Interprovincial fiscal competition in Canada—theory, facts, and options

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Fiscal competition among jurisdictions is one of the many subjects in public finance where opinions are firmer than is the evidence. It seems obvious that Canadian provinces compete with each other to attract people, firms, and economic activity. Evidence such as actual tax rates, however, offer little guidance about how, or how strongly, this competition influences their behaviour. And, if the positive issues are difficult to sort out, the normative ones are even more so. Different commentators see fiscal competition as likely to be good or bad in general and those who concede that it has both good and bad elements can disagree profoundly over where to draw the line between the two.

These disagreements are of major policy significance in Canada. Existing practice and many proposals for interprovincial or national fiscal harmonization explicitly or implicitly assume that fiscal competition is problematic. Tax collection agreements and emerging arrangements in the Canada Customs and Revenue Agency (CCRA), for example, derive legitimacy from fears of what unrestricted tax competition among the provinces would produce. Equalization and federal-provincial shared-cost programs are partly responses to a presumed inability of provinces to provide attractive fiscal packages on their own and the social union framework agreement has explicitly been justified with regard to pressures for a "race to the bottom" in provincial social policy.

This paper attempts to sort out some of the key issues in interprovincial fiscal competition. First, it surveys some of the major theoretical inquiries in the area and tries to isolate the formal and informal models likeliest to provide insights for Canada. Second, it presents some of the pertinent data on interprovincial competition in both taxation and program delivery. Finally, it addresses the thorny questions of how to distinguish beneficial from harmful competition. Some final observations on implications for near-term policy coordination close the paper.

Briefly, our principal theme is that the parallels between interprovincial competition within Canada and interfirm competition in a market setting are closer and more powerful in their implications for public policy than is generally appreciated. Provinces do compete on price and there is evidence that lower tax rates yield rewards as measured by local growth in profits and incomes. But, provinces also compete on program quality: the downward ratcheting of spending on government-provided goods and services that is predicted by simple "race to the bottom" views of competition is nowhere to be found.

In view of the prospects for price and quality competition among the provinces to improve the fiscal package citizens throughout the country enjoy, the case for restraining this competition through national or federal agreements on taxation or programs carries a heavy burden of proof.

Views

It is clear at a basic level that jurisdictions compete for individuals, firms, and economic activity. As long as movement across boundaries is possible, the relative attractiveness of one location over another will affect movement and policy makers' choices about taxes and programs—whether or not those choices are conscious responses to competition—will affect relative attractiveness.

What determines movement and how policy makers respond, however, are issues on which there is not much consensus.

"Race to the bottom"

One popular view rests on two assumptions. One assumption is that the strongest, if not the only, force determining mobility is tax burden. Another is that government is necessarily benevolent; policy makers, if not constrained by interprovincial competition, would seek to maximize social welfare calculated in some disinterested way. This view, which has analogues in such areas as safety and environmental standards, sees a tendency for individuals and firms to move to the jurisdiction where the tax burden is lowest, compelling policy makers to cut taxes, and the services they provide, in a multilateral "race to the bottom."

The more formal exposition of the race to the bottom acknowledges the existence of benefits from public services and characterizes under-provision resulting from tax competition as a negative externality. The intuition is that a province might be inclined to provide more public services but would be restrained from doing so by the prospect of capital locating in other provinces, which would benefit those provinces but not the first. Thus, the perceived marginal local benefit of raising taxes is smaller than the local costs. A tax-cutting jurisdiction, in parallel fashion, would benefit from the migration of the tax base from neighbouring jurisdictions, making the marginal benefit of tax-cutting greater than the locally perceived marginal cost. In this view, therefore, policy makers in all provinces have an incentive to set tax rates and public service levels lower than the social optimum.

Not surprisingly, many subscribers to this view see interjurisdictional competition as a bad thing, leading to under-provision of public services, unsafe working conditions, a degraded environment, and so on.[1] Their natural focus when it comes to policy, therefore, is co-ordination of taxes and publicly funded goods and services across jurisdictions, so as to avoid that harmful "race."

While interjurisdictional agreements—or, indeed, mechanisms to restrict movement across subnational borders—could address this problem, the more common approach advocated within a country is that the central government should either directly constrain subnational tax competition or indirectly constrain it by encouraging or mandating generous levels of services and transfer payments, or creating revenue sharing mechanisms: "States might provide higher quality services if they shared some taxes and did not have to worry so much about losing businesses to neighboring states with lower tax rates. They would then have more incentives to compete on the basis of the excellence of their services" (Rivlin 1992: 142).

"Policy makers as monopolist rent-seekers"

Another perspective takes a dimmer view of the prospects for restraint of competition on the revenue side to produce better programs. This view also emphasizes the importance of costs in determining location but adds to the mix an agency problem: policy makers who consider their personal welfare, as well as the interests of citizens, when they make their policy choices. Local residents' natural constraints on policy makers—elections and voting with their feet—may not be sufficient to align policy makers' and voters' utility perfectly, because of several costs: the cost of moving, the cost to voters of obtaining information about policy makers' actions, and the costs involved in actually holding policy makers to account. The result is that policy makers' pursuit of their own welfare drives a wedge between the programs citizens enjoy and the price they pay for them.

