRGC framework, to ensure decision makers consider how values and emotions influence how the risk is viewed.

Risk assessment asks: What are the potential primary damages or adverse effects? What is the probability of occurrence? How clearly can cause-effect relationships be established? What are the primary and secondary benefits, opportunities, and potential adverse effects? Concern assessment establishes the public's concerns and perceptions as well as the likely social response to the risk (or how it is managed). The experience of Shell when disposing of the Brent Spar platform illustrates the importance of this dimension.

The IRGC approach includes the separate phase of characterization and evaluation to ensure that evidence from scientific facts is combined with a thorough understanding of societal values when judging a risk to be acceptable (no risk reduction necessary), tolerable (worth pursuing with appropriate risk reduction measures) or, in extreme cases, intolerable (to be avoided).

Figure 2
Risk Governance in Context



Such a judgment involves questions such as: What are the societal, economic, and environmental benefits and risks? Are there impacts on quality of life? Is there a possibility of substitution? If so, how do the risks compare? Do any stakeholders – government, business, or other – have reasons for wanting a particular outcome of the risk governance process?

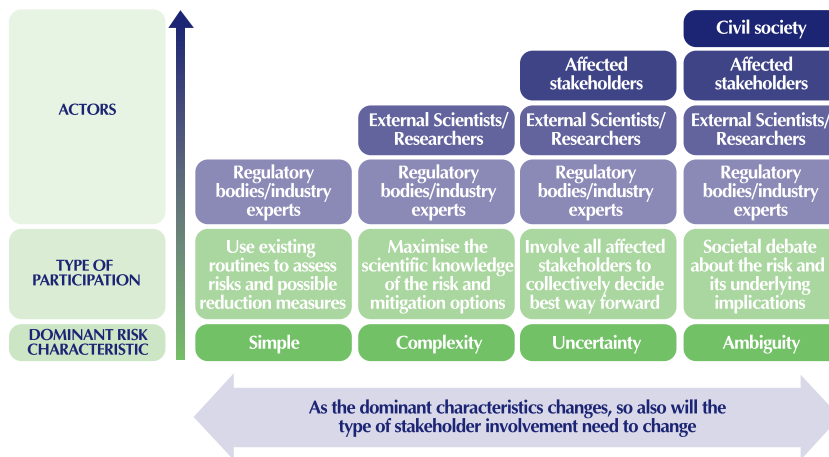
All tolerable risks need appropriate and adequate risk management through measures to avoid, reduce, transfer, or retain the risks. Risk management includes generating, evaluating, and selecting appropriate risk reduction options as well as implementing the selected measures, monitoring their effectiveness and reviewing the decision if necessary.

Key questions in risk management include: Who is, or should be, responsible for decisions concerning the risk and its management? Have they accepted this responsibility? What risk

management options (technological, regulatory, educational, fiscal, etc.) are there? Do these options have secondary consequences? How should we evaluate these options? Do we need to co-operate internationally (for global or transboundary risks)? How do we ensure effectiveness in the long term (compliance, monitoring, adaptive management plans, etc.)?

Communication is important. It enables risk decision makers to ask the right questions of risk assessors. It allows stakeholders and the public to understand both the risk itself and their role in the risk governance process. If deliberately two-way, it gives them a voice. Communication also explains the rationale for the risk decisions and allows people to make informed choices about the risk and its management, including their own responsibilities. Effective communication is the key to creating trust in risk management.

Figure 3
Using a Risk's Dominant Characteristic to Plan Stakeholder Involvement



Questions include: What are the needs and purposes of communication on this risk? How is information interpreted by those who receive it? How best can appropriate knowledge about the risk be conveyed to those affected by it? What is the degree of confidence in the risk management process? What has been and can be the role of the media?

The IRGC framework also stresses the broader organizational, institutional, political, economic, and social contexts that must be taken into account in risk-related decision making, illustrated in Figure 2.

For example, the organizational capacity of an organization or system (the capability of key actors in the risk governance process to fulfil their roles) and the political cultures (the governmental and regulatory styles

Effective communication is the key to creating trust in risk management.

that define particular institutions or countries) are important in determining governance processes. Many governance deficits originate from the lack of an appropriate legal or regulatory framework. Alternatively, some regulatory structures overlap and compete with others, creating conflicts that complicate risk handling.

Also important are the degree of trust in the institutions responsible for risk governance and a country or organization's risk culture, which impacts on the level of risk tolerance (or risk aversion). There is a wide variety of risk cultures around the world and these require different management and communication methods.

The appropriate governance approach to a particular risk depends, in part, on the state and quality of knowledge

about that risk, particularly the clarity of the knowledge about cause-effect relationships. The IRGC places particular emphasis on this knowledge challenge and recommends categorizing the knowledge about a risk (not the risk itself) as being predominantly simple, complex, uncertain, or ambiguous. Doing so can assist both in designing risk management strategies and in planning stakeholder participation.

Simple risk problems have a clear cause-effect relationship and can be managed using a routine-based strategy. The benefits of regulatory action may be straightforward and uncontroversial (e.g., home fire safety).

Complexity refers to difficulties in identifying and quantifying causal links between a multitude of potential causal agents and specific observed effects. Examples include the risks of failures of large interconnected infrastructures and the risks of critical loads to, and losses of, sensitive ecosystems. Complex risks can be addressed on the basis of accessing and acting on the best available scientific expertise, aiming for a risk-informed and robustness-focused strategy.

Uncertainty refers to a lack of clarity or quality of the scientific data, or even its absence. Highly uncertain risks include many natural disasters, acts of terrorism and sabotage and the long-term effects of introducing genetically modified species into the natural environment. Uncertain risks are better managed using precaution-based and resilience-focused strategies, with the intention of applying a precautionary approach to ensure the reversibility of critical

decisions and to increase a system's coping capacity to allow it to withstand surprises.

Ambiguity results from divergent or contested interpretations of the risk or data. Risks with high ambiguity include nuclear energy, food supplements, hormone treatment of cattle, and some aspects of nanotechnology and synthetic biology. Ambiguous risk problems require a discourse-based strategy, which seeks to create tolerance and mutual understanding of conflicting views and values with the goal of reconciling them eventually.

The IRGC also provides guidance on how best to implement the idea of involved stakeholders in the risk governance process. Inclusive governance is based on the assumption that all stakeholders have something to contribute to the process of risk governance and that their inclusion improves the final decisions rather than impedes the decision-making process or compromises the quality of scientific input. However, not all risks can be managed in this way and the IRGC suggests using the categorization of a risk – as predominantly simple, complex, uncertain, or ambiguous – as the basis for deciding on the appropriate level of stakeholder involvement in the process. (See Figure 3.)

While simple risks may require little consultation because of their routine nature, highly complex or uncertain risks may benefit from wider dialogue among, respectively, people with expert knowledge or all directly affected stakeholders. Highly ambiguous risks are

The IRGC framework can also help detect current or potential deficits within the risk governance process. Some common deficits include:

In pre-assessment

- Warning signals of a known risk have not been detected or recognized
- Different stakeholders may have conflicting views on the issue
- “Black swans” exist with no awareness of a hazard or possible risk

In appraisal

- There is a scarcity of scientific data about the risk and/or about people's concerns, or, if there is sufficient data, there is a failure to accept the data
- Low confidence exists in the data or the data interpretation
- There is a lack of attention to interdependencies and interactions with the system at risk

In characterization and evaluation

- Some stakeholders and their views are accidentally or deliberately excluded from the evaluation process
- There is a failure to make trade-offs explicit and hidden agendas are allowed in determining the outcome of the evaluation process
- Social needs, environmental impacts, cost-benefit analyses, and risk-benefit balances are overlooked

In management

- No entity is responsible for managing the risk, or several are and things “fall between the cracks”
- Short-term decisions are unsustainable or lead to further, secondary problems
- Decision makers fail to revisit a risk decision in the light of new knowledge

In communication

- Communication does not account for how different stakeholders receive and accept information
- Treating some people or organizations' concerns as irrelevant or irrational creates alienation
- A low level of trust exists in the decision-making process, the information given, or the communication channel

In stakeholder involvement

- An “authority knows best” approach and a deliberate refusal to seek or accept knowledge or to communicate with other interested parties leads the stakeholders with power to make the decisions, irrespective of the need for consultation and dialogue
 - “Paralysis by analysis” occurs when the selection of an overly inclusive process leads to inertia or indecision
-

those for which wider stakeholder consultation is recommended. Effective stakeholder involvement should both ensure the risk-handling process is inclusive and responsive to those affected by it and maximize the acceptability of the decisions made.

Policy makers are often required to make decisions and take actions under considerable time pressure, with incomplete information and conflicting advice. Even in situations of knowledge deficit, decisions must be made and action taken. The IRGC's framework can assist in giving guidance, even in situations of high complexity, uncertainty or ambiguity.

Conclusion: The Benefits to Public Policy of Improved Risk Governance

Nanotechnology and biofuels are examples of current policy issues where the IRGC's approach could be helpful to policy makers.

The potential benefits of nanotechnology are highly attractive, ranging from targeted drug delivery to environmental remediation. These benefits remain in the future, but nanotechnology applications are already on the market (some paints and sunscreens, for example). So new are many of the applications of nanotechnology that it has not yet been possible to assess their risks scientifically; in IRGC terms, there is high uncertainty. This uncertainty has created space for Friends of the Earth and others to call for moratoriums on the use of nanotechnology in, for example, foods. One of IRGC's recommendations (IRGC, 2007) is that policy

makers could help overcome this controversy by funding the necessary risk assessment studies particularly of commonly used nanomaterials and nanoparticles.

With crude oil prices having risen from below US\$40 a barrel in 2002 to over US\$140 in July 2008, many governments are encouraging the production and use of biofuels for transportation and heating. Oil security is indeed a policy imperative and biofuels appear to offer a short-term, if partial, remedy to what is emerging as one of the global economy's most pressing long-term problems. However, it is also clear that controversy surrounds the impact of current methods of biofuel production on society as a whole (including the fuel versus food trade-off) as well as the environment. (There appears to be no clear indication of the full life-cycle impact of biofuels on greenhouse gas emissions.) In taking the long-term view advocated by the IRGC's approach (IRGC, 2008), policy makers could perhaps be doing more to accelerate second-generation biofuel technologies to reduce the pressure on agricultural land. They could also send signals that current incentives aimed at existing technologies will cease once these technologies are superseded.

Both nanotechnology and bioenergy are new technologies that offer global benefits and whose associated risks may also have global consequences. The risk governance of both requires a harmonized approach by governments across the world – integrated risk governance in its truest sense. The IRGC and its approach to risk governance will actively work to make this happen. ●

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Free downloads of these documents are available here <www.irgc.org>.

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Abstract

Now more than ever, companies are being held responsible for social change that is a consequence of their business activities. The actors are part of a modern class of activists who use refined techniques to exert influence. Non-governmental organizations (NGOs) are increasingly foregoing traditional politics and turning to “private” politics to change the practices of firms and industries. Rather than the traditional route of relying on public institutions to instate regulation, “private politics” uses market mechanisms to change business practices rather than the more traditional route of relying on public institutions.

government. While activists typically target a specific firm, their goal is usually a change of practice in the entire industry through actions that affect firm or industry reputations. Targets are therefore selected for maximal impact rather than because of their specific causal responsibility for a particular offensive practice. In turn, this requires companies to assess the risk of being targeted and to develop proactive strategies. Consequently, private politics strategies are characterized by significant strategic complexity in areas such as target selection, campaign strategies, the role of the media and public opinion, proactive measures by firms, and the choice of target: a firm or an industry. I conclude by discussing the potential normative consequences of private politics, how the emergence of this mechanism may lead to new policies and initiatives, and how these developments may change the role of governments.

In today’s rapidly globalizing world, government regulation is increasingly being both supplemented and replaced by the private politics mechanism. Private politics is distinct from traditional “public” politics. Instead of being driven by public institutions regulating private behaviour, private politics is driven by activist groups and consumers. They use a variety of tools to exert social, environmental, and democratic change on corporations. In many cases, activist campaigns aim to undermine the reputation and eventually the profitability of firms that are seen as acting irresponsibly.

“Private Politics”: Public Activism as an Alternative Regulatory Mechanism?¹

This paper focuses on the key components of private politics — activist strategies such as corporate campaigns and firm strategies (including self-regulation or corporate social responsibility) – and their effects on

1 Short version of the Governing the Global Economy: The Role of Private Politics working paper #40.

Activists choose to use this mechanism for a variety of reasons. First of all, through private politics, activists are able to bring about change very quickly. Depending on the period of the election cycle, politicians may not feel that they need to bend to activists. In contrast, corporations are held constantly accountable for their actions by investors and other stakeholders. Furthermore, activist groups are often at a significant disadvantage when it comes to funding of lobbying activities, compared with the corporations that they seek to fight. But while private politics is a separate mechanism from public policy, the two are not mutually exclusive. In fact, many activist groups use the two in tandem for maximum effect.

Private politics was born at the crossroads of the radical activism of the 1960s and the failures of the organized labour institutions in the 1950s. Disillusioned labour leaders recognized that their traditional tactics were no longer working. So, taking a page from the newly minted social activists of the time, they developed a new strategic framework. Enlisting those social groups also gave labour's cause a much broader base, legitimizing what was otherwise seen as a self-serving cause. Labour's success using this mechanism solidified private politics as a tool for all activist groups.

Further adding to the support of private politics has been a shift in consumers' values. More than ever, they consider the social effects of their purchases, and research shows that customers are starting to pay more attention to a product's

“post-materialist” details (such as sustainability or self-expression), rather than just to its monetary aspects. Thus, consumers are more apt to support activist causes, which has led to an increase in the use of private politics.

Perhaps the main factor in the rise of private politics has been the maturation of the Internet. This has vastly decreased the costs of organizing a campaign, and it has allowed activists to galvanize support online before the target even realizes there is a threat. Additionally, the Internet is an excellent research and development tool. Not only can activists use it to discover and develop issues, it is an effective educational medium. Now activists can rapidly reach all their supporters at little cost, which enables them to distribute information about upcoming campaigns, such as talking points and implementation plans. The Internet has also led to a significant increase in individual activism, since consumers now have a myriad of options for voicing their opinions online.

Furthermore, the increase in low-cost communication, combined with the globalization of the world economy, has given the developing world a seat at the table in the discussion of business regulation. This flattening of the world means that there are no longer any local issues; the sometimes exploitative practices of corporations in the developing world cannot be hidden from modern consumers.

The Structure and Tactics of Modern Activism

Though activists in the modern environment come in many forms, the main archetypes are labour and non-labour. Both the goals and the means of these groups are different. Labour groups almost always have a personal vested interest in the continued success of their target; therefore, their attacks tend to be less severe, and the groups are more willing to bargain with business leaders. Non-labour groups represent a wide variety of interests, from the environment, to human rights, to social issues such as religious and personal freedoms. Attacks from these groups tend to be more severe, since they usually see groups they target as true villains. For example, if an environmental group whose goal is to stop deforestation targets a logging firm with the goal of stopping deforestation, destruction of the firm would perhaps achieve the best result for the group.

The actions of activist groups are centred on what is known as the corporate campaign. This acts as an organizational framework for all efforts aimed at satisfying activists' goals.

The first step in organizing the campaign is to identify an issue. While this may seem as simple as choosing the one most closely aligned with the activists' beliefs, many other factors come into play. For example, because the market for activist support is extremely competitive, groups must choose issues that are most likely to attract consumers to their cause. Additionally, the issue that is the true goal of an activist may be

viewed as simply a selfish interest. Therefore, groups often bundle their campaign with complementary issues to broaden the coalition supporting their cause.

An example of this is the Union of Needletrades, Industrial and Textile Employees' (UNITE) boycott of clothing retailer Gap Inc. in the United Kingdom in 2002. UNITE joined forces with social activist group Africa Forum to bring to light the human rights abuses in Gap sweatshops in the developing world. While the campaign may have been in the name of human rights, focusing on increased wages and more equitable treatment of workers in the developing world, the benefits for UNITE of a successful campaign would be more self-interested. When the rights and wages of textile workers in the developing world increase, outsourced labour becomes more expensive. This would protect domestic unionized textile jobs in the United Kingdom (Lawrence, 2002).

Once an issue has been selected, activists develop their implementation strategy. The labour movement has contributed greatly in this area, developing user guides and educational programs to train organizers and activists.

Identifying a company to target is a key piece of the campaign strategy. While the worst offender may seem the obvious target, activists may choose to attack more vulnerable firms that

are more likely to comply with a demand. Companies in very competitive segments, such as retailers, are particularly good targets. These easy wins can lead to a domino effect of success, since effective advocacy attracts additional supporters and puts industry pressure on other firms.

Thus, consumers are more apt to support activist causes, which has led to an increase in the use of private politics.

Activists also target highly visible firms. The news coverage that a campaign against a well-known brand attracts can put tremendous pressure on a firm. Additionally, activists prefer to target firms with low switching costs and close substitutes. If consumers do not have to make major changes in their daily habits, they are more likely to support a campaign.

Activists can also choose to put pressure on companies within a firm's value chain in an attempt to apply external coercion on a difficult target. This tactic, known as indirect targeting, can be very effective. The success of every firm depends on a variety of different stakeholders. Large industrial firms rely on banks and investors for financing, suppliers for inputs, and customers to purchase their goods, among others. By pressuring a vulnerable external stakeholder, activists can affect the firm's bottom line. This is especially effective if the indirect target has close substitutes for its relationship with the ultimate target.

The final piece of strategy that an activist group needs to consider before selecting tactics and tools is how to navigate the media. Different media agents have different roles in the campaign. For example, activists can recruit social leaders to join their fight in an attempt to legitimize their issue. Activists can also use mediating agents such as journalists to amplify their messages. Finally, groups can target stakeholders and influencers in an attempt to apply indirect pressure. The goal of all these tactics is usually to portray the activist group in a positive light and cast the target firm as the villain.

Harm and reward are the primary tools of private politics. Harm is dealt through a variety of methods. Perhaps the best known is the boycott. This can be waged either directly against the firm, or against indirect stakeholders. While the stereotypical image is that of individual consumers picketing outside a retail location, a boycott can have devastating effects when large contract customers terminate their contracts.

Attacking a firm's capital sources can be highly effective. This involves indirect campaigns against banks, as well as communication with institutional and other investors and analysts to convince them that an investment in what the activists see as the company's irresponsible behaviour is not financially sound. Additionally, labour groups can leverage their often large pension holdings to influence targets. They do this by withdrawing money from the financial stakeholders, exercising voting

rights, and forming coalitions with other institutional investors with similar goals.

