

2011 IMFG GRADUATE FELLOWSHIP SEMINAR SERIES

PREPARING FOR THE COSTS OF EXTREME WEATHER IN CANADIAN CITIES: ISSUES, TOOLS, IDEAS

CAYLEY BURGESS

MASTER OF PUBLIC POLICY CANDIDATE

INSTITUTE ON MUNICIPAL FINANCE AND GOVERNANCE

UNIVERSITY OF TORONTO

APRIL 20, 2011

OUTLINE

1. Options for cities facing extreme-weather costs

- a) Why cities need to think about costs
- b) Tools: insurance, weather reserves, weather derivatives, better governance

2. Federalism and infrastructure adaptation

- a) Why municipal adaptation to climate change is lagging
- b) What can be done: federal program and provincial regulations



CLIMATE CHANGE AND MUNICIPAL FINANCE



- Extreme weather events will grow increasingly common in Canada
- Impacts on municipal infrastructure and services could be costly
- Ex. Snowfall in January 1999 cost 2x Toronto's annual snow-clearing budget
- Ex. Rain event in 2005 resulted in \$44 million in damage to infrastructure

DISASTER ASSISTANCE

- Cities can't rely on provincial disaster assistance:
 - a) Not all costs of extreme weather are eligible for disaster-assistance payments. Ex. provinces typically don't cover revenue losses
 - b) Provincial assistance is discretionary. Ex. it may depend on the number of other municipalities applying for aid
 - c) Disaster-assistance bureaucracies can be slow. Ex. Halifax is still waiting for funds from Hurricane Juan (2003)

INSURANCE

- Coverage in Canadian cities is incomplete and not increasing. Ex. Toronto is raising its deductible. Edmonton began insuring revenue from golf courses after 2004 storm but otherwise has not changed its strategy in several years
- Some cities anticipate rising premiums. Halifax's premiums have already risen
- Private insurance providers spend up to 200 per cent of what they pay in claims on overhead



WEATHER RESERVES

- Self-insurance can be cost-effective and covers non-insurable assets. Ex. low-value, high-risk assets are uninsurable in practice, and the loss of insured assets still requires cities to absorb deductibles
- Toronto introduced a reserve in 2009; Halifax considered one in 2007 but didn't implement it
- An appropriate balance is difficult to determine. City departments may not know how much extreme weather events will cost
- Funding can be a problem. Ex. Toronto only funds its reserve out of budget surpluses. Toronto's fund for insurance deductibles is approximately half of what it should be

WEATHER DERIVATIVES

- Weather derivatives are contracts that pay out according to weather conditions
- Payouts don't necessarily reflect losses
- Less appropriate for large cities with diverse weather risks and large capacity for self-insurance, but difficult for small cities to use. Ex. weather derivatives for small cities aren't traded on exchanges and must be privately negotiated

BETTER GOVERNANCE



- New accounting procedures. Ex. Halifax didn't have rigorous procedures in place after Hurricane Juan, which delayed provincial assistance
- Quicker payments by provinces could help
- Looser criteria for provincial disaster assistance
- Amalgamation: Halifax and Toronto were able to raise deductibles after amalgamation, since risks were spread over more people

ADAPTATION

- Preventative efforts are often more cost-effective than post-disaster reconstruction
- Yet adaptation is often ignored by municipal policy-makers

THE INFORMATION CHALLENGE



- Previous local experience is less helpful, since climate change is new
- Municipalities have small policy capacities relative to provincial and federal governments

THE FISCAL CHALLENGE

- Municipal tax powers are limited and inelastic
- Borrowing capacity is limited: cities may not be able to immediately build large infrastructure even if benefits clearly outweigh costs. Ex. in Ontario, cities other than Toronto can't borrow more than 25% of own-source revenues for capital projects

THE EXTERNALITY CHALLENGE

- Externalities: changes in welfare that are not transmitted through prices
- Externalities may not be considered in the municipal policy-making process. Ex. flood protection infrastructure in one city could hurt or help another but won't be considered without negotiation, amalgamation, regulation, etc



THE MORAL HAZARD CHALLENGE

- Moral hazard: when one engages in riskier behaviour because the risk is insured
- May exist since provinces provide disaster assistance to cities but cities build infrastructure that may lower the costs of extreme weather
- Assistance in Ontario depends on "current financial capacity, debt ratio and capital commitments of the affected municipality" – this could be a perverse incentive to municipal fiscal profligacy
- Reliance on property taxes exacerbate the hazard, since cities will want to develop scenic, high-value areas prone to floods

THE PROGRAM CHALLENGE

- Current federal programs do not always support adaptive infrastructure well: they may be not well funded, not targeted at adaptation specifically, not competitive (but instead distributed on a per capita basis, like the Gas Tax Fund), and already committed.
- Municipalities that receive per capita funds will not necessarily use them for the nominal purpose of the grant



SOLUTIONS: FEDERAL ADAPTATION PROGRAMS

- Advantages over provincial programs: eliminates moral hazard, addresses differential in regional needs, could redistribute funds from polluters to cities through a carbon tax or emissions trading scheme
- Possible model is the Federal Emergency Management Agency's Pre-Disaster Mitigation Program: it is mostly competitive, well-funded, adaptive infrastructure is eligible, and it enjoys wide bipartisan support. Evaluations reveal cost savings for the federal government

DESIGN DIFFICULTIES

- A federal program must:
 1. confirm need for the adaptative infrastructure
 2. must account for regional equity, which may reduce program efficiency (ex. if Alberta must receive the same per capita funding as Nova Scotia)
 3. must identify free-riders (projects that would have been build even without federal funds)
 4. must distinguish between adaptive and other functions, which cities should pay for themselves



LEGISLATION

- Provinces can legislate adaptation in cities
 1. But legislation may not come with funding attached
 2. A one-size-fits-all design is inefficient, since different cities have different needs.
 3. Legislation will quickly become obsolete, since the science on climate change and adaptation is changing quickly. A federal infrastructure program may be able to respond more quickly to new information

FINAL THOUGHTS

- Numerous financial tools exist but are not always used well
- Current federal arrangements are inefficient
- A well-designed federal infrastructure adaptation program could help