From a citizen's standpoint, policy makers' pursuit of their own interests reduces the efficiency with which tax revenue is converted into programs. This view, therefore, sees the downward pressure from interjurisdictional competition on tax rates as a good thing, because it "tames Leviathan"[2]—constraining policy makers from feathering their own nests at the expense of taxpayers and program beneficiaries. The straightforward policy implication of this view is that constraining interjurisdictional competition risks increasing the market power of rent-seeking policy makers, lowering welfare for the population as a whole, and potentially reducing the growth in the efficient provision of public programs over time.

The Tiebout model

Another view brings both costs and program benefits—or, more fully, the utility-enhancing outputs of regional governments—formally into the picture. The classic statement of this view is Tiebout's (1956) allusion to citizens' "voting with their feet." Under some reasonable assumptions, the possibility of movement across borders can be shown to exert a market discipline that induces jurisdictions such as subnational governments to move in the direction of welfare-optimizing equilibria; indeed, they may even do so as effectively as private markets. (See Appendix 1 for a more precise statement of Tiebout's informal hypothesis.)

This more sophisticated view predicts that these equilibria will not be those in which each subnational government adopts the same or similar combinations of taxes and programs. While the population at large is heterogeneous, it will tend to congregate in groups having broadly similar tastes.[3] As like-minded communities elect governments that pursue policies suitable to their collective tastes, the movement of people across borders will tend, through a natural sorting process, to produce communities with different combinations of taxes and public services.[4]

The capacity of the Tiebout model to produce definitive results in a static analysis depends on some key assumptions. One of them is that taxation is not distortionary, so that the level of taxation and the level of programs correspond parsimoniously in all jurisdictions. If taxes are distortionary, a given level of programs could imply a variety of tax levels. Residents might be better off in one community than in another notwithstanding their equal demands for (and receipt of) public services. Another assumption is that each community delivers services at least cost—and that cost must be the same in each community.[5] If not, a given level of taxes would imply a variety of outcomes on the program side. A third assumption—a corollary to the assumption of lump-sum taxation—is that there is no impact of programs on output (and from output back to taxes). Clearly, none of these assumptions holds in real life, which has led to skepticism about the Tiebout model's relevance to real-world policy decisions.

Even some indeterminacy in its static results, however, does not justify dismissing the dynamic forces the model predicts. As Oates points out, even where suboptimal equilibria appear to exist, they

> are not downward spirals "to the bottom"; they are suboptimal equilibria. This raises the obvious and important question of magnitude (which the "race to the bottom" terminology tends to obscure). The real issue here is the magnitude of the deviations (if any) from the efficient outcomes … Is it a minor distortion or do these equilibria imply significant losses in social welfare? (Oates 1998: 18)

"Federalism as market"

It is finally useful to outline an extension of the Tiebout view that, at least informally, takes the parallel between competition among firms in markets and competition among jurisdictions further (Breton 1985; Robson 1992). This view sees governments of jurisdictions as analogous to owners or managers of firms that compete for customers—individuals and firms—by seeking to provide attractive combinations of programs and taxes. Competitive pressures not only keep agency problems in check but spur innovations as jurisdictions seek to deliver better programs at a given tax cost, lower taxes for a given level of programs, and so on.

Like the analysis of firms in a market setting, this view acknowledges the possibility of externalities that might make interjurisdictional agreements or measures taken by a national government attractive—measures to limit interjurisdictional flows of pollution,[6] for example. Consistent with its foundations in a Tiebout-like view of the world, however, this view tends to put the onus on those who would restrict competition to demonstrate that the benefits from doing so in a particular case would outweigh the costs of creating the opportunity for policy makers to exploit market power.

Central to this view is the dynamism of markets: like competition among firms to produce better products and services to attract customers, competition among jurisdictions to improve their technologies of taxation and program delivery will tend to improve the package residents receive over time.[7] While raising distortionary taxes may discourage local investment, for example, the need to retain tax base will focus expenditure on productive areas, with the possibility that welfare could be higher than would be the case if immobile capital lessened competition. Inter-jurisdictional competition thus raises the possibility of a "double dividend" in productivity: "Not only is the allocation of the private factors improved, there is also a productivity gain in the public sector. None the less, one does not find much about this hypothesis in the literature" (Rauscher 1998: 60).

In a "market" with a limited number of firms, there are many ways in which such competition can play out, many of which produce outcomes different from those of standard microeconomic theory. Mintz and Tulkens (1986) and Mintz and Smart (2001) analyze sales taxes and corporation income taxes in a strategic context; their main result is that it is possible to describe reasonable circumstances[8] where the outcome of the rate-setting game is provincial tax rates that are more divergent than in the absence of competition. In other words, in the presence of competition some provinces are able to improve local welfare by raising taxes rather than lowering them.[9]

More generally, jurisdictions may consider the current menu available to voters—including, implicitly, how capital moves in response to local taxes and benefits—but may also consider how other jurisdictions might change their offerings in response to choices made by the first mover. As in oligopoly situations, it is not difficult to imagine circumstances where such interactions impede the achievement of welfare maximizing outcomes. But, even in oligopoly situations, the pressures of technological change and exogenous shocks tend to undermine anti-competitive behaviour, with the result that productivity growth in more-concentrated sectors is not, over extended periods, systematically lower than in less-concentrated ones.