Labour groups have one tool that non-labour groups often don't have – an insider position. By mobilizing union members within a firm, labour groups can implement tactics to apply intense pressure to target firms.

This energy is fuelled through acts of solidarity such as organizing members to come to work dressed in pro-union shirts and buttons, etc., which sends the employers the message that they face an allied front. With this insider loyalty secured, the union is able to commit acts of coordinated pressure, such as systematic decreases in production and workers' organized taking of sick days. This

happened in the United Auto Workers' strike against Caterpillar throughout the early 1990s. The vulnerable position that results from synchronized insider tactics can be effective against even very large companies.

Corporate Impact

Private politics has become an increasingly effective and recognized method for influencing corporate behaviour, and corporations are taking notice. Because of the devastating effects that a well-organized campaign can have on

a firm, companies have started to analyze how to avoid targeting. While firms may decide that co-operating outright might lessen the damage of an attack, this often only attracts future attacks due to the firm's perceived weakness. Firms can also attempt to self-regulate to avoid targeting. However, this may lead to a chain reaction that

results in self-regulation at the industry level. For example, as one firm alters its policies to preemptively appease an activist group, its competitors are left as easier targets. As they adjust their policies to meet or exceed the first mover, other firms will make similar changes to avoid becoming targets, and so forth. This trend continues until all firms in an industry find their business practices affected by self-regulation.

Some attacks, however, cannot be avoided, and firms are then forced to engage with activists. When this occurs, firms have three options: ignore (by continuing operations without change), fight (by launching a counterattack), or negotiate (by settling on mutually agreeable terms).

Firms must carefully analyze the campaign against them before deciding on a response. They should first consider whether the activist is a credible threat with a history of success. Additionally, they should analyze whether the issue

has any social resonance: does the group have support? Furthermore, if the firm chooses to negotiate, should it meet all the demands, or can it simply concede to a small number? If the firm decides that it has the upper hand, it can itself use private politics tools of private politics as the activists to fight back. This often requires a co-ordinated and expansive communication campaign.

The real effect of private politics on corporations has been increased awareness of social and environmental issues at all points along the value chain. Firms now engage NGOs before expanding into the developing world, and they seek the advice of activists to maintain a positive image.

Private Politics and Government

Private politics has profound effects on both governments and citizens, and not all are positive. While the rise of private politics has allowed citizens to take a more proactive and expedient role in modern democracy, it has also left them vulnerable to informal social and economic policy changes brought about by influential activist groups that do not represent the population as a whole.

Private politics is a double-edged sword for governments as well. While the mechanism can lift the burden of some social and environmental regulation, it can also work against existing public policy. For example, activists may try to steer the government to regulate certain industries, such as seal hunting, that

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may be vital to local economies and well-being of vulnerable groups such as Aboriginal people.

Additionally, repeated attacks against companies from one country can tarnish that nation's reputation. For example, if vehement anti-corporate activism exists in Canada, the country may develop a reputation as a cumbersome place to do business. This may discourage international investment and encourage some domestic companies to relocate operations elsewhere. Losing this tax base shifts more of the burden onto individuals and may force the government to cut services.

Activists may also target a government directly, exerting both direct and indirect pressure on it just as they would on a corporation. This becomes a problem when two activist groups with opposing views campaign a government on the same issue. An example of this is when wind power advocates and migratory bird activists take opposite sides regarding wind turbine construction. The larger or more effective group may win out regardless of how representative its members are of the broader population or the alignment of its interest with the public interest.

Thus, governments must ask themselves how they can influence the rules of private politics. After all, private politics is not legitimized by elections or an established legislative process.

One approach is to engage activists directly and incentivize good behaviour. Additionally, governments can selectively leverage the fervour of

activist groups to impose public policy pressure on corporations. In the ideal scenario for government, activist groups would become an efficient mechanism of the democratic process, quickly enacting policy decisions of representative constituencies at a reduced cost to the government, obviating the need for inflexible, formal regulations and high compliance costs to the firm.

However governments choose to participate, they must engage in the private politics debate in order to maintain democratic legitimacy. While governments once held a monopoly on public policy, activists are now competing for influence on corporate and social behaviour. Thus, the main challenge governments face in this emerging field is to find ways to both contain and leverage the power of activism in order to preserve the primacy of the democratic process. ●

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Various kinds of regulatory reform and regulatory policy change have occurred in Canada and other member countries of the Organisation for Economic Co-operation and Development over the last four decades. These have been cast in terms such as deregulation, regulatory impact assessment (RIAs), regulatory quality, better regulation, paper burden reduction, smart regulation, incentive-based economic regulation, risk-benefit regulation, and life cycle regulation (Radaelli and De Francesco, 2007; Doern and Johnson, 2006).

However, all have essentially avoided the central problem of regulatory governance: the absence of a strategic annual or multi-year publicly debated

degree to which the analogy to the tax and spending processes holds is key to the analysis to follow.

I argue that the notion of a regulatory budget and regulatory agenda is an idea whose time has come.¹ A *regulatory budget* is one that sets limits on the costs of new regulation on the private sector (firms and consumers), in order to maximize the net benefits of regulation. The idea is to maximize net benefits by keeping costs under control, or by prioritizing initiatives with high benefit-cost ratios.

A *regulatory agenda* is a logically and democratically necessary complement, because a regulatory budget implies open and explicit priority setting of new rules, new risks, and risk-benefit opportunities based on the best available information regarding the magnitude of both the costs and benefits of regulation, and on politicians' judgment about values and preferred futures.

The analysis centres on two triggers for action and debate. The first and most important is the British government's recent decision to implement an annual regulatory budget (United Kingdom, Department for Business Enterprise and Regulatory Reform, 2008b; United Kingdom, HM Treasury and Department for Business Enterprise, 2008). The second and more Canadian-focused is my book for the Conference Board of Canada (Doern, 2007), which called for an annual strategic regulatory agenda for the Government of Canada. Both relate,

An Idea Whose Time has come: A Regulatory Budget and Strategic Regulatory Agenda

regulatory budget and strategic regulatory agenda analogous to the agenda setting that has for decades been a part of the tax and spending process. The

¹ Thanks are owed to Claudio Radaelli and Doug Blair and two other anonymous peer reviewers for constructive and helpful comments on an early draft of this article.

albeit in different ways, to strategic agendas that would discipline and be centred on proposed *new* regulations rather than the stock of existing regulations. “New regulations” are defined to include both new Parliamentary statutes and delegated legislation (i.e. “regulations” in the narrow sense of statutory instruments having the force of law that are adopted – typically by government orders-in-council – under the authority of a statute).

The two developments are complementary in an analytical sense in that the British government’s announced commitment is to a regulatory budget (a cap on private sector costs of new regulations over a defined period), but with the initiative led by the Department of Business Enterprise and Regulatory Reform (BERR). It focuses on regulatory cost and net benefit, and the discussion is thus far not informed by much analysis about how the cross-governmental political dynamics of strategic regulatory agenda-setting might work. On the other hand, the analysis on Canada focuses on the larger cross-governmental dynamics of regulatory agenda-setting and the democratic and governance case for such strategic agendas, but it does not address the specifics of a regulatory budget.

Any discussion of a regulatory budget must also refer to ideas advocated in the United States 30 years ago and more recently, but never adopted by

The regulatory budget and its necessary accompanying agenda would invoke a discipline that would achieve regulatory benefits at the lowest possible cost.

the US government (Tozzi, 1979; White, 1981; Thompson, 1997; Crews, 1998; Meyers, 1998; Kiewiet, 2006). As I discuss later, the United States has not adopted such a system, initially because of concerns about inadequate analytical data and information, but also due to normal separation-of-powers issues regarding political power and the determination of agendas in the US constitutional system.

The structure of my analysis is accordingly quite straightforward. The first section highlights recent developments in the United Kingdom (United Kingdom, Department for Business Enterprise and Regulatory Reform, 2008b; United Kingdom, HM Treasury and Department for Business Enterprise and Regulatory Reform, 2008). The second section summarizes key features of the analysis of Canada and the need for a strategic regulatory agenda.

The British Commitment to a Regulatory Budget

In a recent report on business enterprise in the United Kingdom, the British Government committed itself “to consult on the introduction of a new system of regulatory budgets for Departments that would set out the cost of new regulation that can be introduced within a given period,” as suggested by the Better Regulation Task Force (BRTF) (ibid: 73). The March 2008 UK Budget also reinforced this commitment by stressing that its

regulatory agenda was outlined in the above enterprise strategy report (United Kingdom, HM Treasury, 2008: 44).

The 2005 BRTF report had recommended that the Government “should develop a methodology for assessing the total cost of regulation, and consider introducing full regulatory budgets” (ibid: 68) acknowledging “that such a move would be difficult and take time, as well as setting an international precedent” (ibid: 69). The BRTC report had more precisely concluded that “it should be possible to have the fundamental elements of such a methodology within the next two years. At this point, the government should reassess whether full regulatory budgets, taking into account the cumulative impact of regulation, should be introduced” (United Kingdom, Better Regulation Task Force, 2005: 47). As I stress below, the above focus of the discourse on regulatory “costs” is somewhat misleading in that the actual methodologies to be employed – not to mention the underlying political values and realities – will and must link these to the benefits of proposed regulations.

The regulatory budget initiative in Britain has emerged with prime ministerial backing and a decision to proceed, but the BERR will lead it. BERR published a consultation document in August 2008, and consultations are now underway (United Kingdom, Department for Business Enterprise and Regulatory Reform, 2008b). The regulatory budget system is being designed for a 2009 start-up trial run, and it will be fully operational in 2010. The choices and issues being discussed in the consultations relate to:

- the design of the system as a whole;
- the scope of regulatory instruments to be encompassed; and
- methodological choices, notably in relation to the measurement of costs and benefits.

I will comment briefly on each.

The regulatory budget system overall is being forged on the concept that the British Cabinet would set budgets by department, but with an eye out also for horizontal regulatory budget items such as climate change. The budget period is being discussed more as a three-to-five-year budget rather than an annual one, but with “flexibility to allow for contingencies and flexibility over time and between departments” (ibid: 10).

It is worth noting that British regular spending budgets already have three-year medium-term spending plans and allocation processes. Issues also arise regarding whether regulatory budgets should be set for families of regulators within departments, and also whether particular “big-ticket items” such as climate change should have earmarked budgets or be left out of a given budget period because of their inherent complexity or uncertainty. For these reasons of perceived impracticality or degree of difficulty, the British government has indicated that climate change for these reasons of perceived impracticality or degree of difficulty will be left out of the initial regulatory budget.

This, in turn, raises questions about exactly how flexibility will be built into the system across and within years, among departments, and with regard

to emergencies or exceptional circumstances (as exist in regular spending budgets). Decisions about which agency will scrutinize the regulatory budgets also need to be made. Virtually all these system design issues raise the need to anticipate and manage the kinds of departmental and regulatory body gaming, not to mention gaming by private sector regulated interests, that will accompany the adoption of such a system. “Gaming” refers here to tactical strategies that departments and their stakeholders use to minimize and circumvent some of the disciplines of a formal agenda and budget. These can include suggesting that a proposed new rule be called a “guideline,” or pressing for status as an exception from the normal rules that would accompany such a budget and agenda.

The above issues are also related to other choices about the scope of the system. The consultation document indicates that the system of regulatory budgets would include “all the costs associated with regulation that have an impact on a business or third sector organization” (ibid: 11). Rules governing public service provision (internal regulation) will not be included. Boundary and scope choices also centre on the coverage – or not – of regulations originating in the European Union (these will be included), the

Virtually all these system design issues raise the need to anticipate and manage the kinds of departmental and regulatory body gaming, not to mention gaming by private sector regulated interests, that will accompany the adoption of such a system.

geographic scope on so-called reserved matters involving devolved governments in Scotland and Wales (the approximate UK equivalent to considering whether to apply a national regulatory budget to both federal and provincial/territorial governments), and

whether economic or independent regulators will be included (the consultation document suggests that they should not be included). Such UK regulators would include the Bank of England. A Canadian example of an independent regulator is the National Energy Board. The non-inclusion of independent regulators in the UK proposals may not, in fact, carry when the final system is announced, because this is a politically contentious issue of scope.

Crucially, there is contention regarding what “regulation” includes (e.g. statutes, regulations in the narrow sense, and guidelines and codes/standards). The British choice to date includes the first two of these, but not guidelines and codes/standards (ibid: 26). These choices inevitably set up room for the gaming strategies referred to above.

With respect to methodologies regarding regulatory budgets, the issues centre on approaches for assessing costs and benefits and, of course, on the availability and transparency of

cost-benefit data and estimates. The BRTF had recommended that cumulative regulatory costs be the basis for the system. Choices about relevant costs include full economic costs, gross costs or net of benefits, and other more specific technical issues. The consultation document proposes that “regulatory budgets take account of direct and indirect costs as well as benefits, including possible unintended effects, and across all sectors of the economy” (ibid: 37). It proposes that regulatory budgets be “set on gross cost estimates of regulation, i.e., that estimated benefits will not be netted off from gross estimates for the purpose of setting budgets” (ibid: 38). However, all such information in the decision process would also be accompanied by linked data and information on benefits.

Costs have to be based on cost estimates or cost-benefit estimates. Experience shows that both costs and benefits are hard to measure accurately and can be subject to exaggerated claims. Though information from RIAs will provide an underpinning here, UK authorities are aware of the need for improvement in this domain – hence the call for further discussion and development of methodologies. On the other hand, if one waits for methodological perfection, a government-wide regulatory budget will never be achieved, and the impetus for the development and refinement of such methodologies will remain limited.

The idea of a regulatory budget was first advanced in the United States in the late 1970s by the US Office of Management and Budget (Tozzi, 1979). Under a regulatory budget

regime, a regulatory body would be given a ceiling on new regulation compliance costs. The idea was obviously regulation-focused, but it was also always tied to the eventual achievement of a full and complete fiscal budget.

Current fiscal budgets include taxing and spending, but not the “spending” that governments mandate and require from private businesses and consumers through regulation. This mandated spending remained “off budget.” Therefore, governments have a built-in incentive to choose regulation as a policy instrument, because the costs of doing so are “hidden” and imposed on private firms and consumers. The government’s own costs to carry out the state’s regulatory responsibilities are, of course, captured in regular budgets, but the private sector costs are not.

Thus, the regulatory budget could potentially provide four benefits:

- more explicit attention to regulatory costs;
- more cost-effective allocation, because priorities would have to be set;
- more decentralized decision making; and
- increased legislative accountability for regulatory costs (Jacobs, 1999: 155).

The notion of “allocation” refers to the allocation of values and benefits that are central to politics and governing. The claimed benefit of decentralized decision making is possible in some senses, because departments closest to the regulatory realms would help set and

recommend regulatory priorities. However, overall, a real regulatory budget involves centralized agenda-setting and decision making as well.

The United States never adopted a cross-government regulatory budget, partly because of the lack of information on regulatory costs and a consistent and comprehensive set of cost estimates, and partly because of stakeholder concerns that it might favour more or less regulation overall. This was also because of a lack of political will, which may be even harder to secure in the US political system, which separates powers between the executive and Congress (Meyers, 1998; Crews, 1998; Thompson, 1997).

However, some elements of more specific regulatory budgets did arise in the early 1990s regarding the US Clean Air Act and the US Safe Drinking Water Act amendments, where private sector cost ceilings were used as benchmarks in the negotiations between the president and Congress (James, 1998) regarding these laws and rules. Because of these experiments and because of the overall logic of the case for regulatory budgets and agenda-setting, advocacy efforts have been made periodically in the United States, as have discussions and debate in academic settings (White, 1981; Thompson, 1997; Kiewiet, 2006).

The UK Better Regulation Task Force also took note of the Dutch model for reducing administrative burdens. It is, in essence, a “regulatory budget for administrative costs” to the state (United Kingdom, Better Regulation Task Force, 2005: 46). The BRTF also

noted that the United Kingdom should adopt this approach, since it would provide useful experience for operating regulatory budgets. Canadian research has also identified gaps in the systematic awareness of overall basic regulatory administrative costs to the government and in other areas (Ndayisenga and Blair, 2005). Moreover, some estimates exist regarding ratios between such direct costs to the government and the much larger mandated private sector costs, ratios that range from 15 to 20 times the costs to government (James, 1998).

A Strategic Regulatory Agenda in the Government of Canada

To analyze the federal government's pattern of regulatory policy and governance, I looked at the following:

- the current reality of complex regulatory regimes (multiple interacting regulatory bodies and rules) rather than single regulators functioning alone;
- rapid changes in technology and advances in knowledge;
- the need to better manage and rank risks and risk-benefit opportunities; and
- the changing nature of science-based regulation in government (Doern, 2007).

The interaction among these latter changes has made it extremely difficult for governments to manage their regulatory responsibilities. In light of these overlapping pressures and changes,

I propose improvements to the current federal approach to regulation. I then outline the need for a strategic annual regulatory agenda regarding *new* regulations.

The heart of the “potential improvements” question is that far too much of the current federal approach to regulation is premised on “one regulation at a time.” This approach essentially drives the official federal “regulatory policy.” Such an approach does not properly evaluate new regulations in relation to current ones across federal departments and agencies and in other levels of government. It deals inadequately with the interacting features of the regulatory environment, including a government-wide view of risk profiles and priorities. Thus, it does not meet the requirements for regulation in the innovation age.

Federal regulatory policy has evolved since 1986, when regulators were required to consult affected parties and the public, conduct RIAs, and pre-publish the regulatory proposal. Later additions to the policy included decision-making criteria, such as whether proposals would offer net benefits to Canadian society, minimize regulatory burden, foster intergovernmental coordination and co-operation, meet regulatory process management standards, and link to Cabinet directives. Intergovernmental and interdepartmental co-ordination is mentioned in the policy, and hence some complex regulatory regime issues are acknowledged, but these not backed up by adequate regular cross-governmental review and institutional support.

Even the decision contained in the 2007 federal Cabinet Directive on Streamlining Regulation to add a life cycle approach to this policy, while highly desirable, still largely reflects a “one new regulation at a time” approach. The life cycle approach will extend the policy past the regulation proposal and approval stages to include subsequent enforcement, compliance, and evaluation stages.

Can one imagine the federal government managing its tax and spending system in the way that it does its regulatory system? Would a government simply have an overall tax or spending policy that says, each time a new decision on tax or spending is contemplated: “Be sure to conduct a tax or spending impact assessment, consider alternatives to spending and taxation (such as regulation), use a life-cycle approach, consult with Canadians, etc.”?

This is unthinkable, because governments know that they must have an annual or multi-year agenda for both these sides of the fiscal coin. Governments also assemble the required data to inform their priority setting for tax and spending. This kind of agenda setting is, of course, not perfect, but it is far more developed and is seen to be a crucial macro responsibility for democratic government – all the more so in a globalized, interdependent international setting.