The important implication for competitive federalism, however, is the following: constraints on tax and expenditure competition seem likely to inhibit the innovation in service delivery that would obtain absent such constraints. And, since all taxes impose some efficiency costs, the competition to produce productivity-enhancing public services, which permit lower tax rates for a given level of services, becomes all the more important.

It is worth emphasizing that while observers concerned about problems arising from specific types of interprovincial competition, such as targeted subsidies or tax breaks intended to attract particular firms or types of business, may be able to make a strong case on the grounds of economic efficiency for limiting them, the test of demonstrating a favourable cost-benefit outcome is not an easy one to pass. The explicit parallel with competition in a dynamic market makes clear why this is so: when retailers, for example, compete with promotions that a central planner would see as distorting, such as loss-leaders, the presumption is that competitive pressure will make such phenomena transitory. Competition is multidimensional, involving numerous taxes, transfers, and services, many of which are multidimensional in their own right. It is far from clear that restricting competition along one dimension will necessarily improve the competitive dynamic in the system as a whole.[10]

There are at least three important differences between firms in a competitive market and governments in a federation that are potentially important for tax and program outcomes. One is that jurisdictions compete both for capital and labour. The lack of perfect alignment between their interests may militate against efficient solutions from labour's point of view.[11] (The analogy in the competitive market would be an agency problem on the consumer side, where the purchaser was not the final user.) This problem has given rise to the extensive literature on the impact of income-shifting on the happy outcomes predicted by the Tiebout model.

The second is that the "refereeing" process is less easy to design where competition among jurisdictions is at issue. Where market failures suggest a need to counteract market power or coordinate among individuals and firms, there are usually disinterested third parties to design and enforce the necessary regulations. When market power or coordination among governments is at issue, these third parties are not so readily found, since the governments themselves cannot be disinterested regulators.

Finally, competition among subnational jurisdictions generally has a "vertical" aspect. Where vertical tax interactions create spillovers—as, for example, when deductibility of a tax imposed by a subnational jurisdiction in calculating a firm's or an individual's tax obligations to a national government has implications for taxes and programs in other subnational jurisdictions—a challenge of either removing the provisions that create the externality or designing a coordination mechanism that limits its effects arises.

These differences between interfirm and intergovernment competition obviously matter for outcomes but they do not in any way undermine the competitive analogy.

Evidence

Although there is a large literature dealing with the theory and evidence on competition in other places and other jurisdictions, systematic evidence that Canadian provinces compete on fiscal offerings is scant.[12] What is currently available is discussed below.

To organize our investigation, we begin by looking at taxes. We first implicitly adopt the "race to the bottom" view that stresses downward pressure on tax rates—and, presumptively, spending—as policy makers respond to individuals' and firms' desires for lower costs. We then turn to look at taxes and spending together and ask about the overall balances of fiscal costs and benefits offered by Canada's provinces and what they tell us about interprovincial competition.

Do provinces compete to lower taxes?

Believers in a race to the bottom might feel that to ask this question is to answer it. Provinces certainly imply that they aim to provide tax rates lower than those of other provinces: comparative tables of provincial tax rates have been featured in budgets for many years.[13] But, evidence on outcomes is mixed.

Two recent papers have undertaken the task of providing an empirical analysis of provincial reactions to tax policy choices made in other provinces (Cavlovic and Jackson 2001; Hayashi and Boadway 2001). These papers focused on corporation taxes.[14] Using the ratio within a province of corporation tax revenue to corporation profits as a measure of corporate tax rates, both found evidence of strategic interactions between Ontario and Alberta, less evidence for Quebec, and little response among the Atlantic provinces.

It is hard, however, to know how much to make of these results. Average tax rates calculated in this way give a partial picture that is hard to interpret.[15] Average rates may reveal something historical about the incentives facing firms with activities in different provinces and which are governed by the profit allocation formula.[16] But, the critical decisions affecting resource allocation—the locations of physical investment (and employment)—will depend on marginal effective tax rates (METRs) on capital investment, which depends not only on corporate income tax rates and base definitions but also on the rates and bases for other taxes, such as taxes on paid-up capital and labour. These problems and other issues such as omitted variables, endogeneity, and difficulty in interpreting time-lags make us doubtful of the capacity of existing models to capture the full range of strategic interactions among provinces.[17]