The federal government's current regulatory system has no obvious or transparent way to consider, on a similar overall basis, which areas of regulation

are most important so that it can deal with them in a considered cross-governmental manner and then implement the new regulations, including the required science and technology underpinnings and financial and staffing resources.

The federal government does not routinely present minimalist systematic information to Parliament or Canadians on the annual rate of growth (or contraction) of even the number of new regulations or of administrative costs to the government and taxpayer. There is, to be sure, some uncertainty regarding what kinds of further data are required, hence the need for a Regulatory and Risk Review Commission (ibid: Chapter 6).

However, regulatory agenda setting does not need to wait for perfect regulatory data. Public spending and tax agenda setting began and continues to today without perfect data, but subsequent agenda-setting needs trigger improvements in data acquisition and analysis and in theories and ways of interpreting and debating about it.

The main point is that governments have been lax in making this kind of effort regarding regulation. It is needed, not only for normal democratic and accountability reasons, but also for the kind of annual agenda setting I suggest below. Regulation comprises at least a third of what governments do, in the sense that regulation, taxation, and

spending are three of the core instruments of policy action. However, considered and more transparent agendas where priorities are debated and set do not openly inform or anchor policy action.

The heart of the “potential improvements” question is that far too much of the current federal approach to regulation is premised on “one regulation at a time”.

The difficulty with the current approach is that more and more regulation is complex. When proposing new rules and implementing current ones, multiple sets of regulators affect each other, as well as any number of firms, consumers, and citizens. In short, multiple cycles and multiple life cycles of rule making and enforcement are increasingly the norm. For example, the full regulatory processes for new drugs involves federal government regulation of intellectual property (approval of patent applications), approval of clinical trials, drug safety and efficacy review and final approval, and eventual ultimate approval for funding under provincial medicare formulary systems.

It must be stressed that an annual regulatory agenda would not solve all co-ordination problems any more than tax and spending co-ordination problems are fully solved by the annual tax and spending agenda and related budgetary processes. Some of these kinds of co-ordination problems undoubtedly require action at other middle and micro levels of agency action or actions among agencies and stakeholders. But

an agenda would be more strategic in addressing regulatory priorities in an integrated way to better manage the complexity of regulation and to ensure that new regulations respond to economic and technological changes.

The regulatory budget and its necessary accompanying agenda would invoke a discipline that would achieve regulatory benefits at the lowest possible cost. An annual agenda would also help manage the challenges between growing consumer demand for faster access to new products and the desire for democratic regulatory processes. Finally, this agenda would help ensure that science-based and related risk analysis capacity is properly allocated to aid regulatory decisions, enforcement, and compliance. A regulatory budget and agenda would focus limited regulatory resources and capacity in the areas of highest risk and risk-benefit.

In part, this call for a more explicit regulatory agenda is also an appeal for greater basic rationality in regulatory governance to complement the agenda setting already being done for taxation and spending. Agenda setting for taxation and spending takes place partly via the annual budget process, and partly via the Speech from the Throne. That agenda process occurs every 18 months or so, at the discretion of the prime minister. A Speech from the Throne can certainly include regulatory priorities (and a budget can certainly announce regulatory initiatives), but they are not at all designed to capture overall regulatory priorities per se.

There is, of course, an inherent democratic argument for more formal strategic agenda setting that can be subject to scrutiny and criticism. A regulatory budget and agenda could complement the federal government's Advantage Canada economic strategy (Canada, Department of Finance, 2006) and its science and technology strategy (Canada, Industry Canada, 2007). It would also address some of the regulatory weaknesses and needs identified by the House of Commons Standing Committee on Finance (2006). It is also crucial for many social and foreign policy areas where regulation is often the instrument of choice.

The above analysis raises two linked questions about the agenda idea. First, does the federal government already have some kind of internal informal annual regulatory agenda that is simply not apparent to the rest of us? And second, what would a more complete and democratic annual regulatory agenda look like, and how might it work?

The first question deserves an answer, because if such a system exists and is working well, why should the regulatory agenda argument be carried any further? Some elements of an internal informal annual regulatory agenda that provide partial answers to this question already in place:

- the agenda setting that goes on within departments that have major science-based regulatory tasks, as well as within some other regulatory bodies;

- departmental reports on plans and priorities, which are submitted during the annual expenditure process;
- the Speech from the Throne and related priorities regarding legislative bills that go before the House of Commons; and
- the recently launched experimental “triage” process, whereby departments are invited to differentiate high, medium, and low priorities for regulations, which then receive appropriate levels of regulatory focus and resource support (Doern, 2007: chapters 5 and 6).

These examples of partial, informal, and unclear regulatory agenda-setting processes and dynamics can certainly be built upon. However, they do not constitute a full-blown agenda-setting process or arena for strategic regulation. It is at best a hit-and-miss process, from the perspective of an outsider looking at how and why governments regulate in some areas but not in others on an annual or multi-year basis. Outsiders, in this context, include members of Parliament.

It is, without doubt, a far less explicit or transparent process than either the tax and expenditure agendas or the overall Speech from the Throne process. Neither of these processes is perfect, but each is informed by the view that strategic agenda setting is important and should be reasonably transparent.

The next question is this: what should an annual regulatory agenda look like? A more complete, transparent, and

strategic regulatory agenda process that debates, sets, and announces federal regulatory priorities would require several features (some similar to features of the tax and spending agendas, and others different, because regulation itself is different):

- a process whereby all proposed new regulations from across federal departments and agencies would be aggregated annually and priorities determined at the Cabinet level;
- a determination of what would be included as proposed new “regulations” (both new laws and new delegated law – the regulations – would need to be included);
- a provision and processes for handling contingencies and emergencies requiring new regulations (as exists for the tax and spending processes);
- an appreciation of the many possible criteria that might be used to distinguish high-priority from low-priority proposed new regulations;
- an annual ministerial “regulatory agenda statement” and debate in the House of Commons; and
- a consideration of whether such an agenda process should be a separate, stand-alone one, or one that is appended to the existing tax or spending agenda process to avoid duplication in matters such as stakeholder consultation or for other reasons (I recommend a stand-alone separate process, at least initially).

The arguments as to why a given new regulatory proposal should be ranked high and should proceed to adoption will, without doubt, reflect the same diversity of rationales, values, and ideas as arguments for new tax and spending proposals. The Minister of Finance and the Prime Minister control tax priority setting, whereas new spending, though tightly controlled by a few ministers, does involve a formal and informal bidding process by all ministers.

Proposals for new regulations would come from many ministers as well. The rationales and criteria would include risk assessments and regulatory costs of diverse kinds, and levels of real and perceived severity. There would also, in any given year, be criteria related to electoral promises, international obligations, and regional pressures, as well as numerous health, safety, environmental, and sustainable development values.

In a complex Cabinet of more than 30 ministers representing a federation, the criteria for pride of place on the regulatory agenda will be as diverse as they are for spending and taxation. Agenda setting is inevitably a mixture of political and economic rationality, but it also involves tactical and opportunistic behaviour by political and economic players inside and outside of government to take advantage of windows of opportunity.

Conclusions

With the recent UK government commitment, the idea of a regulatory budget and a strategic regulatory agenda has finally come closer to implementation. However, the intersection of the UK decision in 2008 to commit to a regulatory budget and my 2007 analysis, which called for a strategic regulatory agenda in the government of Canada, suggests complementary analytical needs and debates.

The UK decision has focused on a regulatory budget for new regulations and their private sector costs, but it is linked to regulatory benefits as well. It has emerged from a business enterprise development perspective in the United Kingdom's lead industry department, but with prime ministerial backing. Though it recognizes the challenge of assembling regulatory cost and benefit estimates and of overall system design, it is committed to proceed. The British development so far suggests that the regulatory budget will not be on an annual basis, but rather on a three-to-five-year basis, to complement its existing three-year expenditure budget plan cycle.

However, thus far British reports and announcements have been vague about how a strategic agenda will be set across the government and within departments, with their individual families

of regulatory bodies. It is also unclear what criteria will inform such an agenda, in addition to private sector gross costs and linked benefits. The more the debate about actual agenda setting opens up in the coming months beyond a business-led political constituency, the broader the criteria are likely to become.

My call for a strategic regulatory agenda for Canada contains no details about a regulatory budget for the government of Canada. I do recognize, however, that some form of cost-benefit and risk-benefit disciplining structure has to be a key part of such a strategic agenda.

The analysis suggests an annual strategic regulatory agenda to complement the annual regular tax and spending agenda, but to be debated publicly as a separate part of the Parliamentary calendar. The analysis is quite explicit about the larger cross-governmental and democratic basis of the case for a strategic regulatory agenda and the diverse criteria that will inevitably inform it and shape it. But any development of a regulatory budget and agenda for the federal government would have to include further analysis and debate of the Canadian equivalents of the issues of scope, coverage, and methodologies covered in the recent British consultation document (Regulatory Budgets: A Consultation Document).

As with the UK developments and also the earlier US debates about a possible regulatory budget, the argument in the Canadian context is that governmental approaches to regulation are grossly inadequate when compared with the

ways in which governments treat spending and taxation. Regulation comprises at least a third of what governments do, but regulatory governance and policy making regarding new regulations still fly essentially without a pilot or radar. ●

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On March 11, 2009, the PRI and Treasury Board Canada Secretariat hosted the Integrated Assessment Workshop for Regulatory Impact Analysis for managers and analysts within the federal government. The purpose of the workshop was to help build the capacity for departmental and agency analysts involved in the regulatory process. Attendance was strong, with over 35 participants from 12 government departments and agencies.

The workshop used a hypothetical exercise that considered a proposed policy to use a "green" approach to meet regulatory requirements for reducing sewer overflow events. Participants were separated into groups to

examine one aspect of the analytical puzzle – risks, benefits, costs, or distributional issues, and policy, and outreach. They later returned to plenary to present their findings to the group.

The workshop successfully brought together a range of federal agency professionals engaged in environmental, health, and safety regulatory analysis and decision making. The event provided participants with an opportunity for greater understanding of the integration of science, economics, and policy, and the analyses that facilitate the process.

Richard B. Belzer, Ph.D.

President

Regulatory Checkbook

Introduction

The Government of Canada recently embarked on a program to streamline its regulatory procedures. This new program, set forth in the *Cabinet Directive on Streamlining Regulation* (CDSR), is both a new way of writing regulations and a new way to think about the entire regulatory process. The centerpiece of the CDSR is regulatory impact analysis. The general notion is that the government can and should use well-respected and commonly used analytic tools, such as benefit-cost analysis, to examine in advance the likely consequences of an array of alternatives, and use this analysis to inform both the government and Canadians before making important decisions. The CDSR includes a system

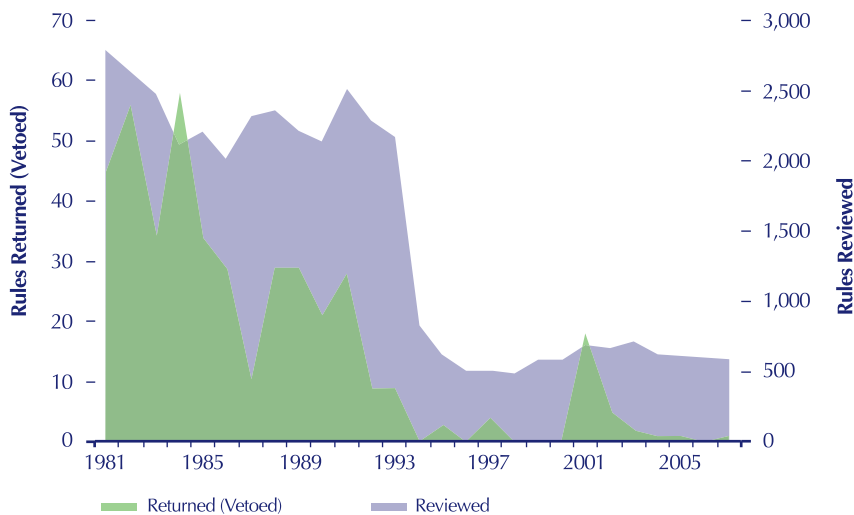
The benefits of the CDSR cannot be achieved without an effective challenge function, but designing and implementing such a function is not easy. Challenge functions are needed because regulatory agencies and stakeholders often disagree about certain fundamental issues, such as which instruments should be selected and what regulation ought to achieve. These disagreements spill over into regulatory analysis. When disagreements arise, the challenge function should be perceived as a neutral process for resolving technical issues and clarifying the remaining policy differences. All stakeholders will not always perceive outcomes as equitable, but an effective challenge function can enable the fairness of the regulatory process to be above bias or favouritism, thus making unhappy individual regulatory outcomes less disconcerting.

Challenge functions are inherently regulatory in nature, so they can be unpleasant in practice. Whereas government agencies normally regulate others, they are themselves the regulated parties of a challenge function. Many of the lessons about regulatory design, well described in the CDSR but targeted at the private sector, also apply to the relationship between challenge functions and regulatory agencies. When regulating the private sector, agencies often try to persuade them to embrace agency norms. Similarly, the challenge function agency will seek to persuade regulatory agencies to embrace the ethic of neutral regulatory analysis as a prerequisite to regulatory decision making.

Principles for an Effective Regulatory Impact Analysis Challenge Function

to ensure that regulatory analysis meets high standards for transparency, quality, analytic rigour, and utility for decision making. The design of that system of regularized oversight – called a “challenge function” in Canada and some other OCED countries – has yet to be determined. This paper discusses options that have been tried or proposed elsewhere and helps guide a credible analysis of alternatives.

Figure 1
Regulations Reviewed and Returned (Vetoed) by OIRA, 1981-2007



Source: <<http://www.reginfo.gov/public/do/eoHistoricReport>>

For this reason, designing an effective challenge function can be a complex task. The many factors to consider often entail trade-offs such that advancing one objective requires sacrificing part of another. An even more important lesson can be gleaned from the experience of others: it is much easier to design a challenge function to fail than it is to design one to succeed.

This brief paper identifies several important principles to consider when designing a challenge function. To set the stage, US experience is briefly summarized, but from perhaps an unusually critical perspective. Subsequent sections set forth competing models for challenge function design and explain how they can be expected to perform.

The Challenge Function in the United States

In the United States, the challenge function began with the *Federal Reports Act* of 1942 which, for the first time, required the government to minimize the public burden of its information collection activities. Paperwork burdens grew anyway, resulting in the bipartisan approval of the *Paperwork Reduction Act* of 1980. The new Office of Information and Regulatory Affairs (OIRA) was established within the US Office of Management and Budget, and it was directed to manage and control these burdens.

Meanwhile, the White House Council on Wage and Price Stability (COWPS) had been established by Congress in 1974 and given the job of restoring US productivity and controlling inflation. The Council's functions evolved over

time, and during the Carter administration they were extended to the pre-promulgation review of a small number of major regulatory actions. The Council filed public comments concerning benefits, costs, and other impacts, but had no other challenge function authorities.

In 1981, President Reagan transferred this function to the new OIRA and established therein an explicit challenge function with veto authority. This transformed US regulatory practice almost overnight. The OIRA was suddenly responsible for reviewing several thousand individual regulations, as shown in the upper line on the accompanying chart (right-hand scale). At one time, the OIRA boasted more than 80 employees. Early on, the new office also wielded its veto with enough regularity to be taken seriously, as shown in the lower line on the chart (left-hand scale).

If vetoing draft regulations is construed as a measure of success, then success was short lived. Vetoes declined precipitously during Reagan's second term, stabilized during the term of President George H.W. Bush, and vanished during the term of President Clinton. Clinton significantly curtailed the scope of the challenge authority by removing about 90 percent of its workload, but he largely retained Reagan's evaluative criteria and regulatory principles. The data also show that President George W. Bush did not deviate appreciably from Clinton administration principles or practice. The Office of Management and Budget vetoed a handful of draft regulations in 2001

and 2002, arguably to establish its authority, but has rarely exercised this authority since then. On average, about one percent of all regulatory actions the OIRA reviewed were vetoed, and an unknown (but almost certainly very small) percentage of those were vetoed because of defects in regulatory analysis. In any case, these data do not support the conventional wisdom that the US challenge function has been nearly as effective as advertised by its proponents. Even if it was effective in the early 1980s, it is difficult to argue persuasively that it remains so today.

Competing Models for Regulatory Analysis Challenge Programs

For many years, the United States was the only OECD nation with a regulatory challenge function, so the US model became the most promoted model by default. Nations with parliamentary governments tended to be uncomfortable with it in part because of its highly adversarial nature. Much of what makes the US model adversarial, however, is not so much inherent to the challenge function but a reflection of the fact that the political functions of the US government are divided between constitutionally co-equal but competitive legislative and executive branches.

An array of challenge function models, besides the centralized review akin to the US model, have been either attempted or proposed, with varying degrees of success. These other models are described in the following section, which concludes with a challenge

function model – the competitive supply of regulatory analyses – that has not yet been attempted anywhere.

Public Notice and Comment

Predating the era of explicit regulatory analysis, the first challenge function model was the procedural device of requiring public notice of proposed regulatory actions and requesting public comment. Every OECD nation has some system for public notice and comment. In the

Canada Gazette one can often find Regulatory Impact Analysis Statements (RIAS), and these documents convey a wealth of useful information of public interest. However, notice and comment procedures lack both a quality control requirement with respect to regulatory analyses or any independent way to require that analyses be qualitatively well-considered or quantitatively objective, meaning free of bias resulting from the authors' policy preferences (what we *want* the outcomes to be) or wishful thinking (what we *hope* they will be).

Because public comments are generally advisory, the ranks of those willing to expend the resources to provide them are necessarily limited. Effort is a function of the degree to which it is perceived that the agency might be influenced to change its mind or could be compelled to do so by a court. The public comment process is at its most vibrant and effective when the legislation authorizing an agency to regulate also has strict rules requiring it to

justify its decisions based on competently performed regulatory analysis. Conversely, public comment has little impact as a challenge function when an agency has unfettered decision-making discretion.

Persuasion and Co-option

It is much easier to design a challenge function to fail than it is to design one to succeed.

One can always find examples in which an agency's interests, as it perceives them to be, are served by better regulatory analysis. In these instances, absent or sub-

standard regulatory analysis results from insufficient technical expertise or a resistant bureaucratic culture. These problems can be overcome by persistent, often painstaking, efforts at capacity building, education and training, and organizational reform. A regulatory agency that benefits from good regulatory analysis will learn from experience and, slowly but surely, become its advocate.

Persuasion and co-option fail, however, when better regulatory analysis undermines an agency's objectives or its claims to authority and primacy. For example, an agency whose statutory mission involves regulating in an area where markets perform relatively well will learn that benefit-cost analysis reveals its regulatory proposals to be inefficient, and thus undesirable from a normative economic perspective. A timely example is the regulation of superficial characteristics of fruits and vegetables, which the European Union recently rescinded (but only in part; it

is estimated that three fourths of all European fruits and vegetables will still be covered by the handful of remaining restrictions). Regulation simply cannot yield net social benefits in the absence of market failure, and there is no evidence that markets are unable to price fruits and vegetables efficiently to account for diversity in shape, size, and similar characteristics. Agencies directed by law to regulate where no market failure exists will not voluntarily submit to the disciplines posed by a challenge function.

Peer Review

Peer review is routinely used in scholarly settings and has become popular in government. Peer review can, but usually does not, perform the challenge function well. Agencies use it less to improve quality than to ratify their work. Governmental peer review is therefore subject to severe conflicts of interest. Agencies using peer review may choose the reviewers, write the reviewers' instructions (the "charge"), decide when and how the reviewers meet, and even control their discussions. Agencies have powerful incentives to choose reviewers who are friendly, desirous of establishing or maintaining cordial (or financially profitable) relations, and disinclined to be troublesome. Instructions to reviewers can be crafted to avoid asking the most pertinent questions or to constrain panels' reviews to a carefully restricted domain. When this happens, governmental peer review works as a challenge function only when experts disregard their instructions and refuse to ratify. This happens rarely, and only

among peer reviewers with extraordinary self-confidence and personal resolve.

In scholarly settings, peer review is used mostly to allocate grants or ration pages in a refereed journal. The task is to select the "best" from what is available, not to ratify anything. Scholarly peer reviewers have ratification authority only in one context: the decision to approve of a doctoral dissertation leading to the award of a Ph.D.

Peer review also suffers from potentially more serious defects. First, when even (and perhaps especially) the best and brightest experts are assembled, there is no way to limit their review to the matters in which they are expert. Scientists are susceptible to the conceit that their expertise is easily transferrable elsewhere. Second, scientists can leverage their position as technical reviewers to advocate for specific public policies. This can be managed in various ways, such as by explicitly directing reviewers to stay out of policy debates and technical areas where they lack expertise, with the threat that their work will be summarily dismissed if they don't. Responsibility for selecting panels and writing their instructions can be given to a genuinely independent entity. Panels can consist of very sceptical individuals willing and motivated to question nearly everything.

Still, some of these problems cannot be remedied no matter how much care and effort is devoted to the task. Scientists will often be tempted to believe that their own research is the most important in any field of inquiry and be critical of the research of profes-

sional rivals. They will be tempted as well by the prestige that comes from service on committees of highly distinguished people, and the power that comes from being authoritative, even if for just a short while.

Separate Agencies' Policy and Analytic Functions

Typically, personnel employed or contractually funded by the regulatory agency also conduct its regulatory analysis. They are subordinate to agency program officials and subject to pressure to produce analyses that support programmatic objectives. Even when there is no explicit pressure, analysts in a regulatory agency tend to share its perspectives, goals, objectives, and culture.

For this reason, obtaining independent regulatory analysis from within the agency requires at least that analysts be organizationally separated from program officials. Their promotion and advancement must be insulated and they must report to senior officials without dilution or censorship. Where these conditions do not apply, an aggressive challenge function will be necessary to get minimum quality analysis from an agency.

Regulatory Analysis Blueprints

A process reform that has been used occasionally involves the advance preparation of regulatory analysis blueprints. These should not be substantive descriptions of what an agency intends to do by way of regulation, but rather plans outlining how it will go about performing regulatory analysis in advance of making decisions. Like

public comment processes in general, the effectiveness of a blueprints procedure depends on whether blueprints are, and are perceived to be, genuine efforts to inform the analytic process.

Blueprints need to state clearly what data and analytic methods will be used or, if one purpose is to generate new data and methods, the precise criteria that will be used to choose among competing data and methods. The challenge function agency can monitor, and if necessary, compel compliance. Blueprints also enable agencies with different perspectives to participate more effectively, for they can perform their own shadow analyses. Similarly, by establishing a bona fide public participation blueprints process, the resources of the private and non-governmental sectors can be activated to inform decision makers and improve the quality of regulatory analysis.

A bona fide blueprints process may produce competing regulatory analyses, only one of which is authored by the regulatory agency. This creates the need for a transparent process for selecting the “best” analysis based on clearly defined ranking criteria and a process for resolving disputes. The only stable ranking criterion is objectivity, by which it is meant the absence of embedded or implicit policy preferences. Other criteria can create incentives for undesirable strategic behaviour.

Designing a challenge function requires balancing a set of competing objectives; trade-offs among objectives are inevitable and no single approach will dominate on all margins of interest.

A regulatory agency cannot be counted on to select the most objective (i.e., the most policy-neutral) regulatory analysis. It has an inherent conflict of interest. For that reason, a blueprint process probably should vest the authority to choose the best analysis in the challenge function agency. If there is a concern that non-transparent logrolling or deal making could go on behind closed doors, this can be prevented by using a procedure called final-offer arbitration in which the choice of the

“best” analysis is restricted to the set of analyses presented and the decision is carefully documented for the ultimate arbiter, the minister.

Competitive Supply of Regulatory Analyses

Regulatory agencies tend to control the production of regulatory analyses. This creates two problems. First, as noted above, analyses produced by regulatory agencies are not independent. The second problem is one characteristic of monopolies. Economic theory teaches that they produce too little output at too high a price, and the output they do produce is often substandard.

The remedy for the ills of monopoly is competition. A challenge function can be devised so many analyses are prepared by diverse interests, with each team of analysts implicitly serving as peer reviewers of others’ work. The crucible of effective, rigorous, and highly

motivated critical review provides the incentive each team needs to perform its best work. The staff of the challenge function agency then becomes a reviewer of competing portrayals of regulatory effects and decides which analysis is best.

Such an approach offers significant secondary benefits to the challenge function agency. For example, it would no longer need to devote scarce resources to training in analytic methods. Competition will motivate prospective regulatory analysts to learn their craft without subsidized assistance. This is particularly helpful given the limited evidence that devoting resources to training regulatory agency analysts results in proportionate quality improvements.

Criteria for Gauging the Effectiveness of a Regulatory Challenge Function

Designing a challenge function requires balancing a set of competing objectives; trade-offs among objectives are inevitable and no single approach will dominate on all margins of interest. In this section, several criteria are set forth that can be used to compare and contrast competing challenge function designs.

Clarity of Purpose

For a challenge function to be effective over an extended period, its purposes must be both clear and stable. Analysts must know in advance what is expected of them and thus be able to predict how their work will fare under

review. The public also must have confidence that the challenge function is consistent, equitable, and transparent.

Predictability is enhanced if the challenge function agency also has a synergistic mission reinforcing analytic quality. Paperwork reduction and information quality are good examples of synergistic missions. Regulatory agencies always want more information, both to perform regulatory analysis and to craft efficient and effective regulations. Left to their own devices, however, agencies tend to seek more information than they really need (thus imposing undue burdens on the public) and may not be sufficiently motivated to assure information quality sufficient for the intended purpose. When the challenge function agency also oversees paperwork reduction, it can reduce the quantity of information demanded by the government while simultaneously improving its quality for analysis and decision making.

Conversely, predictability is significantly degraded if the agency also has missions that conflict, such as the advancement of a substantive policy agenda. Ironically, the existence of conflicting missions undermines the agency's effectiveness at achieving each one.

Institutional Capacity

The scope, scale, and intensity of the challenge function determine the institutional capacity that must be built to enable it to have a chance to be effective. Obviously, the more expansive the mission, the greater will be the

resources that must be devoted to the task. These resources consist of professional staff with training, experience, and expertise that equal or exceed that of the agencies whose work they review. It also means access to outside expertise where necessary. This is especially important for complex regulatory actions that contain detailed scientific, technical, engineering, or statistical information. No challenge function agency can possibly retain on staff all of the expertise it needs to review complex proposals effectively, yet access to such expertise is essential for effectiveness.

In both the EC and US models, the size of the professional staff is insufficient. In the European Commission, it is not clear that it has ever been otherwise. In the United States, the staff has been cut by about half while its responsibilities have greatly expanded. Both schemes lack sufficient in-house expertise in vital areas, and in the United States, staff are forbidden from obtaining help from outside the government.

Independence

The need for independence has already been noted in different contexts, but it is worth highlighting as a separate criterion, because there are multiple dimensions involved. As indicated earlier, if the regulatory agency prepares the only analysis, then its authors need

independence from program officials to produce objective work products. In a similar vein, analysts working for the challenge function agency require multiple types of independence — independence from competing missions, as noted above, but also independence from political interference.

For a variety of reasons, this might not be as feasible to implement as it is necessary. The challenge function can overcome this in part by using well-crafted and reproducible evaluative criteria and following transparent review procedures. Despite the limitations of peer review, the challenge function almost certainly will have to rely on this tool

for complex scientific and technical issues. Securing genuinely independent peer review is thus an additional challenge function task that cannot be left to regulatory agencies to perform.

Over time, challenge function agencies are tempted to promote their successes and minimize their failures; that is, they often do not live

by the same analytic discipline that they impose on others. A key predictor of this problem is a reporting requirement in which the challenge function agency must show that its efforts have improved the quantity or quality of regulatory analysis. Faced with such a requirement, the agency will lower its standards. A reporting requirement that

No challenge function agency can possibly retain on staff all of the expertise it needs to review complex proposals effectively, yet access to such expertise is essential for effectiveness.

rewards the challenge function agency for mounting successful challenges may avoid this problem.

Timing

A challenge function can intervene at different points in the regulatory process, and choosing these points has a dramatic impact on the program's likely effectiveness. Historically, challenge function agencies have played a gatekeeper role at the end of the process. This works, however, only if the challenge function agency has the authority to veto regulatory analyses and compel them to be revised. Vesting the agency with veto authority has important practical and political consequences. For example, the agency must be willing to exercise this authority; powers that go unexercised may disappear.

The challenge function instead can be located at the beginning of the regulatory development process. If this is done, the best it can do is establish a plan for how regulatory analysis would be conducted. It cannot assure that the plan is followed, and some regulatory agencies will choose to depart from the plan for unpersuasive reasons.

A better alternative is to establish multiple points of intersection – at the beginning, the end, and places in between – each with a limited set of issues to resolve and different enforcement tools. This approach significantly improves the flexibility with which challenges can be brought. At the same

time, however, it expands the scope of the challenge function task and creates reasonable expectations that it will act.

Transparency

Transparency has at least two dominant forms: procedural transparency (which applies to the process of evaluating regulatory analyses) and technical transparency (which concerns the data, models, and analytic and statistical methods used in regulatory analysis). Both forms of transparency involve a principle that it is easier to believe others should follow than it is to follow oneself.

Regulatory challenge programs do a good job of demanding transparency on the part of regulatory agencies, but can themselves be highly opaque. This is usually justified on the grounds that senior government officials have a need for professional candour that they cannot obtain if they must “work in a fishbowl.” This is true but largely irrelevant. A challenge function that includes a high degree of protection for confidentiality within the challenge function agency is one that suffers from actual or perceived conflicts in mission, with concomitant distrust and ineffectiveness.

Technical transparency is essential for any challenge function to be successful. Regulatory agencies – and anyone else preparing all or part of a regulatory analysis that they believe ought to be relied upon as the most objective characterization of likely regulatory effects – must be obligated to show their

work. Qualified members of the public ought to be able to use the same assumptions, data, models, and methods used by the original analysts and obtain essentially the same results.

Review Criteria

Any successful challenge program must have criteria for determining whether a regulatory analysis is sufficient for the decision problem at hand. These criteria must be transparent (meaning readily known by all) and objectively interpretable (meaning not subject to the idiosyncrasies or eccentricities of the reviewer or anyone's policy preferences). Thus, criteria that speak to the “feasibility” of one thing or the “appropriateness” of another are poorly suited for use in a challenge function, because they are inherently subjective.

Benefit-cost criteria tend to be the most widely used in challenge functions, and there are good reasons why. First, there are well-established external rules for deciding whether a regulatory effect is a cost, a benefit, or a transfer. Second, economists have decades of practical experience objectively quantifying effects. Practitioners understand that benefit-cost analysis is supposed to be positive (i.e., descriptive) and not normative (i.e., prescriptive). Thus, the discovery of bias in a benefit-cost analysis is per se evidence of manipulation. Whether error is meaningful depends on whether it is larger than the explicit or implicit precision of the estimates or sufficient to change the net-benefit ranking of alternatives.

Evidentiary Standards and Burden of Proof

A challenge function must be clear concerning who bears the burden of proof, what that entity must do to satisfy this burden, and what evidentiary standards will be applied. It is a reasonable starting point to require the author of an analysis to follow generally accepted benefit-cost analysis practices, fully reveal all source materials, and ensure that a qualified third party can reproduce the results. In addition, it also is reasonable to expect that an analysis will be an unbiased portrayal of the effects of a proposed regulation, and that these effects are accompanied by probabilities of their occurrence or well-founded, semi-quantitative descriptions of their likelihood. Rare events must not be described as “likely,” and descriptors such as “plausible” and “possible” must be described in quantitative terms consistent with general understanding.

Meeting these standards might be sufficient to earn a weak presumption of validity. The next task is to decide who is authorized or allowed to challenge. Typically only the challenge function agency would have this authority, in which case limited resources or the known perils of monopoly power may well handicap the challenge function. Alternatively, other governments (i.e., provincial) or other government agencies could be authorized to mount challenges, thus allowing the discipline of competition to work as an agent for the discovery of error. This would have the additional salutary effect of leveraging challenge function agency

resources. Finally, any member of the public could be allowed to mount a challenge. Such a regime would ensure that the broadest possible span of interests and competencies were taken into account.

Regardless of which model is employed, the challenge function needs a clearly stated evidentiary standard for determining whether an analysis requires correction. The choice of evidentiary standard is an implicit trade-off between Type I and Type II error. In this case, Type I error (a false positive) means interpreting a claim, inference, or conclusion as false when in fact it is true. A Type II error (a false negative) arises when a claim, inference, or conclusion is interpreted as true when in fact it is false. There is no obvious pair of weights to assign to Type I and Type II errors. As a practical matter, the more the challenge function tolerates Type II error, the less effort will be devoted to challenge.

Authority

Many challenge functions have legal foundations and specific authorities conferred on the agency or body that perform them. Deciding what authorities should be conferred on the challenge function is complex, and there are few simple or easy answers. Diverse authorities of varying intensity and effect appear to be superior to narrowly defined authority even when that authority is extremely powerful. Under the US model, the challenge function agency has the authority to veto draft regulations – a very substantial power – but it also lacks the authority to do anything less drastic. Since 1981, it has

reviewed 39,381 draft regulations and vetoed 426. This represents 1.08 percent of the total, meaning that the Office of Management and Budget rarely exercises its single authority under the challenge function.

The challenge function agency can be given a broader set of authorities to exercise at different points in the process. For example, if the challenge function agency learns early on that a particular regulatory analysis is headed in the wrong direction, perhaps because important alternatives were excluded, or it is expected to be based on a crucial model known to be seriously flawed, it should be able to intervene early to secure a mid-course correction. Neglecting (or being unable) to correct known errors in a timely manner makes the challenge function less effective, more adversarial, or both.

A challenge function also can be effective without giving the agency decision-making authority. For example, in Australia, the Office of Best Practice Regulation (OBPR) cannot actually prevent an agency from proceeding without a required regulatory analysis or veto of a substandard product. However, the OBPR makes its reviews public and agency non-compliance public. In contrast, when a challenge function agency has veto power, it tends to exercise that power rarely, thus reducing effectiveness. If, as in the United States, the challenge function agency also has a public reporting obligation, then it cannot publicize poor regulatory agency performance without raising questions about why it did not exercise delegated veto power.

Equitable Application

Agencies (and non-government suppliers of regulatory analysis) must be assured that the challenge function agency applies the same quality standards to all. Experience shows that it is possible to apply criteria consistently to all analyses that are reviewed with equal intensity, but it is very hard to devote the same intensity of effort to reviewing all analyses. If a challenge function agency reviews competing analyses, it must take great care to avoid inconsistencies that give even the appearance of bias.

Principles of horizontal and vertical consistency can be used to help reduce potential inconsistencies across regulatory actions. Horizontal equity means devoting the same intensity of review to regulatory analyses of similar scale and scope. Vertical equity means allocating effort that is proportional to scale and scope. Discontinuities and errors in the classification of proposed regulations undermine equitable application. The US challenge function, for example, requires regulatory analysis only for proposed actions whose impacts exceed a clearly defined but difficult to implement cost threshold. Regulatory agencies can evade this requirement by using various tactics, such as dividing a major regulation into a set of smaller

parts each of which stays below the threshold for mandatory analysis, or the simple expedient of not performing even a screening analysis to determine whether the regulation's costs exceed the threshold.

Challenge functions are a special form of regulation, and for that reason, the choice and design of a challenge function for Canada should be informed by a rigorous analysis of all reasonable alternatives.

Achieving equitable application will be tested immediately by the challenge function agency's institutional capacity – most obviously, its budget. Thus, the choice of challenge function model should take into account a reasonable expectation of what resources can and likely will be devoted to it. For a centralized review function such as

the US model to be effective, very significant investments in highly qualified professional staff must be made. If it is unlikely that the challenge function will be well funded, or it will slowly be defunded like in the United States, then a different model should be chosen to leverage its scarce resources. For example, a model stimulating the competitive supply of regulatory analyses, in which a smaller challenge function agency serves as a referee and arbiter of quality, is likely to be more effective if the budget is limited.

Conclusions

There are many options for structuring and implementing a regulatory analysis challenge function, and no model has been shown to be superior on each margin of interest. A practical way for-

ward for Canada is to first conduct a realistic assessment of the constraints under which its challenge function will operate. For a challenge function to be effective, it must be designed taking these constraints into account. Once this is done, various alternatives can be examined with an eye toward maximizing the net impact of the program. Indeed, it would be sensible to compare alternatives using the same analytic tools that regulatory agencies are expected to follow when they propose new regulations.