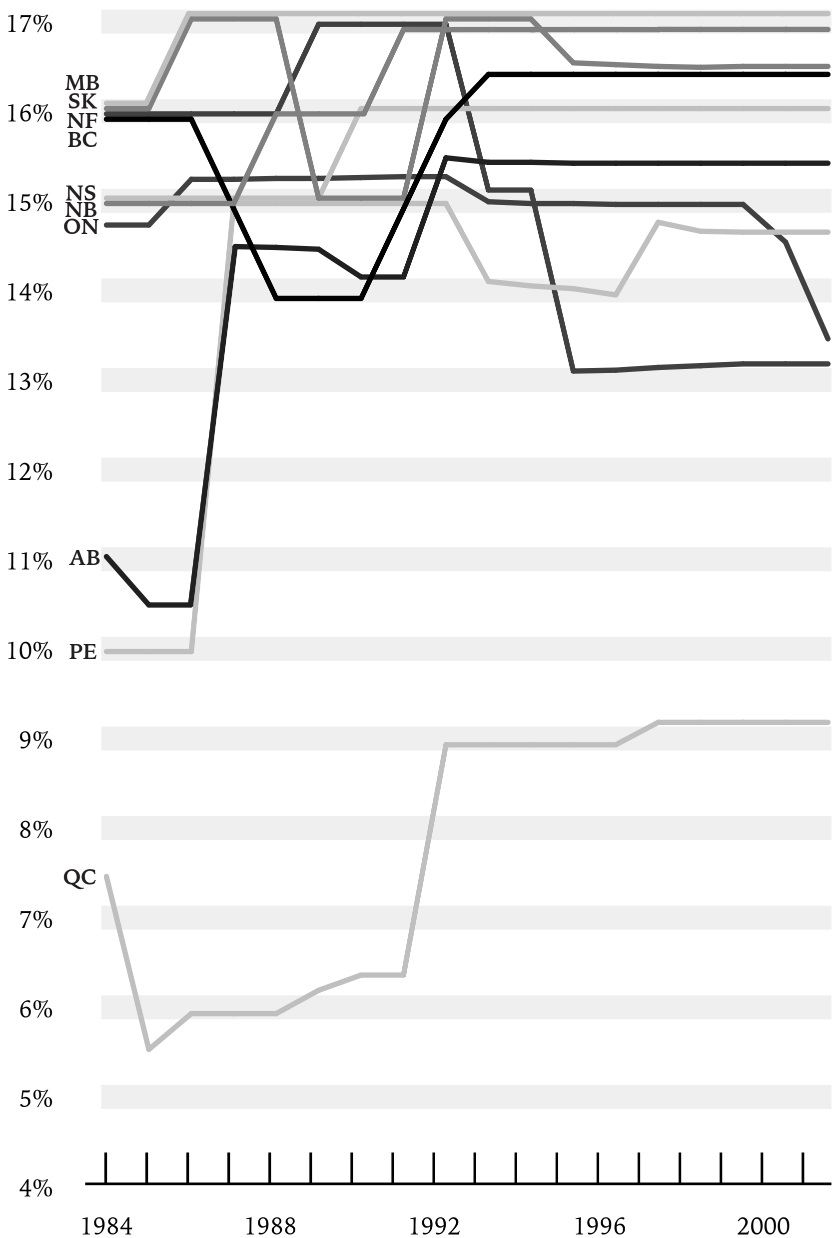
Actual statutory corporate tax rates can move us a very small step closer to the variable of interest. What do the data on trends in provincial tax rates and firms' investment behaviour suggest?

The first part of our exercise links changes in provincial statutory corporate income tax rates (trends in sector-weighted statutory rates are shown in figure 1) with inter-provincial differences in the growth rate of reported corporation profits expressed in constant dollars per capita. The procedure is a simple bivariate panel of provincial annual data for the period from 1981 to 1999; we find in a simple panel model of provincial differences that falling statutory rates are significantly associated with rising real per-capita corporation profits.[18] This negative relationship, we assert, indicates merely that provinces are indeed under pressure to attract or maintain the corporation tax base or that provinces compete successfully (or not) for the corporation income tax base.[19, 20]

The second part ideally would use a similar procedure to examine the effects of changes in provincial all-in METRs on the growth of provincial constant-dollar net business sector capital stock per working-age resident.[21] Here a negative relationship could indicate provinces competing for shares of tangible capital investment. Absent year-by-year estimates of those METRs, we use the same weighted statutory rates as above, on the assumption that they move in the same direction as would the METRs.[22] We find, for the period from 1976 to 2001, a significantly negative relationship between these rates and the growth of net capital stock per capita (see figure 2 for a plot outlining the historical relationship). We find further reassurance in Mintz and Smart's (2001) result from microdata that shows multijurisdictional entities[23] to report profits in a manner apparently very responsive to local statutory tax rates on corporation income.

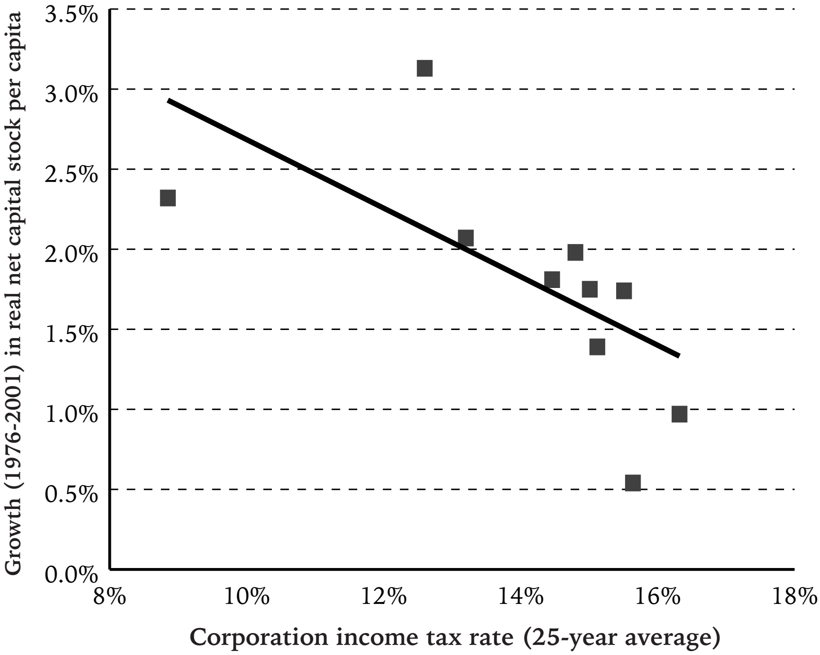
We round out the picture with a look at personal income taxes, specifically all-in METRs for employment income (in the hands of adults, weighted by income) by province by year (see figure 3).[24] We use the same bivariate panel approach as above, with changes in METRs "explaining" growth in real per-capita personal income. The relationship is significantly negative over the period from 1984 to 1999 and robust across a variety of specifications. The implication we draw is that tax-cutting provinces do better than others at retaining and attracting the personal income tax base, which we cautiously take to be some evidence of competition occurring.