There are reasons to believe that a challenge function incorporating competitive supply of regulatory analyses would fare well in this analysis, because it could overcome several known problems that have been shown to afflict other models. Nevertheless, it is important that no alternative be given special treatment or an a priori preference. Challenge functions are a special form of regulation, and for that reason, the choice and design of a challenge function for Canada should be informed by a rigorous analysis of all reasonable alternatives. ●

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The Science and Practice of Risk Ranking

Summary

Sound risk ranking is essential to effective risk management. Without it, small risks may receive unwarranted attention, while large ones are neglected. The challenges in ranking risks include the sheer number that need to be considered, the variety of ways to define “risk,” and the differences among stakeholders, regarding which consequences matter most. Addressing these challenges requires an understanding of risks, risk analysis, and decision-making processes. A practical approach is offered for producing sound, transparent, and credible risk rankings.

waiting until circumstances bring a risk to our attention, then decide whether to treat it more or less seriously.

In our private lives, we bear the consequences, if we spend our time, money, attention, or emotional resources poorly. However, the public as a whole suffers, when policy makers worry about the wrong things. When setting their priorities, policy makers face the same challenges as do individuals, one challenge being the sheer number of risks that might be considered. A second is deciding how to define “risk.” A third is reconciling the variety of values of the different stakeholders in comparing risks.

The first section below considers these challenges from a theoretical perspective. It is followed by a short history of US Environmental Protection Agency (EPA) efforts to grapple with them. The next section describes an approach that combines risk research with practical experience in risk ranking followed by consideration of the compatibility of this approach with risk-management processes initiated by the Government of the United Kingdom and advocated by the Canadian Standards Association.

Before beginning, it is important to note that ranking risks is but one critical step in effective risk management. Ordering risks by their importance allows policy makers to focus on those that matter most. It does not, however, say what to do about them. It does not even determine which risks require action or who should take it. There may be small risks that are easily managed and large risks that merit no further attention, because there is nothing

Ranking risks to health, safety, and the environment is important because, while there are risks everywhere, we have limited resources for managing them. In an ideal world, we would regularly review our priorities, deciding which risks deserve more attention and which less. In the real world, systematic reviews of risk priorities are as rare in the public arena as they are in our private lives. That is, we usually muddle through,

to be done about them, beyond investing in research that might, one day, make action possible.

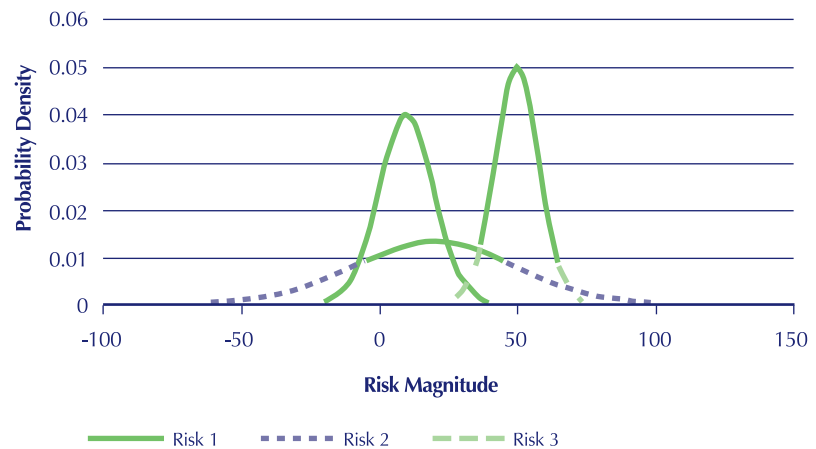
Challenges to Risk Ranking

Risk analysis is an interdisciplinary field that develops and applies computational and empirical methods to understanding risks. It has identified three challenges to ranking risks: too many risks, too many definitions of risk, and too many values.

Too Many Risks. The list of risks facing an agency, firm, or family can be long and varied. For example, on a given day, a parent might need to decide how much attention to pay to a child's cough, a car's rattle, an aging parent's recent fall, a wave of neighbourhood burglaries, a worrisome skin rash, and blood sugar irregularities. At a given meeting, a school board might need to decide how much attention to pay to missing school bus seatbelts, playground fights, potential pandemics, broken stairs, and student obesity.

Normally, people pursue *sequential risk ranking*. That is, they wait until a risk draws their attention, then work hard to understand it better. Based on that improved understanding, they move that risk up or down in their ranking, hoping to afford it a more appropriate level of concern. Thus, a parent might conclude that the rattle is just annoying, then try to put it out of mind. A school board might conclude that it is living on borrowed time, for pandemic preparedness, then try to push other risks away, to give a possible pandemic the needed attention.

Figure 1
Some Complexities of Risk Ranking, in a Simple Case



Source: Long and Fischhoff (2000).

Over time, sequential risk ranking might lead to better priorities – or it might lead to focusing on vivid minor risks, while neglecting quite serious ones. Parents can neglect their own major health problems, while attending to minor concerns about their kids, cars, and home. School boards can neglect potential disasters, while dealing with routine problems and single-issue interest groups.

The success of sequential ranking depends on how many risks need to be ranked, how quickly uncertainty about them can be reduced, how they attract attention, and how precise the ranking needs to be (Long and Fischhoff, 2000). Sequential ranking can work well, for example, when public health surveillance programs pick up telltale signs of emerging diseases, whose seriousness can be quickly ascertained. It can work less well when it is driven by the 24/7 news cycle.

When sequential ranking proves impossibly inefficient, *simultaneous risk ranking* is needed: looking at all risks at once. As appealing as that idea might be, in principle, the challenges to its execution are substantial. Figure 1 shows, in abstract terms, issues that arise when ranking three risks measured on a single scale. As the number of risks increases, the complexity of simultaneous ranking can grow exponentially, diluting the attention paid to part of the work. At the extreme, attempting to understand everything can lead to understanding nothing. The remainder of this article considers practical ways to overcome three key challenges to simultaneous risk ranking.

Too Many Definitions of “Risk.” Figure 1 has one major simplification: all risks are measured in a common unit (called the risk magnitude). Risk analysts have long realized that there is no single measure of “risk.” Even when

Table 1
Risk Comparisons

One...legitimate purpose [for risk comparisons] is giving recipients an intuitive feeling for just how large a risk is by comparing it with another, otherwise similar, risk that recipients understand. For example, roughly one American in a million dies from lightning in an average year. “As likely as being hit by lightning” would be a relevant and useful comparison for someone who has an accurate intuitive feeling for the probability of being hit by lightning, faces roughly that “average” risk, and considers the comparison risk to be like death by lightning in all important respects. It is not hard to imagine each of these conditions failing, rendering the comparisons irrelevant or harmful:

- (a) Lightning deaths are so vivid and newsworthy that they might be overestimated relative to other, equally probable events. But “being struck by lightning” is an iconic very-low-probability risk, meaning that it might be underestimated. Where either occurs, the comparison will mislead.
- (b) Individual Americans face different risks from lightning. For example, they are, on the average, much higher for golfers than for nursing-home residents. A blanket statement would mislead readers who did not think about this variability and what their risk is relative to that of the average American.
- (c) Death by lightning has distinctive properties. It is sometimes immediate, sometimes preceded by painful suffering. It can leave victims and their survivors unprepared. It offers some possibility of risk reduction, which people may understand to some degree. It poses an acute threat

at some very limited times but typically no threat at all. Each of those properties may lead people to judge them differently — and undermine the relevance of comparisons with risks having different properties.

- (d) It is often assumed that the risks being used for comparison are widely considered acceptable at their present levels. The risks may be accepted in the trivial sense that people are, in fact, living with them. But that does not make them acceptable in the sense that people believe that they are as low as they should or could be...

The second conceivable use of risk comparisons is to facilitate making consistent decisions regarding different risks. Other things being equal, one would want similar risks from different sources to be treated the same. However, many things might need to be held equal, including the various properties of risks...that might make people want to treat them differently despite similarity in one dimension...

The same risk may be acceptable in one setting but not another if the associated benefits are different (for example, being struck by lightning while golfing or working on a road crew). Even when making voluntary decisions, people do not accept risks in isolation but in the context of the associated benefits. As a result, acceptable risk is a misnomer except as shorthand for a voluntarily assumed risk accompanied by acceptable benefits.

Source: US NRC (2006; Pp. 37-38).

risk rankers care only about expected deaths, they must decide whether to treat all deaths as equal or, if not, how to weight them. For example, risks can be ranked differently, when measured by “expected probability of premature death” or “expected years of lost life” (which assigns extra weight to deaths of young people). Ranks might differ, too,

when measured in units that consider benefits (e.g., deaths per coal miner vs. deaths per ton of mined coal) or in units that consider exposure (e.g., deaths per mile travelled) (Fischhoff et al., 1981; Crouch and Wilson, 1981).

Additional choices arise when deciding how to include various kinds of morbidity, in the measure of risk. Lively

academic debates revolve around different measures of *quality-adjusted life years* (associated with different forms of harm). These measures try to put diverse risks on a common footing, by asking people how much they, personally, value different states – using structured surveys to resolve the ethical issues of defining risk.

Defining risk is complicated further when mortality and morbidity do not capture all the concerns of citizens. For example, they may also care about how voluntary exposure to a risk is, how equitably it is distributed across the population, how much of a sense of dread it evokes, how controllable it seems, how far in the future its effects extend, how well it is understood by science, how well it is understood by those exposed to it, how immediate its effects are seen, and how new it is (Fischhoff et al., 1978; Slovic, 1987). Ignoring these risk attributes can mean missing issues that are critical to policy makers or their constituents.

Defining risk is complicated further when mortality and morbidity do not capture all of citizens' concerns

Too Many Possible Values. Once the risks have been characterized, ranking can begin, bringing additional complications. Reasonable people can disagree about the relative importance of mortality and various forms of morbidity, or even about the importance of different aspects of mortality. For example, some people are more averse to risks that have *catastrophic potential*, in the sense that they can take many lives at once (e.g., aviation), compared to *chronic risks*, with the same expected death toll exacted at a more even rate (e.g., driving). Other people find it offensive not to treat all deaths equally. Those people might consider catastrophic potential, because of its *signal value*, feeling that risks that can take many lives at once may be poorly understood and managed. Similarly, some people want to have all risks treated similarly, regardless

of whether exposure to them is voluntary, whereas others believe that people get more benefit from risks that they assume voluntarily (Slovic, 2000).

A common temptation for simplifying risk ranking is comparing risks that exhibit seemingly similar magnitudes, then arguing that they should be treated similarly. A “classic” comparison equates the risk of living 50 years beside a nuclear power plant to that of eating a tablespoon of peanut butter (due to potential aflatoxin contamination).

Table 1 summarizes the logical flaws in such comparisons.

Figure 1 reveals an additional challenge to ranking risks, even when they have been reduced to a common unit. The rankings depend on what statistic is used to represent a risk whose value is not known with certainty (as is almost always the case). If means are used (as a “best guess”), the three risks would be ranked 3-2-1. If a high percentile is used (as a “worst case”), the order becomes 2-3-1. Other statistics are also possible, including different “best guesses” (in cases where the mean, median, and mode differ).

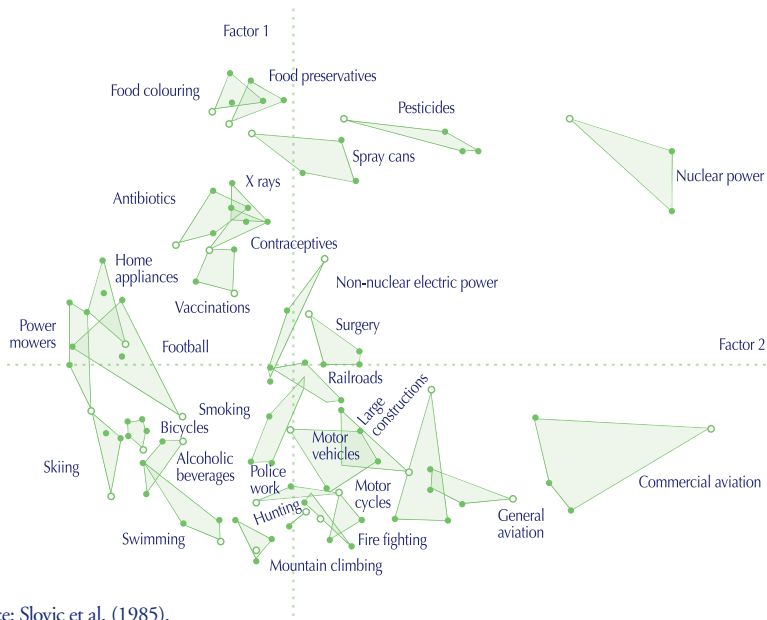
In these ways, defining “risk” raises fundamental value questions, which must be resolved before scientific evidence can be assembled, regarding the magnitude of the risks, and the ranking process begun. In principle, an organization could choose to resolve these value issues among its stakeholders, then let someone else assemble the

science and compute the ranks. In practice, resolving value issues in an informed way typically requires vigorous discussion among individuals with suitably diverse perspectives. Without such a deliberative process, the issues are unlikely to be thoroughly understood (US NRC, 1996). Typically, they are too complex for individuals to grasp fully, without hearing other people’s views. Moreover, transparent, public deliberations, by trusted individuals may be needed for rankings to have external credibility. Two decades of research and practice have produced a foundation for methods to achieve these goals.

Ranking Risks at US EPA

The US Environmental Protection Agency (EPA) has long sought to set its regulatory and research agenda systematically. A landmark report, *Unfinished Business* (US EPA, 1987), summarized the judgments of 75 staff members ranking the risks addressed by the EPA’s existing programs, as well as risks that it might, one day, regulate. A similar process, undertaken by the EPA’s Science Advisory Board, produced *Reducing Risk: Setting Priorities and Strategies for Environmental Protection* (US EPA, 1990). Based on the framework that these reports created, the EPA established a program to encourage state and local risk-ranking exercises. After supporting several dozen such exercises, the EPA published *A Guidebook to Comparing Risks and Setting Environmental Priorities* (US EPA, 1993), with thoughtful advice on conducting respectful, scientifically informed deliberations. Seeing its foundational

Figure 2
Location of 30 Hazards within a Two-Factor Risk Space



Source: Slovic et al. (1985).

work as done, the EPA funded two regional centers to support additional ranking.

Central to the EPA's approach is letting participants drive the process, in terms of which risks are ranked and how "risk" is defined. Technical experts are entrusted with creating risk estimates relevant to participants' concerns. One price paid for this flexibility and responsiveness is reduced transparency. Individuals who were not in a group must trust the work of those who were, because the rationale for their ranking is not made explicit. A second price is limited comparability. Without a standard definition of "risk," one cannot tell whether different groups have reached consistent conclusions, or pool ranking results across domains, so overall priorities can emerge.

As a result of these methodological problems and changed political conditions, systematic risk-ranking has not been a priority for the EPA recently. The US Department of Homeland Security has committed to risk-informed decision making. However, its work has involved computation, without deliberation.

A Method for Risk Ranking

Drawing on research in risk analysis and behavioural decision research, a group centred at Carnegie Mellon University's Department of Engineering and Public Policy developed a risk-ranking procedure that adds standardization and transparency to the EPA's flexible, participatory approach. Like the EPA approach, Carnegie Mellon's recognizes the variety of risks and ways

to value them. It, too, allows participants' concerns to drive the selection and presentation of risk estimates and uses risk analysis to aid judgment, rather than to replace it. It also views well-informed stakeholders as the final arbiters of risk priorities.

The Carnegie Mellon approach departs from the EPA practice of characterizing all risks in terms of a common set of attributes, rather than allowing each ranking exercise to choose its own attributes. Such standardization is possible for two reasons: there are some attributes that most people want to consider and, hence, belong in every exercise (e.g., human mortality), and many potentially relevant attributes are correlated (e.g., involuntarily assumed risks tend to be distributed inequitably). As a result, taking a representative (or two) from a cluster of correlated attributes should address that general set of concerns. Figure 2 shows such core clusters, represented as dimensions in a *risk attribute space*.

Many other studies, with varying activities and technologies, risk attributes, risk raters, and statistical procedures, have yielded similar patterns: (a) People rate risks similarly on these attributes, even when they disagree about the attributes' importance. (b) Attribute ratings are highly correlated, typically revealing two primary dimensions, given names like *Unknown* (vertical) and *Dread* (horizontal).

Based on these regularities, the Carnegie Mellon approach characterizes all risks in terms of the same attributes, as in Table 2. Each column uses two different (but correlated) attrib-

utes to represent one dimension of concerns, trusting them to convey its meaning. The first column has two measures of mortality; one considers the age of the dead, while the other ignores it. The second column has two measures of environmental impact, developed from the dozens of indicators used in different environmental impact analyses (Willis et al., 2004, 2005). The two right-hand columns have measures representing the two factors in Figure 2.

The display in Table 2, along with accompanying explanatory materials is designed to communicate the facts needed to rank risks based on the attributes that matter to people. Like any risk communication, they needed empirical evaluation, before being used for any serious purpose (Morgan et al., 2001b). That evaluation needed to approximate the conditions in which the materials were designed to be used: the sort of moderated, deliberative group process that any credible risk-ranking would entail.

To that end, an experimental test was created, with realistic profiles of 22 potential risks in a hypothetical middle school. Research participants ranked the risks, playing the roles of citizens advising the school board of a district with limited resources for managing risks. Each risk was described in a brochure that included a tabular summary like Table 2, along with a narrative description, subject to extensive pretesting.

The deliberative process sought to respect both individual and group perspectives, building on the EPA Guide-

Table 2
A Standard Risk Characterization

Number of People Affected	Environmental Impact	Knowledge	Dread
Annual expected number of fatalities	Ecosystem stress or change	Degree to which impacts are delayed	Catastrophic potential
0-450-600 (10% chance of zero)	50 km ²	1-10 years	1,000 times expected annual fatalities
Annual expected number of person-years lost	Magnitude of environmental impact	Quality of scientific understanding.	Outcome equity
0-9,000-18,000 (10% chance of zero)	modest (15% chance of large)	medium	medium (ratio = 6)

Source: Adapted from stimuli developed and used by Willis et al. (2005).

book and the US National Research Council's (1996) influential report, *Understanding Risk*. Before meeting as a group, individuals made personal risk rankings. At various points in the deliberations, the group publicly assessed its degree of consensus, while members privately recorded their personal views. Two different ways were used to elicit judgments so participants could triangulate on their values. The process assumed that these ranks needed to be constructed from individuals' basic values, as they reflected on the issues, informed by others' views (Fischhoff, 2005).

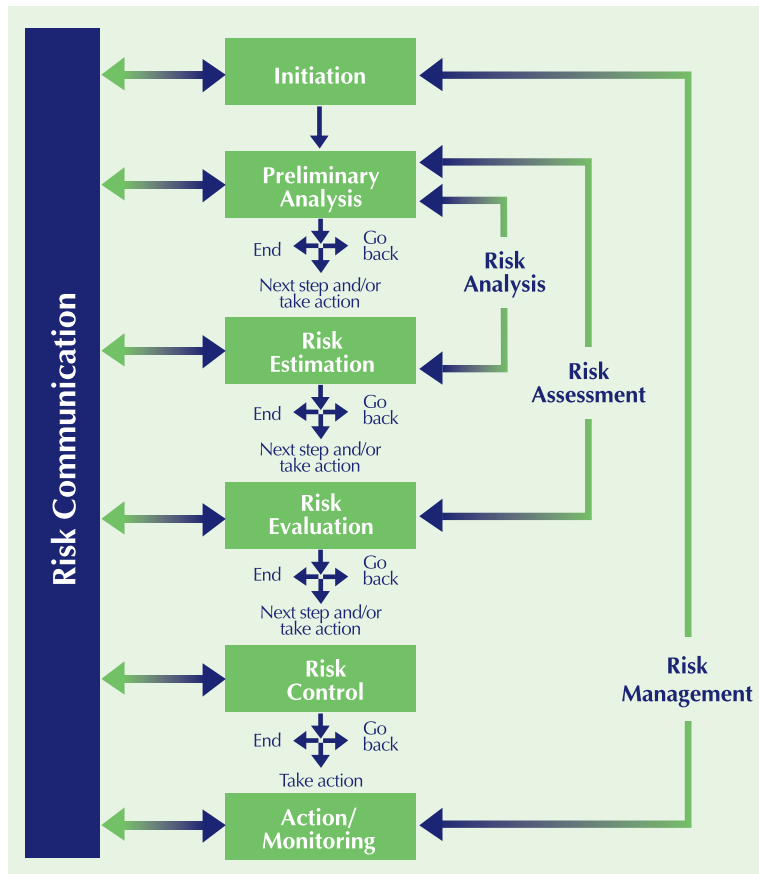
The method was evaluated with lengthy group sessions, involving both lay people and professional risk managers. Generally, participants tended to agree about the rankings, even when they disagreed about the importance of

the attributes. Moreover, that agreement increased as the deliberations proceeded, without evidence of inappropriate group pressure. Details on the procedures and the evaluations can be found in Florig et al. (2001), Morgan et al. (2001a), and Willis et al. (2004, 2005), with exemplary materials at <<http://sds.hss.cmu.edu/risk/>>.

Risk Ranking in Practice

The Carnegie Mellon approach to risk ranking applies analytical and empirical risk research within the reality circumscribed by the EPA Guidelines. Its empirical evaluations suggest that it could be trusted to support real decisions, with a wide variety of risks and stakeholders. It is grounded in extensive research regarding what risk attributes matter to people, how to characterize them scientifically, and how to present them comprehensibly.

Figure 3
Steps in the Q850 Risk Management Decision-Making Process –
Simple Model



Note: Risk communication with stakeholders is an important part of each step in the decision process.

A variant of the Carnegie Mellon approach has been endorsed by an initiative aimed at improving UK government risk management. Adapted through consultations with staff from several ministries, it is designed to be applied efficiently, without special training (HM Treasury, 2005). Called a method for “assessing concern,” it characterizes risks on six attributes: familiarity, understanding, equity, dread, control, and trust. Risks are

rated separately for how they are viewed by experts and by the public. These ratings complement scientific estimates of deaths and other harms, along with estimates of their monetary equivalents (to the extent possible).

In terms of the approach’s suitability to Canadian conditions, Figure 3 presents a risk-management philosophy, promulgated by the Canadian Standards Association, which influenced the approach’s development. The center

column prescribes a risk-management process with standard steps – although with a noteworthy commitment to self-evaluation, not proceeding until a step has been satisfactorily accomplished. The left-hand bar prescribes continuing two-way interaction with the public. That interaction seeks to focus the process on public concerns and make its conclusions as credible as possible. The Carnegie Mellon risk-ranking approach could offer a scientifically sound approach to realizing this philosophy.

In this abstract representation, possible risk levels are measured on a single dimension called risk magnitude. On this scale, having zero risk means receiving no further attention. The height of each curve (a probability density function) shows the chances of having that risk level.

The narrowness of the curves for risks 1 and 3 means that they are relatively well understood. Their location on the scale shows that Risk 1 should clearly be ranked lower than Risk 3. The flatness of the curve for Risk 2 means it is much more poorly understood than either Risk 1 or Risk 2. Its rank is also less obvious. It will more likely have a much lower risk, but has some chance of having a higher risk. It might be given a higher rank by people who were especially concerned about large risks.

Individuals from four diverse groups rated 30 activities and technologies on nine attributes (e.g., voluntariness, dread). A statistical procedure (factor analysis) identified two underlying dimensions of risk. Risks high on the

vertical factor, called “unknown risk,” were rated as new. They are not well known to those exposed to them, not well known to science, involuntary, and with delayed effects. Risks high on the horizontal factor, called “dread risk,” were rated as certain to fatal, if things go wrong, to threaten large numbers of people, and to evoke a feeling of dread. The four groups were students, League of Women Voters members, Active 20-30 Club members, and risk experts. The lines connect the highly similar results from the different groups. ●

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Background

One of the little-noted policy achievements of recent years has been the dramatic improvement of tax policy in most countries. Barriers to trade have been greatly reduced; top marginal income tax rates have been cut by half or more; the value-added tax (by far the least distortionary of all major taxes) has gained wide currency, battering its way from non-existence in 1952 up to the top of the heap (it now yields more revenue, worldwide, than any other tax). All signs credit this impressive tax achievement to the work of the world economics profession, both in developing the analysis leading up to the reforms and in providing fuel and support in the struggle for their adoption.

are easy to identify and measure (cash flows coming in and going out), and that the measurement takes place at a single focal point (the firm's balance sheet).

But first impressions can readily mislead. The expenditure (and regulatory) side is very different from the tax side, in that it takes only a handful of people, working at the government's centre, to design and put in place a tax reform, while in comparison one needs a virtual army to carry out separate evaluations of hundreds of roads, bridges, dams, port projects, etc or of thousands of regulatory measures. It is a big mistake to lump all roads into one big bundle and say "we like roads" — and the same goes for any of the other categories of expenditures or regulatory resources. The truth is that some outcomes have benefits far in excess of costs, while for others it is the reverse. It is precisely the task of good benefit-cost analysis to identify which is which, and this basically entails evaluating the actions one by one, in a coherent and systematic fashion. Hence the need for an army instead of a handful of people to bring about meaningful progress.

Another set of issues comes into play when we consider that, unlike the case of a business firm, a responsible government would try to weigh the benefits and costs of a given project or measure, not just in terms of its impact on a well-defined balance sheet, but instead counting its effects on the welfare of the country's entire population. And in addition to this daunting task, it would want to count a number of important

Benefit-Cost Analysis An Overview

Compared to the great advances in the tax side, countries have made little (and often no) progress in rationalizing their public expenditures. At first glance, this seems odd. Is it not quite natural to weigh benefits and costs, and then hold off on any action whose costs end up greater? This is certainly the way business firms work, but they have an easy task in the sense that benefits and costs

types of benefits and costs (like clear water, clean air, and natural beauty on the benefit side, and traffic congestion, air and water pollution, and disease contagion on the cost side).

Small wonder, then, that progress has been slow in moving toward the rigorous application of benefit-cost analysis to the full range of projects and programs on the expenditure side of government budgets including those in the regulatory reform. Does that mean that we should not try? That any new efforts would be doomed to failure? Of course not. There is ripe, low-hanging fruit out there, waiting to be picked, if only governments could mount a serious and determined effort.

On National Parameters

In benefit-cost analysis, a major distinction is made between elements of cost and benefit that appear time and again over many (even nearly all) projects, and other elements that are quite project-specific. Elements in the replicated category can and should be studied in depth, preferably by (or under the aegis of) a central project office. Project-specific elements, on the other hand, fall naturally and almost necessarily within the responsibility of the teams that evaluate each project.

The main replicable elements are the opportunity costs, respectively, of capital, foreign exchange, and labour. The first two of these are really very general. A country's capital market senses additional demands for or supplies of funds, but rarely "knows" or even cares what sector or area happens to be generating these demands or supplies. It is

similar with respect to foreign exchange. A given demand for dollars or Euros will affect the exchange rate in the same way, regardless of whether it is used to finance foreign travel, foreign investments, or the import of materials. This means that one can speak of one economic opportunity cost of capital, and one economic opportunity cost of foreign exchange, as major national parameters.

The key element in estimating these parameters is what we call the "sourcing pattern" for the item in question. Ultimately, a new demand for wheat will be filled either through new increments of supply or through the squeezing out of other demanders. This is exactly what happens through the price mechanism as a new demand is introduced. What is true for the wheat market is equally valid in just about every other market including, of course, those for capital and foreign exchange. A new demand for capital funds will have the effects of squeezing out other national demanders, stimulating local savings, and attracting additional capital inflows from abroad. These effects are naturally produced as the new demand has its expected market-tightening impact. Similarly, a new demand for foreign exchange will be ultimately satisfied in part by squeezing out other demanders of foreign exchange (mainly importers) and in part by stimulating domestic suppliers of foreign exchange (mainly exporters).

If there is a single basic principle governing the measurement of benefits and costs, it is "willingness to pay" and its mirror image "willingness to supply".

To estimate the economic opportunity cost of capital, we therefore have to estimate what is the true cost to the economy, occasioned by the displacement of those investments, plus the true compensation necessary to stimulate those extra voluntary savings, plus the effective marginal cost, to the economy, entailed in attracting that new capital from abroad.

Similarly, when a project demands foreign exchange, we evaluate its cost in terms of the economic value of the set of imports that are displaced and in terms of the incremental resource cost of the exports that are stimulated. Most of the time the relevant value of the lost imports will be measured by the exchange rate plus applicable tariffs, sales and excise taxes, and the relevant value of the newly stimulated exports will be measured by the exchange rate plus any applicable export subsidies (or minus any relevant export taxes).

The case of labour is more nuanced, owing to the enormous variety of occupations, skills, and specialties that comprise a country's labour force. On top of these differences, one also finds significant wage differentials across regions, and even across jobs of similar general description but with different "amenity values". Broadly speaking, the best approach to the economic opportunity cost of labour takes the market wage rate in the specific location of the project as the starting point, and then

adjusts this to account for relevant “externalities”. These are mainly personal income and payroll taxes.

Because of the heterogeneity of the labour factor, the most convenient approach is to consider the actual project outlays on labour as the baseline, incorporated in the “financial” analysis of a project. This baseline cost is then adjusted upward to account for lost taxes from each labour category in the places from which it was sourced. A downward adjustment is then added to account for the taxes paid by or for that category of labour as it is used on the project.

To summarize, outlays on tradable goods (or sales of them) have to be adjusted by a foreign exchange premium, the percentage by which the real economic opportunity cost of foreign exchange exceeds the (actual or expected) future real market exchange rate. With respect to capital, the economic net benefits or costs of each period are discounted by the economic opportunity cost of capital. In these cases, the tariffs and indirect (including value added) taxes, as well as any corporation income and property taxes actually paid by the project, are counted as part of the project’s economic benefits. They do not enter into the calculations of the “national parameters.”

In the case of labour, the payroll taxes paid separately by the project, as well as the income taxed paid by the workers, are treated symmetrically, the economic

cost of labour thus ending up as the financial cost minus taxes paid “here” plus taxes lost elsewhere.

Valuing Benefits in Highway and Irrigation Projects

The above examples are standard elements in modern benefit-cost analysis. They are widely accepted and used, in part because the external effects involved are readily measured in dollars. A whole new set of problems arises in cases where project benefits or costs (whether direct or external) come in kind rather than in cash.

Good examples can be found in road projects (and transportation projects in general). Their basic economic benefits consist in the reduction in the costs of moving people and/or goods. Thus, a road improvement project may bring benefit in the form of reduced fuel costs, reduced wear-and-tear on vehicles, etc. These are relatively easy to estimate, and highway engineers have produced tables expressing these costs in terms of litres of fuel per 100 kilometres, tire usage per 100 kilometres, the number of kilometres that a vehicle will last on each type of road. The most important benefit of highway improvements, however, is in most cases the saving of time for drivers and passengers. Valuing this is easy for truck and bus drivers who are paid a cash wage, but for others the value of travel time is totally subjective. The uninitiated usually start by wanting to value, say, commuter time as being equal to the hourly wage of each person involved, but specialists have learned that people

value their travel time as far less than their hourly wage. How is this done? Consider the choice between going by bus and driving. The dollar cost of going by bus is lower, but the time cost is higher. Suppose the bus takes one hour (per day) longer and costs \$10 less than driving and parking. If half the people (of given income and other characteristics) choose each of these two modes, economists judge that “on average” they are indifferent, and would then place a value of \$10 per hour on their commuting time.

Irrigation projects are another case in point. We need to put a value on the water that will be provided by, say, an irrigation dam. This task is greatly eased if one finds significant use of pump or river irrigation in the region. Here one can build a hierarchy – pump irrigation water is worth more than water from a dam; and the latter is worth more than water from the river. Why? Farmers can pump water when they need it most, while river water is available only in quotas based on current stream flow. An irrigation dam adds to the value of river water by storing water in periods of low farm demand, and saving it for the periods when farmers need it more. But a dam tries to deliver water when the farmers want it “on average”. The water is not as effective as pump irrigation, which each farmer can tap into, exactly when wanted.

If there is a single basic principle governing the measurement of benefits and costs, it is “willingness to pay” and its mirror image “willingness to supply”. These concepts, known to

economists as “competitive demand price” and “competitive supply price”, have been at the core of applied welfare economics for more than 150 years. They build on the fact that if you are unwilling to pay \$1.01 for an item but willing to pay 99 cents, there must be some point between these two prices at which you are exactly indifferent between the item and whatever package of other things you would choose as its alternative. The same kind of reasoning applies to the sellers of an item. For most marketed goods and services this pair of principles works nicely and it leads to our taking market prices as measures of benefit and cost, the prices being inclusive of taxes on the demand side (measuring what demanders really pay), and net of taxes on the supply side (measuring what suppliers really get).

Valuing Benefits in Other Areas

These principles can in many cases extend to items that have no direct market. Thus, for highways, we conceive of the total “price” that drivers would be willing to pay for each trip, and for irrigation projects the price that a farmer would be willing to pay for each successive cubic metre of water. But these concepts are hard to apply to programs of early childhood education or medical research, or national defence.

It is precisely the role of a formal system of BCA to defend the general interest in opposition to the clamor of one after another clique of beneficiaries, urging the implementation of ever more bad projects.

In such challenging areas, economists have had to reach deeper into their bag of tricks. One solution entails working with the increment to national product that a given project would make possible. Thus early childhood education leads to people being better prepared for regular school, to their staying in school longer, and to their having greater earning power over their working lifetime. The increment to real earnings is then taken as the benefit, from which the costs of the early education itself plus the induced increments to education are then deducted. A similar approach is sometimes taken to estimate the benefits of medical programs that add to the working lifetime and hence to the lifetime earnings of their subjects. One cannot deny the plausibility and usefulness of these measures of benefit, but we must recognize that they are extremely rough, and that they neglect important aspects of benefit. Are there not intrinsic benefits to many types of education – greater appreciation of life, greater capacity to cope with life’s challenges, etc. – that are present even when the subjects follow careers that pay no more than the alternative (e.g., teachers rather than plumbers)? Likewise, do not medical advances provide significant benefits, even for retirees and housewives whose earnings are zero whether or not a given medical project is undertaken?

Broadening the Reach of Benefit-Cost Analysis

These rhetorical questions only open the door to a whole panoply of challenges for benefit-cost analysis challenges that will keep us busy for a very long-term future, but on which we will gain by pecking away at one problem after another, refining our capacities at each step. An example is the concept of “quality life years”. One often hears that a given advance in medicine or public health has avoided “x thousand deaths” from, say, pneumonia or malaria. But clearly every human being dies sooner or later, and, indeed, avoiding a death from pneumonia may simply mean that a given subject will die a month later from the flu. Thinking along these lines led benefit-cost analysts to focus on the number of months or years of extra life made possible by a given project or innovation. The next step was to recognize that these added years may turn out to be of low or dubious value in cases where the patient is bedridden, comatose, or otherwise impaired. This led to the concept of quality life years, which implicitly counted only the good time involved in life extension. These advances have merits, because they apply clear thinking to a complex and difficult problem. But they leave us with the further challenge of placing a monetary value on these quality life years.

How can we put a value on such years? Once again, the historical starting point in answering such a question was earnings, but economic theory brought this into question. The basic line of thought is that most people “choose” leisure, in

the sense that they could readily find a second job or work longer at the first one. That means that their “willingness to pay” for leisure hours is at least as great as the wage they could have earned by working more. Following this line of reasoning, the benefit of the 2,000 hours that most of us work a year is equal to our earnings per hour minus the disutility of work. The net gain on these hours may thus be quite small, depending on how agreeable or disagreeable our job is. But the 6,760 hours of leisure all have a value that is higher than the wage we could have earned by working more. This leads to a valuation of quality life years at a multiple of a working person’s standard earnings.¹

Readers will appreciate that our solutions are far from perfect. But hard work and considerable ingenuity have helped us to make significant strides in extending the reach of benefit-cost analysis into new territory. One key piece of advice deserves repetition. It is better to proceed cautiously than to leap ahead rashly. In “selling” a project, one is on very solid ground if one can plausibly argue that this project is acceptable in spite of our having consciously underestimated its benefits and overestimated its costs. Thus, returning to the medical arena, many projects will turn out to be justified even if we value quality life years at the annual earnings of similarly qualified active

workers. This is very likely a huge underestimate, given that economic analysis and empirical evidence argue in favour of a significant multiple of annual earnings.

In other areas, use can be made of the principle that no benefit should be counted that is greater than the alternative cost of producing the same benefit. This principle has been the gold standard of benefit-cost analysis in electricity projects. Here we are lucky to have genuine, well-defined standard alternatives, consisting of the generating equipment produced by such firms as General Electric, Siemens, and Mitsubishi. When faced with the task of evaluating a hydro-electric or geothermal project, we ask the question, what would it cost to produce a similar pattern of energy output, using equipment from the GE catalog? That alternative cost is what we save by embarking on the hydro or geothermal project in question.²

Poverty, Income Distribution, Basic Needs

This overview would not be complete without mention of the set of issues connoted by such terms as income distribution, the fight against poverty, helping the disadvantaged, etc. The temptation in this area is to buy into the idea of distributional weights, and apply them consistently in the analysis. A distributional weights framework

entails giving different weights to the net benefits of different people. For example, a person or family with an income of \$20,000 might be given a weight of 2 (meaning an extra dollar of benefit to them counts as \$2 in the benefit-cost analysis), while a person or family with an income of \$200,000 might be given a weight of 1/2. Despite its initial appeal, this system does not reflect the true values of real-world societies. In the example, the distributional weights principle would urge the approval of a project or policy that would take \$10 million from people with a weight of 1/2 (meaning a social cost of \$5 million), and end up (owing to administrative costs and economic inefficiencies) delivering benefits value at only \$3 million by recipients with a weight of 2 (meaning a social benefit of \$6 million). This sort of large and drastic trade-off between distributional considerations and economic efficiency would insinuate itself into every nook and cranny of economic policy if we really believed in a distributional weights framework.