Figure 1: Trends in "weighted" statutory CIT rates



Source: Figures derived from the International Tax Program at the Rotman School of Business, University of Toronto.

Figure 2: Growth in provincial capital stock and historical CIT rates



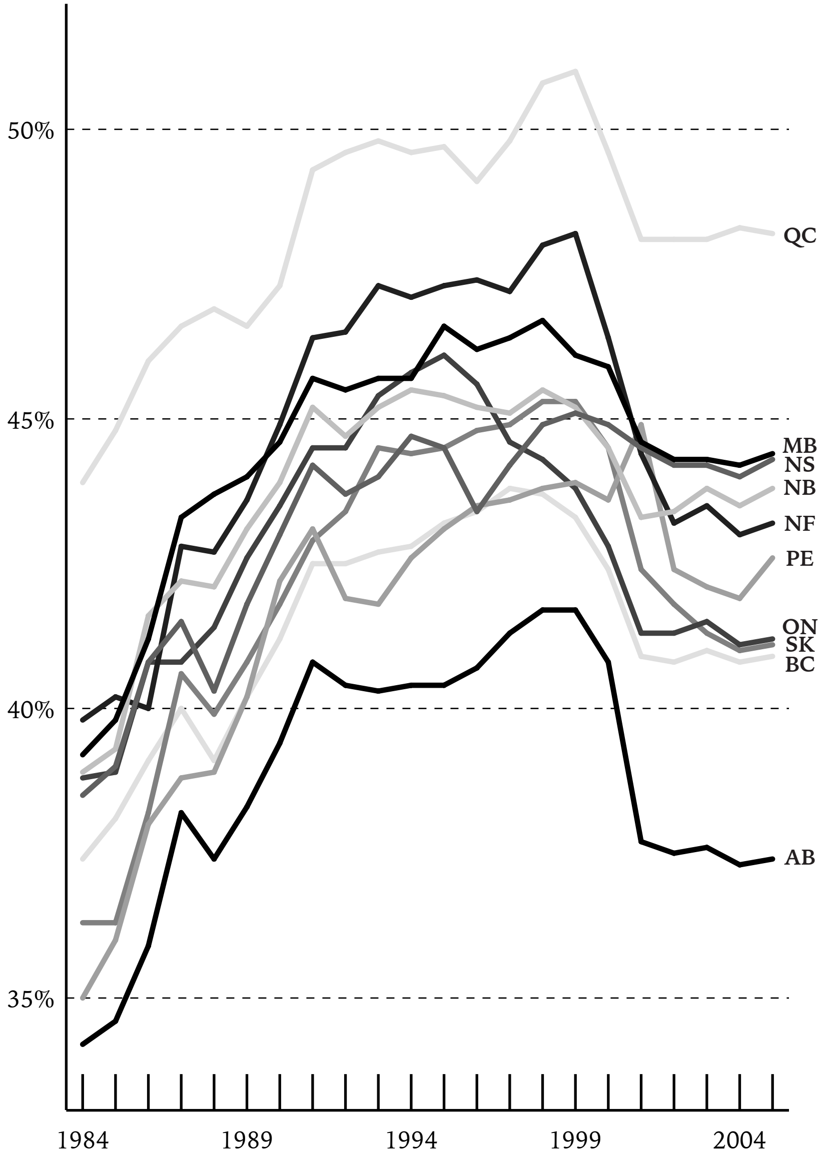
Source: Statistics Canada, CANSIM and the C.D. Howe Institute.

Do provinces compete on the total mix of taxes and programs?

Identifying or empirically specifying fiscal competition is difficult because taxes and spending are clearly jointly determined, leading to problems of endogeneity in the specification of models and likely bias in results. Another point worth emphasizing is that identifying causes of convergence in tax, transfer, or service policy among the provinces is always difficult: in some cases, interprovincial agreements or federal policies are undoubtedly important; in others, competition may be inducing "law of one price" convergence; in others, similarities in the preferences of the population may be the most important factor.