The sensible alternative to distributional weights is a framework built on basic needs externalities. This framework is based on the idea that society is willing to pay some extra amount (a premium) for reducing the degree to which the basic needs of the poor remain unmet. The basic needs framework is frankly paternalistic. It does

1 Such results have been confirmed by empirical studies of risky employment. By how much do earnings on a given dangerous job exceed those of a safe one for a similarly qualified worker? This comparison leads to an implicit valuation of life years, typically much larger than annual earnings.

2 This is a stylized, simplified example. Real-world, benefit-cost analyses work with the entire electrical generating system. The expected pattern of demand is projected to future years, and production is optimized by minimizing the expected cost of meeting this projected demand. This optimization is performed “with” or “without” the specific project being analyzed. The project is deemed acceptable if the present value of all (investment plus operating) costs is lower “with” our contemplated investment than without it.

not approve of giving money to the poor if it is spent on drinking, gambling, or other vices or frivolities. But it applauds the use of public funds to further the education of the poor, expand their access to medical care, and improve the level of their nutrition and the quality of their housing. Evidence in favour of the basic needs framework comes from the practice of governments all over the world. Probably no social policy has wider acceptance than the idea of universal free

primary education; all but the poorest of governments have some sort of policy to deliver free or subsidized medical care to those who cannot otherwise afford it; food and housing subsidies for the poor likewise have widespread acceptance. What these policies all have in common is the use of public funds to provide subsidies “in kind,” not “in cash,” that help meet people’s basic needs. From the point of view of benefit-cost analysis, the great value of a basic needs framework is that it can be formalized and incorporated into our analytical structure without exaggerated and troublesome implications like those of distributional weights.

In a basic needs system, policy makers would determine a schedule assigning premiums to the meeting of basic needs. Perhaps the premium would be 50 percent to bring a person from a nutrition index of, say, 80 to one of 82 but would be only 25 percent to take

In the field of benefit-cost analysis, there is no room for pomposity or triumphalism. Dedication and humility and a great deal of hard and serious work are required.

one from 85 to 87 and only 5 percent to take one from 90 to 92. After a certain point, say index level 95, the premium would be zero. Such a basic needs framework is totally flexible. A stingy, austere government could set the initial premium at only 15 percent and reach the zero point at index level 90. A deeply concerned government might start with a premium of 100 percent and reach zero only at index level 110.

The basic needs framework can be used to cover specific projects in the fields of medical care, housing, nutrition and education, but it also has strong implications for projects that reach the poor simply by affecting their incomes. This is because a project that raises a family’s income from \$15,000 to \$20,000 will have a reasonably predictable impact on that family’s spending on the various basic needs. It will move that family, say, from index 80 to 82 in the quality of its housing, from 86 to 88 in the index of its children’s education (staying in school longer), maybe from 90 to 93 in its level of nutrition. The project would thus receive extra “points” based on the values of these basic needs externalities in their respective ranges.

In the field of benefit-cost analysis, there is no room for pomposity or triumphalism. Dedication and humility and a great deal of hard and serious work are required. But let there be no doubt, we have made very significant

strides since the very early days of benefit-cost analysis, and there is every reason to anticipate further gains, provided only that we apply the required intensity of effort.

The Achilles Heel

Sadly, this overview ends with a cautionary note. The most obvious reason for instituting benefit-cost analysis as a serious real-world policy is a tendency for many projects to be approved even though their costs far exceed their benefits. It is all too easy for this to happen because it is very common for the benefits of public projects to be concentrated in a particular area and/or on a limited group of beneficiaries (i.e., the group of farmers served by an irrigation dam). These beneficiaries think the project is the greatest thing in the world, even when it costs might be twice its benefits. And of course, from their own perspective, they are right. They are receiving all or nearly all the benefits of the project, but they bear maybe only 5 or 10 percent of its costs. Those who suffer are the country’s taxpayers, who pay the other 90 or 95 percent of the costs. But, for any given project, these costs are so widely dispersed that no given taxpayer pays very much. Thus, there is little incentive for taxpayers to try to organize to defend these highly dispersed interests. It is precisely the role of a formal system of benefit-cost analysis to defend the general interest in opposition to the clamour of one after another claue of beneficiaries, urging the implementation of ever more bad projects.

This sad tale does not end here. Politicians and administrators are prone to respond to the pressures of beneficiary groups, and can be easily led to support bad (as well as good) projects. Often, they do not even notice the difference. But even outside the public sector we find trouble. Most of the actual work of cost-benefit analysis is carried out by private consulting firms, staffed by professionals. Yet most of the time these firms are hired by entities that have a stake in the outcome of the analysis. In nearly every case, the entity that pays the bill is on the side of the project's being approved. Hence the incentive to exaggerate benefits and understate costs.

Charlatan firms do not hesitate even to invent benefits, so long as they sound plausible. But even highly professional, self-respecting entities can fall prey to the subtle temptations stemming from the knowledge that the client would like to see a particular outcome. Thus, when the estimated fuel cost might reasonably have an upward trend, they might be content to use its recent price as the standard estimate over the whole project's life. Or else make no provision for the projected rise in real wages or the likely future appearance of lower-cost alternatives. Or else simply lean to the low side of the plausible range for the prices of the project's inputs. The tendency to introduce this kind of subtle bias into the analysis is, sad to say, only human, and it is very hard to avoid or prevent.

Our best answer, to date, is professionalism plus transparency. The best policy is for all (or nearly all) public sector project evaluations to be made public as soon as possible. This presents the opportunity for charlatan firms to be unmasked and disgraced. But perhaps more important, it gives each professional person involved in benefit-cost analysis the incentive to fight back against the subtle temptations that lead to biased results. The dictum that a person's greatest asset is his good name can be made to apply also in the world of benefit-cost analysis. Developing this sort of ethic, side by side with advancing the science and methodology of benefit-cost analysis, is the way we need to go! ●

Book Review

Regulatory Capitalism

Author: John Braithwaite

Contemporary societies have more vibrant markets than past ones. Yet they are more heavily populated by private and public regulators. This book explores the features of such a regulatory capitalism, its tendencies to be cyclically crisis-ridden, ritualistic, and governed through networks. New ways of thinking about resultant policy challenges are developed.

At the heart of this latest work by John Braithwaite lies the insight by David Levi-Faur and Jacint Jordana that the welfare state was succeeded in the 1970s by

regulatory capitalism. The book argues that this has produced stronger markets, public regulation, private regulation, and hybrid private-public regulation as well as new challenges, such as a more cyclical quality to crises of market and governance failure, regulatory ritualism, and markets in vice. However, regulatory capitalism also creates opportunities for better design of markets in virtue, such as markets in continuous improvement, privatized enforcement of regulation, open source business models, regulatory pyramids with networked escalation, and meta-governance of justice.

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Over the past decade we have seen a remarkable increase in quantitative policy analysis and regulatory impact analysis worldwide, much of it in the areas of health, environmental, and safety regulations. While interest in quantitative regulatory impact analysis has waxed and waned over the decades, there appears to have been a resurgence in interest in quantitative assessment of environmental policy (see literature reviews in Howlett and Lindquist 2004; Jacobs and Associates 2006a, 2006b; Graham, 2007). What is the source of this increased interest in quantitative analysis? What are the benefits and limitations of this approach,

environmental policy are touted as reducing the costs of achieving policy goals and/or providing incentives for technological improvements associated with environmental quality. How has Canada been doing on this front?

I answer these questions by exploring the link between economic analysis and environmental policy, as well as the extent to which a new synergy is developing between these two areas. I also examine the rationale behind linking environmental policy and economic analysis, and I assess Canada's progress in this area.

Regulatory Analysis in Policy

Regulatory impact analysis, including benefit-cost analysis and quantitative policy analysis, is a method of analyzing the quantity and distribution of the benefits and costs arising from proposed regulatory change. This approach can be applied to regulatory options or to investments in infrastructure. It is one of several variants of benefit-cost analysis.

Recent reports by the Organisation for Economic Co-operation and Development (OECD) (2007) and Jacobs and Associates (2006a) highlight the dramatic worldwide increase in regulatory analysis. The number of OECD countries requiring regulatory analysis grew from near 0 to 10 between 1974 and 1994, and from 10 to 26 between 1994 and 2005. Jacobs and Associates describe regulatory analysis as the "norm of democratic governance in modern industrialized countries" (2006b: 8). The use of regulatory

Economic Analysis of Policy and Market Based Instruments

particularly in the area of environmental policy analysis? Is Canada keeping up with the rest of the world?

A similar worldwide trend is the increase in use of market-based instruments – or the incorporation of incentives into environmental and natural resource policy. These approaches to

analysis across countries is relatively uneven. Since 1981, over 20,000 rules have been subject to some form of regulatory analysis in the United States, and over a thousand of these included full benefit-cost analysis (Jacobs and Associates, 2006b). A large number of these cases examine environmental, health, and safety regulatory changes (Graham, 2007).

Regulatory Impact Analysis in Canada

So how does Canada compare with other OECD countries in terms of the quantity and quality of regulatory analysis? Unfortunately, the evidence in the literature is not encouraging. First, I should point out that Canada currently “requires” benefit-cost analysis of regulatory change (Canada, Privy Council Office, 1999). In addition, several federal and provincial agencies describe the need to assess benefits and costs of policy options and regulatory alternatives. However, Vining and Boardman (2007) state that Canadian policy makers view quantitative policy analysis as difficult, and hence rarely use it. Likewise, Jacobs and Associates (2006b) report that Canada has declined from being a world leader in regulatory analysis to a country that lags behind several other OECD nations.

For example, how is Canada doing in the economic analysis of environmental policy? In 2004, an OECD report found that benefit-cost analysis is seldom used in environmental policy decisions in Canada (OECD, 2004). Many analysts both within and outside

of Canada have raised concerns about this lack of regulatory analysis of environmental policy (Adamowicz, 2007). But are such concerns valid? Is regulatory analysis good for society?

A survey of the literature reveals benefits of using quantitative regulatory analysis, such as:

- selection of regulatory options that result in a better allocation of resources;
- formal assessment of the costs and benefits of policy options, resulting in better understanding of impacts and an indication of where the uncertainty about impacts is greatest;
- more transparent decision making – especially when selecting regulatory options that are not the most efficient, or when suggesting options where costs exceed benefits;
- increased accountability of government agencies; and
- more capacity within agencies regarding the impacts of policy.

For example, Sunstein (2002) reports on regulatory analysis conducted by the United States Office of Management and Budget, in which the benefits of regulations adopted significantly exceed the costs. Graham (2007) shows that net benefits of federal regulation increased from about US\$50 billion between 1993-2001 to approximately US\$150 billion between 2001 and 2006. The improved efficiency in policy making in the latter period illustrates the power of regulatory analysis.

Sunstein (2002) also goes beyond the “standard” economic arguments in providing reasons for rigorous benefit-cost analysis and regulatory impact analysis, particularly in environmental and health policy. He argues that formal analysis will help alleviate a host of “heuristics” that individuals typically use in framing and making decisions. These heuristics include the availability heuristic (for example, overemphasizing a risk that has recently been experienced or made “available”) and probability neglect (placing insufficient emphasis on the probability of an outcome and focusing on the consequences should the event occur), as well as other heuristics such as outrage and myopia. Interestingly, Sunstein claims that the strongest support for benefit-cost analysis is not in the economic arguments made about its use, but in the behavioural aspects of decision making; in other words, the notion that individuals’ use of heuristics translates to use of heuristics by decision makers, and thus to poor policy decisions. Though controversial, the important concept of this argument is that formal, structured presentations of costs and benefits can be useful because they provide information to the policy process, as well as to the public at large.

So what are the downsides of quantitative regulatory assessment? At a conceptual level, there are a number of concerns. A common cause for unease is that the process is not “democratic,” in that benefit-cost analysis relies on monetary assessments rather than voting or political processes (Ackerman, 2008). There are two responses to this

critique. First, benefit-cost analysis may actually be more inclusive than political processes, because it attempts to identify effects on all members of the society, not solely on interest groups or “stakeholders.” Second, regulatory impact analysis often includes distributional assessments and/or the evaluation of goals beyond economic efficiency (Vining and Boardman, 2007).

Another conceptual concern is that only factors that can be quantified will be included in a regulatory analysis, leaving the more qualitative impacts as mere footnotes in the analysis. This can be a significant problem in the area of environmental policy, where quantitative information may be lacking. But careful analysis should identify issues that are not easily quantified, leading toward a multi-goal analysis in those cases. Such challenges in analysis or data should also be considered signals for the need to invest in research.

A third concern arises from the difficulty of measuring benefits related to health risks, environmental decline, and other difficult-to-value matters (Ackerman, 2008). Consider policy regarding threatened and endangered species. Under Canada’s *Species at Risk Act*, the socio-economic costs and benefits of listing and recovery planning for a particular species are to be considered. But

Though controversial, the important concept of this argument is that formal, structured presentations of costs and benefits can be useful because they provide information to the policy process, as well as to the public at large.

uncertainties often arise in measuring the impact of the recovery plans or actions. In addition, the economic benefits of threatened species recovery are usually *passive use values*, and are therefore difficult to quantify because of the lack of a behavioural trail linking recovery of a species to economic activities or markets (Adamowicz, 2004). Although these are legitimate concerns, the field of environmental valuation has made significant strides in the past two decades, especially on the issue of health risk valuation. Uncertainty regarding measures of value should be incorporated into the analysis, and not used as a rationale to disband the approach.

There are also a number of technical challenges to benefit-cost analysis. The choice of the discount rate, for example, almost always raises considerable controversy. The recent *Stern Review* (Stern, 2006) on the economics of climate change illustrates this issue. The critiques of the report have focused on the selection of a relatively low social rate of discount (e.g. Weitzman, 2007). Finally, the cost of the regulatory analysis is itself an issue. Each year, government agencies propose a profusion of rules and regulations. In-depth analysis of each one would be prohibitively

expensive. A scoping analysis could help identify those that require in-depth assessment.

None of these limitations are insurmountable, given the appropriate choice of policy analysis technique. So why is Canada falling behind other OECD countries in regulatory analysis?

The answer lies in our institutional framework. The Canadian landscape for regulatory analysis is somewhat fractured in terms of guidance documents, capacity, examples, and approaches for review and quality control. The guidelines provided by the Treasury Board of Canada Secretariat (Canada, Treasury Board of Canada Secretariat, 2007) are useful as a general guide, but they do not provide a sufficient framework, or incentives, for choosing the appropriate analysis technique, measurement approaches, peer review guidelines, or presentation requirements. Canada may want to learn some lessons from the United States, where a single agency — the Office of Information and Regulatory Affairs — is effectively responsible for oversight and quality control in analyzing a wide range of regulations. Although there are concerns that such an approach is too centralized and rigid, and that political influences can outstrip the regulatory analysis, such an approach provides economies of scale and generates relatively standardized approaches for analysis.

Another often-overlooked benefit of centralizing analysis is the feedback between analysts and the scientific community. In this case, the long-term

relationships fostered by a centralized agency can help ensure that researchers tackle the most pertinent problems.

Another challenge for Canada is its limited and fragmented capacity for rigorous analysis. Howlett (2007) suggests that though analytical capacity in the federal agencies has been maintained reasonably well, it is unlikely this capacity can keep pace with the increasing complexity of policy questions (climate change, electromagnetic field issues, water resources, etc.). Capacity in other agencies, including provincial governments and non-governmental organizations (NGOs), appears to have declined significantly (Howlett, 2007; Howlett and Lindquist, 2007). These agencies are often on the firing line with a host of issues such as natural resource management, land use, species at risk, and air and water quality. To stem the decline in analytical capacity, Howlett and Lindquist (2007) explain how policy analysts could be better trained. They suggest building the curricula in policy schools to go beyond general analysis skills. Finally, the international comparison by Jacobs and Associates (2006a, 2006b) illustrates the current lack of institutional features that could build analysis capacity, such as peer review, guidance documents, and quality control processes.

By improving agencies' capacity to conduct economic analysis, as well as the communication between the policy research community and the regulatory agencies, we will be better positioned to make these choices.

The Use of Market-Based Instruments in Environmental Policy

Just as regulatory impact analysis has been identified as a way to improve resource allocation, the use of market-based instruments is seen as a way to reduce the costs of achieving environmental goals or providing incentives for improving the quality of the environment and developing environmental technologies.

A variety of mechanisms have been developed to reduce the impact of externalities and align environmental goals with the economic system (Stavins, 2001).

There have been few systematic analyses of the use of market-based instruments in environmental policy around the world, but anecdotal evidence suggests a widespread movement toward such incentive-

based environmental policy. The United States has a wide variety of incentive-based programs, such as tradable emissions permits, transferable water rights, and tradable land use development rights (e.g. Stavins, 2001). Europe is addressing climate change concerns with a cap and trade (or tradable emissions permits) approach for carbon dioxide (Ellerman and Buchner, 2007). Australia has not only integrated tradable water rights and pricing to address water scarcity (Young and McColl, 2003), but it has also been

experimenting with market-based approaches for carbon management and the provision of environmental goods and services (Stoneham et al., 2003). Market-based instruments are not appropriate in all cases (see, for example, Pannell, 2008 for a discussion of instrument choice in a land-use context), but interest is growing in finding ways to provide incentives for environmental improvement.

Has Canada also been increasing its use of market-based instruments? Not according to a 2004 OECD country study on the environment: "Market based instruments are insufficiently used to foster integration of environmental concerns into sectoral policies; too much emphasis is given to soft instruments like voluntary guidelines or partnerships" (OECD, 2004: 97).

However, since that report was published, many market based ventures have been implemented in Canada, such as:

- tradable water rights in Alberta (Nicol and Klein, 2006);
- the British Columbia carbon tax;
- the Alberta emissions charge or carbon offset requirement for firms exceeding their carbon intensity targets <www.carbonoffsetsolutions.ca>; and
- more use of incentives for beneficial management practices to reduce water pollution from agricultural sources <www.al.gov.bc.ca/apf/env.html#bmp>.

In addition to these, other market-based programs are being investigated and evaluated across Canada <www.sustainableprosperity.ca>.