When it comes to overall provincial spending, the first thing the data make obvious is the absence of a race to the bottom. Real per-capita spending has shown no sign of withering away: constant-

Figure 3: Average METRs by province

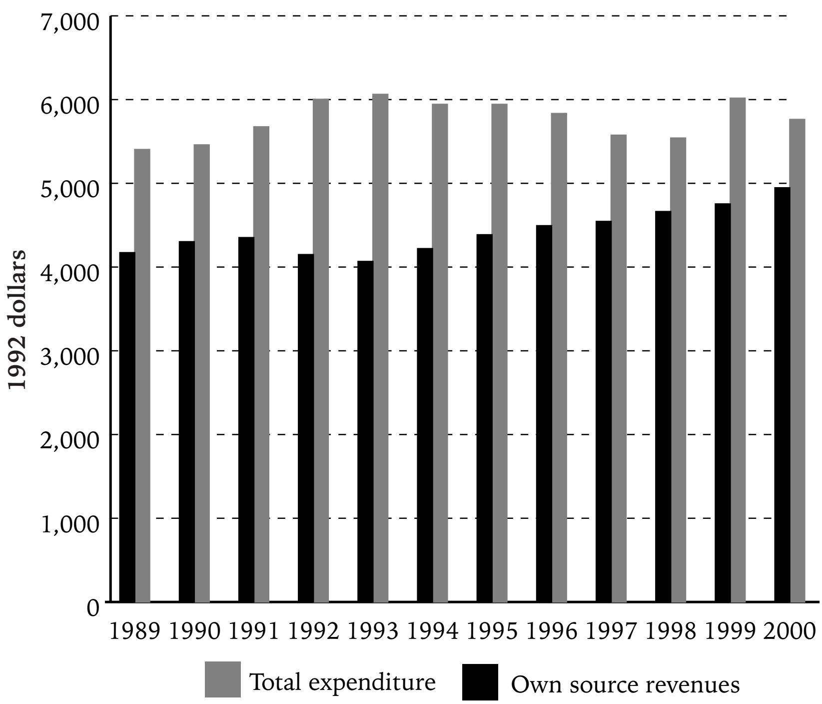


Source: C.D. Howe Institute, via Statistics Canada's Social Policy Simulation Database and Model, Release 8.1. Responsibility for the results and their interpretation lies with the authors.

dollar spending per capita in fiscal 2000 was above the level prevailing in 1989 through 1991 (see figure 4) and stood only modestly below the plateau running from 1992 through 1995. In an illustration of provincial spending on categories that could be defined as in-province public goods and publicly provided private goods (other categories fit less well in the Tiebout framework), a similar overall pattern would stand out: flatness and no downward spiral.

This, we argue, is circumstantial evidence supporting our claim that demand characteristics and institutional factors place a floor under provincial spending. The intuition was given by Tiebout: the import of the fact that the goods and services provided by provincial and local governments are publicly provided private goods is that those governments behave very much like private markets. And, to the extent that collective provision of public goods is considered, interprovincial competition helps deliver market-like quan-

Figure 4: Total provincial revenue and expenditure ($1992 per capita)



Source: Statistics Canada, CANSIM and the C.D. Howe Institute.

tities and qualities. This is to say that there are key forces encouraging provincial policy makers to deliver services that voters demand and are demonstrably willing to pay for. In the Tiebout framework, what is needed is simply enough different regions and low enough mobility costs for this market discipline to work.

Conundrums

A straightforward observation that follows from the foregoing discussion is that what is not broken does not need fixing: mobile firms and individuals demand a range of services and naturally want them delivered at minimum cost. Actual and potential mobility disciplines governments' spending and taxing behavior. That said, however, there are good and bad aspects of competition, and restraints thereon, that deserve discussion.

Can we distinguish "good" and "bad" competition?

From a normative point of view, "good competition" is whatever is required to deliver market-like outcomes that optimize social welfare. On the other hand, "bad competition" may involve tax arrangements that exploit the non-identity of interest between capital and labour as well as competition that produces externalities such as federally mediated tax spillovers or inadequate investment in areas such as pollution abatement, education, and health.

Among the examples of unhealthy tax competition frequently cited are efforts to "export" taxes through, say, unitary corporate-tax provisions or efforts to draw particular types of investment into a jurisdiction by sector-specific tax breaks. Both of these might be seen as giving rise to an agency problem where the "buyer" of a particular service from a jurisdiction is not the ultimate consumer—though, interestingly, these two examples are opposites in that the former presumes that labour is buying an arrangement that is disadvantageous to capital, whereas the latter presumes the opposite.

These concerns are blunted by consideration of the dynamics of competition. Take, for example, an obvious sector-specific measure: Ontario's research employee stock-option credit, intended to relieve the provincial tax burden on capital gains arising from stock options held by employees of Ontario-based high-tech companies. This is a complex and provincially divisive measure, which arguably would cause interprovincial misallocation of human and financial resources and which would not happen in a fully coordinated system. To the extent that the measure steers resources away from jurisdictions where their exploitation may be more valuable,[25] the distortion could reduce the net welfare of Canada. Generally available tax reductions would be more conducive to welfare maximization, simply because they are less likely to distort resource allocation across sectors and less likely to induce rent seeking.[26]

Yet, these considerations are not enough for a conviction. If Ontario is simply competing for business in the way any commercial entity might, the fact that it wins that business is no evidence of welfare loss and, certainly, there is no net loss if the national supply of capital is fully elastic. Ontario residents may value certain types of activity more than residents of other provinces. Even if a static analysis reveals an interprovincial misallocation of capital as a result such policies (and small open-economy assumptions do not entirely hold), moreover, dynamic considerations may indicate that allowing such competition produces better welfare outcomes in the long run than not allowing it. A federal system cured of presumptively excessive competition may house less happy residents than one suffering from the disease.

Frameworks for tax competition

The case for encouraging, rather than discouraging, competition seems ironclad. Yet, why have there been persistent arguments in the European Union, for example, for tax harmonization and program coordination? The answer must be either that support for tax harmonization in the European Union is based on a crude belief, without solid empirical foundation, in a "race to the bottom" or that it derives much of its impetus from a desire of policy makers (equivalent to the managers of firms in our analogy) to widen their scope for self-serving behaviour.

The Canadian case for further tax harmonization should be informed by Baldwin and Krugman's (2000) critique of the case for tax harmonization within the European Union. Their model sees member countries as constituting a more-industrialized core, with high taxes and high social spending, and a less-industrialized periphery with less of each. Some firms continue to locate in the high-tax core because they benefit there from tightly integrated production arrangements and product markets; other firms locate in the periphery because they do not need the core's facilities but are unlikely to fare well with higher taxes. In this situation, the core would not necessarily benefit from lower taxes and the periphery certainly would not benefit from higher ones.[27]

As to the "bad competition" mentioned above, there exists a framework within the guidelines of the Canada Customs and Revenue Agency (CCRA, formerly Revenue Canada) for administering provincial taxes that, in principle, should avoid the worst cases (see Appendix 2). The CCRA's stated unwillingness to collect taxes, even for a fee, where those taxes run counter to the "economic union criteria," is intended to deal with just this problem.

Our concern with relying on the guidelines lies not only with the problem that deciding what offends the criteria might be unclear; the larger concern is that the newly independent tax collection agency has an incentive to implement every provincial program it is offered. The reason is the usual incentive to build an empire that confronts every regulated monopolist. Our concern is deepened by the fact that the agency's tax collection machinery almost surely has efficiencies from scale: it may be cost effective to collect disparate and disjointed taxes on behalf of a province in situations where it would not be cost-effective for the province to so itself. The presumed and undesired outcome would be a fragmented and distortionary provincial tax base with exorbitant compliance costs. There is no ready solution for this difficulty other than light on the decision making and scrutiny from all sides.

Yet, given the thrust of this chapter, it would be inappropriate to place heavy emphasis on this concern over balkanization of provincial tax codes. The alternative—strong central control or coordination of the tax base—would discourage innovation in tax design and would not necessarily lead to improved welfare outcomes.

This last point seems poignantly clear in the small tempest over capital tax deductibility. It is a commonplace in the literature that tax exportation is one source of externalities and that when taxes paid to one jurisdiction are deductible in determining liability in another, a certain amount of tax exporting will occur. When provincial capital taxes are deducted in determining taxable income, but before the income allocation formula is applied, there is such an interprovincial spillover. Importantly, the tax collection agreements that currently coordinate most corporate and personal taxes in Canada are an obstacle to addressing this problem. Only because Alberta's corporation income tax stands outside the agreements has Alberta been able to contemplate ending provincial capital tax deductibility. Most other provinces have no such freedom. If spillovers are a problem, eliminating the provisions that cause them is likely a more effective response than designing new coordination mechanisms whose benefits in mitigating the spillovers may be small in comparison to their competition-restraining costs.

Frameworks for program competition

The preceding discussion makes plain that Canadians should be skeptical about the need to gird against competition in taxes or spending. Yet, as noted at the outset, it is a matter of federal policy that a "race to the bottom" in taxes and spending exists and necessitates the Social Union Framework Agreement (SUFA). A position paper from federal ministers Stephane Dion and Anne McLellan in February 1999 defended the SUFA's spending incentives—matching grants under federal/provincial shared-cost programs—on the grounds that they would "inhibit any pressures for a 'race to the bottom' in social programs and services for Canadians" (Dion and McLellan 1999). Under the SUFA, Ottawa and the provinces would agree on new programs in areas such as health and education and, if a given province already had programs working in the agreed area, they would still get federal money if they agreed to spend more money in what is called a "related area."

The analogy between competition within a federation and in a market points out problems with this approach. With matching federal dollars, provinces are intended to perceive a marginal cost of public funds that stands at half of the marginal benefit and, therefore, to spend on programs they otherwise would not fund. Likewise, since an extra dollar of spending can be financed with 50 cents in tax revenue, provinces are encouraged to raise taxes where they otherwise would not.[28] In other words, matching funds would sever the link between marginal revenue and marginal spending, a link that is central to the dynamics of competition.

Another way to look at the impact is as a lowered reward for innovation. Provincial technology improvements or innovation in management techniques, in order to avoid 50 cents of provincial spending, would need to deliver a dollar's worth of economies—a provincial initiative that would cut the cost of a program by less than a dollar would save the province less than 50 cents.

All in all, the requirement that money be spent on the federal or similar program undermines competitive federalism in general and, at the risk of repetition, reduces provincial accountability in matching taxes and spending. This seems conclusively to indicate that SUFA-like arrangements to reduce tax competition are hard to justify from a public finance perspective.