While exciting new initiatives have begun, Canada is still a long way from embracing the apparent global wave of incentive-based policies in environmental management. This may be partly due to our institutional lack of familiarity with such approaches – there is a “learning by doing” aspect to policy (Adamowicz, 2007). There are also concerns regarding “commoditization” of environmental goods and services such as water, as well as fears that market-based approaches will reduce our industrial competitiveness. Some have suggested, however, that the key reason for the slow adoption of market-based instruments in Canada is a lack of capacity within regulatory agencies (Renzetti, 2005; Horbulyk, 2005). The capacity challenges associated with multiple agencies and jurisdictions is similar to both market-based instruments and regulatory analysis. Not all environmental policy issues can or should be addressed using market-based approaches. However, analytical capacity is required to judge these cases and determine if and when market-based instruments are beneficial.

The Way Forward – Integrating Economic Analysis and Environmental Policy in Canada

Various reports suggest that Canada is lagging in its use of regulatory impact assessment and adoption of market-based approaches to environmental policy. If this is true, how are we to catch up?

We can get part of the way forward by developing a better institutional framework for analyzing policy. Such a framework would require rigorous guidelines for policy analysis, as well as systems for peer review and assessment. And once in place, it would provide incentives for building the capacity required to conduct rigorous analysis. But building capacity depends on educational institutions’ providing high-quality training with an eye to uniquely Canadian policy issues and frameworks.

The development of an agency with a strong oversight role, or “challenge function” (Jacobs and Associates, 2006a), much like the United States Office of Information and Regulatory Affairs, could help address the apparent weaknesses in Canadian policy analysis and regulatory assessment. Such an agency could generate increased capacity and economies of scale in policy analysis. It would also create a demand for improved analytical capability in other sectors (NGOs, industry, provincial agencies), and likely engage the research community in addressing challenging issues, such as discounting, valuation, and distributional analysis.

Developing capacity may also be the key to adopting appropriate market-based approaches for environmental protection. The tide is turning, but increased opportunities to learn by doing and to develop a level of comfort with market-based approaches would aid in implementation of these approaches where they are best suited.

Environmental policy questions are increasingly complex. In particular, issues surrounding the environment, health, and safety are becoming more multidisciplinary, and they are often fraught with uncertainties (Arrow et al., 1996). An organized and quantitative approach to policy analysis is one of the few relatively transparent ways of examining options. Similarly, integrating market-based approaches into environmental policy may provide for a cleaner environment without compromising economic performance. However, making choices between regulatory approaches and policy options depends on our ability to assess these options. By improving agencies’ capacity to conduct economic analysis, as well as the communication between the policy research community and the regulatory agencies, we will be better positioned to make these choices. ●

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Introduction

Senior management requires accurate and consistent information for decision making, both regulatory and non-regulatory. A key tool that department analysts use to get that information is the Regulatory Impact Analysis Statement (RIAS), which must be prepared for every regulatory submission. The RIAS, which provides a background and rationale for the proposed initiative, requires an analysis of benefits and costs to determine if a proposed regulation is the best alternative for Canada. A third economic component, distributional analysis, adds to the picture by identifying potential consequences for specific regions or groups in Canada. While not required, a distributional analysis helps in assessment

analysts must express benefits and costs in quantitative terms whenever possible, many regulatory situations are not suited to numeric analysis. Often this is due to shortage of information on which to base a quantitative appraisal. And in some cases, the scale of the initiative and its potential effects are so minor that they do not warrant a full quantitative analysis. In these instances, a qualitative assessment of benefits and costs is the right choice.

The characteristics of a true qualitative analysis are different from quantitative approaches, so the analyst must approach it differently. We outline some of these differences, focusing on data collection and the applicability of qualitative analytical techniques in regulatory analysis. First, we describe the more familiar quantitative analysis of benefits and costs. Then we outline the principal elements of a qualitative study. In conclusion, we consider how qualitative analysis can complement quantitative analysis.

Quantitative Analysis of Benefits and Costs

A regulation implies some influence on private parties to limit or change behaviour – for example, by setting standards or enforcing a ban. Since this affects regular activities, it imposes a cost on the involved parties. For industry, this often takes the form of increased compliance investments, such as the cost of obtaining a new technology or switching to a new input in the production process. As new equipment or materials are purchased through the market, the cost has a monetary value that is easily understood and observed.

Qualitative and Quantitative Analysis in Economic Evaluations to Support Decision Making

of whether the proposed regulation is an equitable means for achieving the objectives of the proposed regulation.

While the 2007 federal Cabinet Directive on Streamlining Regulation indicates that regulatory economists and

For example, a pollution control regulation may require the installation of scrubbers on smokestacks. The scrubbers would be purchased, installed, and maintained at a cost to the polluting firms; this is the regulatory compliance cost that they must pay.

Conversely, benefit values are not always so easily observed, estimated, and compared. This is because the benefits of a regulation, such as improved human health or a cleaner environment, are not traded in markets. Therefore, monetary values cannot be easily applied to them. Techniques to reveal the value that society places on these benefit categories study the preferences of individuals and the trade-offs that they are willing to make. If these trade-offs are measured in dollars, then this monetized measure of a regulation's benefits can be compared with the market-measured costs. If the benefits are greater than the costs, then the regulation is efficient from an economic perspective. This indicates that the proposed regulation would probably benefit society.

Obtaining Quantitative Data

The ideal data for a quantitative benefits analysis derives from primary research efforts, such as a survey of stakeholders, tailored to the scenario in question. The survey would identify stakeholders' preferences for a variety of

circumstances surrounding the proposed regulation, as well as their willingness to trade to achieve their best outcome. However, because conducting a primary survey is costly and time consuming, it is justified usually only for large-scale regulatory initiatives.

An alternative data source is a benefits transfer, in which estimates of non-market values from a study developed for a different context are transferred to the regulatory context (Bateman et al., 2000). This typically yields reliable and defensible data for quantitative analysis when a transparent protocol is applied to identify appropriateness, such as Environment Canada's Environmental Valuation Reference Inventory (Environment Canada, 1998). This credibility, combined with the significantly lower cost of conducting a benefits transfer rather than a primary survey, has made it a widely accepted way to obtain study values.

Qualitative Regulatory Assessment

The term "qualitative" is commonly applied to any analytical process that uses non-mathematical or statistical approaches to summarize findings, gauge impacts, or report outcomes.

Although a qualitative study does not always carry the same weight as a quantitative analysis, the term does not necessarily imply a lack of analytical rigour.

A well-conducted qualitative study is simply an alternate means of interpreting potential effects on stakeholders. The objectives are often different than they would be in a quantitative study, since qualitative methods make sense of phenomena in terms of the meanings people bring to them (Greenhalgh and Taylor, 1997).

As an example, consider a regulatory initiative designed to lower public risk of contracting a food-borne illness. Though the analysis of the compliance costs and measured benefits of the proposed regulation is quantitative, the preliminary assessment of public concerns is qualitative.

In the most basic form of qualitative analysis, likely for a low-impact proposed regulatory initiative, a professional judgment of expected effects could serve as the basis for the economic evaluation of benefits, costs, and distributional issues. If a regulator believes that the initiative will cost stakeholders little or nothing, but will yield positive benefits, a statement that net benefits are expected to be positive may be sufficient. An example would be an amendment to production standards to reflect current technological processes used in an industry. The purpose of this amendment is to reduce risk to human health by keeping firms that do not conform to a high quality standard out of the market. Costs would be negligible, yet the likely benefits include increased public confidence in consumer products. While difficult to measure, this would likely be positive.

Figure 1
Continuum of Quantification



Source: Adapted from Bergstrom and De Civita (1999).

This type of case often employs “best judgment” analyses, which admittedly may be imprecise. However, this could be acceptable for applications that do not require a high level of accuracy. This concept is supported by the “continuum of quantification” proposition (see Figure 1). This states that the required degree of quantifying data depends in part on how the results will be used. Figure 1 shows the range of the continuum, from “low” for gains in knowledge or priority setting cases, to “high” for compensation or litigation cases. While “policy decisions” are located more to the right of the scale, suggesting a need for greater quantification, a low-impact regulatory initiative could not justify conducting a primary survey, whose cost would be significantly more than the benefit of the regulatory initiative. Here, as in all cases, the effort invested should be proportional to the expected outcomes.

Obtaining Qualitative Data

When an analyst determines that a study should be conducted qualitatively from project conception, the term “qualitatively” takes on a different meaning. Rather than conducting an analysis based on insufficient or unavailable data, a researcher carrying out a true qualitative analysis has identified a particular need that requires an assessment of processes and meanings rather than quantity, amount, or frequency (Labuschagne, 2003). To do this, analysts gather information through techniques such as observational studies, in-depth interviews, and focus groups. All these methods involve analyst interaction with small groups of participants, either directly or indirectly. Data collection and analysis are time-consuming and therefore costly, but when done appropriately they “are a source of well-grounded, rich descriptions of processes in identifiable, local contexts” (Miles and Huberman, 1994).

Using Both Quantitative and Qualitative Analysis

In practice, regulatory analyses rarely rely exclusively on either qualitative or quantitative information. They often require some blending of both. For example, qualitative assessments (such as those developed through focus groups) can play an integral role in developing quantitative estimates.

In addition, even where many of a proposed regulation’s impacts can be quantified and monetized, a benefit-cost analysis often reveals some potentially important benefits (or costs) that cannot be readily or reliably expressed in numeric terms. In such instances, the analyst should explain to decision makers that these important non-monetized outcomes exist and need to be taken into account alongside the quantifiable results. The triple bottom line approach is one way to capture and convey such information (see text box).

An Example of Qualitative Assessment: The Triple Bottom Line Approach

As the name implies, the triple bottom line (TBL) approach reflects how policies or enterprise activities influence three bottom lines: (1) a financial bottom line, which reflects the traditional internal cash flow accounting stance of businesses; (2) a social bottom line, which reflects external consequences on others in society, embracing concepts such as fairness, economic opportunity, or security; and (3) an environmental bottom line, which reflects effects on natural systems such as waterways, air quality, or fisheries. The intent is to capture both the internal (e.g. financial cash flows) and external (social and environmental) repercussions of a proposed policy or activity.

The TBL approach was conceived in the context of sustainable development (Elkington, 1997). It can also be applied as a form of benefit-cost analysis. One of its advantages is that it can accommodate qualitative and/or quantitative information, and it can be deployed in a manner that can convey the likely outcomes of policy options to decision makers and stakeholders (Raucher and Garvey, 2007).

An application of the TBL approach can be entirely qualitative, providing an organizing framework within which an analyst can categorize and describe the types of benefits and costs associated with a proposed regulation. A qualitative TBL assessment also can be extended to reflect the expected relative magnitude or importance of each benefit or cost (low, medium, or high). Furthermore, if quantitative information is available, it too can be included in a TBL report. The objective is to ensure that all the important consequences of a proposed regulatory initiative are brought to the decision makers' attention in a systematic, organized, and comprehensive manner.

Qualitative Analysis within the Context of Economic Valuation

Economics is a science that studies social preferences and expresses them in monetary units for comparative purposes. However, reaching the stage where monetary values can be applied to a potential benefit for comparison to costs requires numerous inputs, both numerical and conceptual. This is not feasible when the participants from whom information is gathered consist

of small groups or individuals. This is because the results of these discussions cannot be generalized to the overall population, since these groups would not be representative or of sufficient sample size. On the other hand, in a medium- to large-scale economic evaluation of benefits and costs, there is nearly always a role for qualitative techniques in the process of obtaining societal values.

Consider a proposed drinking water disinfection regulation, where one treatment scenario would reduce the risk of microbial infection for consumers, but would increase their long-term risk of developing cancer. A second disinfection scenario would do the opposite: decrease the cancer risk, but potentially increase microbial infection risk. This is a typical trade-off of one risk for another (Putnam and Wiener, 1995). The optimal level of drinking water disinfection would lie somewhere between these two extremes, at the point where society indicates overall acceptance of the two types of risk, both independently of each other and in combination. This point would be identified through analysis of the responses to surveys that ask participants to evaluate the risk associated with both treatment plans.

Why would economists be interested in qualitative tools if they cannot be used to obtain the analytical values needed for an analysis? The reason is that the commodity that participants are asked to value must be accurately specified, and focus groups provide an ideal vehicle for ensuring that the correct issue is addressed. Repeated focus group sessions with stakeholder participants are also an opportunity to test the survey instrument to ensure that participants understand it well, which may improve overall response. The survey instrument must ask the right questions if the answers are to help the regulator achieve an efficient outcome. Focus groups allow researchers to gather a wide range of perspectives in a short

time and therefore to gain a complete picture of participants' thinking (Sutkus et al., 2008).

Similarly, this technique could be used to obtain insight into equity issues for the distributional analysis component of the economic evaluation, or it could identify potential social consequences.

Conclusion

Qualitative analysis is commonly seen as an inferior alternative to quantitative work, performed only when data is lacking. But in small-scale situations, a qualitative analysis may be all that is warranted due to the usually high cost of conducting a full-scale quantitative study. Furthermore, a well-considered qualitative review of potential impacts may give decision makers enough evidence to judge a regulatory proposal. In larger-scale regulatory situations, qualitative information gathering can contribute to the development of survey instruments for assessing the values that society places on diverse scenarios. Additionally, qualitative analysis techniques can inform other aspects of the regulatory decision-making process outside of the economic analysis, such as identifying which control measures to consider in order to achieve desired results. ●

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Policy Research Initiative

On March 13, 2008, the Policy Research Initiative (PRI), in collaboration with the Regulatory Affairs Sector of the Treasury Board Secretariat and Health Canada, held a conference in Ottawa on the role of benefit-cost analysis (BCA) in decision making. The event was well attended – over 140 people, representing 15 federal departments and agencies, participated.

The conference focused on discussing BCA best practices with the regulatory community. BCA is a tool that allows decision makers to weigh the probable gains and losses that would result from a proposed regulatory or policy action. The purpose of the conference was to give managers and officers from a variety of disciplines an overview of the ele-

ments and issues involved in planning and undertaking a science-based economic analysis for regulatory decision making.

of the US Office of Management and Budget's Office of Information and Regulatory Affairs. Dr. Graham endorsed BCA as a tool for effective decision making. He challenged what he described as common myths surrounding BCA, arguing that this tool is not biased against providing adequate regulatory protection. He also noted that BCAs may require qualitative analysis and that policy evaluations must also include an account of how the costs and benefits are distributed within society.

To introduce participants to the steps and elements involved in integrated assessment of a regulatory proposal, Barry Jessiman (Health Canada) and Paul De Civita (PRI) presented a case study on the Sulfur in Gasoline Regulations. Their objective was to show how the integration of use of the natural and social sciences can provide decision makers with a solid evidence base on which to make defensible decisions. They also demonstrated the approaches, steps, issues, and challenges of a BCA undertaken with science input. Thus, their address also served as a reference point for the five other presentations delivered that day.

Key to any policy or regulatory proposal are the trade-offs (advantages and disadvantages) that will arise after implementation. Richard Morgenstern from Resources for the Future spoke on alternative approaches (and challenges) to valuing the industry - and government-related costs associated with regulatory proposals.

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ments and issues involved in planning and undertaking a science-based economic analysis for regulatory decision making.

The keynote speaker was John D. Graham, Dean of Pardee RAND Graduate School and former administrator

Given that many of the benefits associated with public policy (e.g. improved health, enhanced environmental quality) are not traded in any market, prices and values are not readily available for BCA. Vic Adamowicz from the University of Alberta discussed the concepts and challenges associated with valuing health and environmental benefits. He spoke about approaches that used market data to infer values and survey techniques to elicit values directly from individuals. He also provided an overview of techniques to obtain values from existing policy analyses – an approach referred to as “benefits transfer.”

One of the most important benefits of public policy is the avoidance of premature mortality. While the scientific literature includes defensible methods to monetize the value of avoiding small changes in the risk of premature death, the approach is not universally understood or free of controversy. Laurie Chestnut of Stratus Consulting delivered a presentation on the concepts underlying the value of a statistical life and the recent results of a PRI review of the magnitude of this value for Canadian policy applications.

Costs and benefits may occur at different points during the life cycle of a regulation, making it difficult to ascertain whether the benefits outweigh the costs. Typically, the costs of a new

Key to any policy or regulatory proposal are the trade-offs (advantages and disadvantages) that will arise after implementation.

regulation are realized immediately after its implementation, while the benefits accrue later in its life cycle. To allow meaningful comparison, both the cost and benefit streams must be transformed into present or annualized values using appropriate discount rates. Anthony Boardman of the University of British Columbia presented an overview of the different discounting practices and outlined a practical and flexible approach for federal departments to use.

The costs and benefits of a proposed initiative are important for decision makers to appreciate. If the benefits outweigh the costs, society is in a better position – i.e., Canadians in the aggregate are net winners. Another important consideration is to shed light on who are the winners and the losers. Distributional analyses are usually undertaken to provide this perspective. Sandra Hoffman from Resources for the Future outlined the concepts and tools available to address the issues, which may include regional impacts, competitiveness effects, plant closures and employment losses, trade impacts, etc.

The agenda, presentation slides, and abstracts of working papers from this conference are available on the PRI web site at <www.policyresearch.gc.ca>. Many of the presentations were also supported by working papers that

provide details not captured in the slides. Abstracts of the working papers may also be found at the same site.

For additional information, please contact Paul De Civita at PRI by telephone 613-943-2400 or by email <p.decivita@prs-srp.gc.ca>. ●

Will social media change the regulatory process?

Communication with stakeholders is a vital component of a regulatory process, both for messaging to citizens and in receiving feedback for government. Historically, this has been accomplished through traditional approaches, including written submissions, documentation, or in-person information exchanges. But can the advent of social media be successfully integrated into the process, thereby developing a more collaborative approach to regulatory decision making?

New and emerging technologies may contribute to a change in how regulations are developed. Threaded discussions or forums could allow stakeholders to post, read, and exchange ideas about proposed regulation, with a department or agency representative participating in the discussion to provide explanations or information. Interactive proposals with links to pertinent documents, or even the use of podcasts to convey information, would provide greater transparency and efficiency for inter-

ested parties. Another such initiative is blogging, recently adopted by Dr. Peter Orszag, the new director of the Office of Management and Budget (OMB) in the United States. In recognizing that blogging is a common and convenient way for people to obtain the information they need, the OMB is an early government user of social media.

Another possible area that could take advantage of technological advancements is in international regulatory co-operation. For example, Canada, the United States, and Mexico could engage in a forum for NAFTA regulators that would facilitate on-line, instant collaboration on regulations/practices of common interest.

While these approaches are currently not widely used in mainstream government consultations and engagement, future research could focus on ways to identify a mechanism to facilitate their adoption.