Concluding thoughts

A model that treats provinces as analogous to firms competing for customers in a market setting highlights key positive and normative features of interprovincial fiscal competition. At a moment in time, the dynamics of competition for households and business combined with heterogeneous preferences of provincial populations mean that there will be a range of tax rates and spending among the provinces between loose ceilings and loose floors. Over time, the positions of individual provinces within that range will change and the ceilings and floors may move, but the primary driver for those movements is the response of provincial policy makers to changing desires of their actual and potential populations as regards the fiscal mix.

From this perspective, advocacy of measures to restrain fiscal competition carries an onus of proof. Blunting the incentives to compete on tax rates through Equalization or to compete on program offerings through federal mandates and tied-funding arrangements risks exacerbating the agency problem that inhibits the translation of provincial voters' preferences into provincial policy.

Where clear externalities exist, such as would arise from inadequate provincial investment in pollution abatement, education, or disease control, for example, there is a well-grounded case for interprovincial coordination or the involvement of the federal government.

On the other hand, however much a cut in tax rates in one province may inconvenience the government of a neighbouring province, the competitive-market analogy clearly points to the existence of benefits to citizens generally that outweigh the inconvenience—there is no externality and no case for intergovernmental agreement or federal control.

The possibility exists that constraining competition in areas where there may be negative externalities—such as poaching of tax bases—would produce healthy outcomes. Yet, despite the possibility that targeted provincial subsidies and tax breaks might distort the allocation of resources within Canada considered in a static framework, the competitive-market analogy makes clear the difficulty of distinguishing situations that warrant a national response from those that are simply individual steps in a fiscal competition that, over time, produces incremental improvements in the balance of costs and benefits enjoyed by citizens everywhere.

Appendix 1: The Tiebout hypothesis

Myrna H. Wooders gives succinctly the hypothesis and the fiscal implication:

> The Tiebout Hypothesis asserts that, in economic situations where it is optimal to have many jurisdictions offering competing packages of public goods, the movement of consumers to jurisdictions where their wants are best satisfied and competition between jurisdictions for residents will lead to near-optimal, "market-like" outcomes. A jurisdiction (or club) is a group of individuals who collectively provide public goods for themselves exclusively (the public goods are local). Tiebout also suggested that individuals would sort into taste-homogeneous jurisdictions ... [T]he fiscal externality problem appears to be that, in Tiebout economies, it is optimal to tax players, including firms, for their external effects. If jurisdictions try to tax players in excess of the external effects they impose, there is a potential for profitable secession or opting out. Because of the assumed mobility of players in Tiebout economies, the redistribution implicit in such taxation cannot be sustained. (Wooders 1999: 10585)

The assumptions (mainly from Blankart and Borck 2000)

1 Consumers are completely mobile and move to the jurisdiction that best satisfies their preferences.

2 Consumers are fully informed about communities' taxes and supply of public goods and move in response to differences in taxes or spending levels.

3 There are a large number of communities among which consumers may choose.

4 Individuals live on dividend income, so there is no requirement that individuals live and work in the same jurisdiction.

5 Governments use lump-sum taxes or user charges to finance public services.

6 There are no interjurisdictional spillovers; that is, public goods are purely local public goods.

7 The average cost per person of providing public goods to the population is a U-shaped function of the number of residents.

8 Communities attract residents exactly until the optimal city size—i.e., the minimum per-capita cost—is reached.

Relaxing assumption 5, given that taxes in practice are distortionary, is the most common exercise in Tiebout-type analysis and yields some interesting results. One is that that high demanders of public goods should be especially careful to choose tax mixes that are likely to be relatively efficient: this point is sometimes used to explain heavy use of consumption taxes in many European countries, wherein economic performance has been reasonable notwithstanding high overall tax burdens relative to countries that rely more heavily on income taxes. Another example, offered by Brueckner (2000), takes the preceding point to its logical end: high demanders of public services, given distortionary capital taxation, will live in communities whose high tax rates inhibit growth of the tax base (put another way, a persistently low tax base necessitates high rates to finance a given level of services). In this example, heavy demanders of public services would be better off if their jurisdiction were financed through head (poll) taxes. One extension to the provincial case is that provinces should rely more on relatively non-distorting consumption taxes than on the other available bases.

Appendix 2: The guidelines of the Canada Customs and Revenue Agency for administering provincial tax measures

The guidelines below are quoted from Canada Customs and Revenue Agency 2002.

Minimum criteria

The Agency will administer provincial/territorial taxes if:

- they are legally valid;
- they adhere to basic principles such as those that do not jeopardize the system of self-assessment, do not involve double taxation, and that contain generally accepted standards for fairness; and
- the Agency and the province/territory can arrive at mutually acceptable contractual arrangements.

Economic union criteria

The economic union criteria establish conditions under which provincial/territorial tax programs will **not** be administered by the Agency, even if they meet the above minimum criteria. They also determine whether or not provinces/territories will be charged for the administration of a provincial/ territorial tax measure.

- Discriminatory locational incentives—The Agency will not administer measures that provide a locational incentive, which discriminates between provincial and territorial residents and non-residents. However, the Agency may administer locational tax incentives available to all taxpayers on a non-discriminatory basis.
- Non-harmonized measures—The Agency may administer these on a full cost-recovered basis.[29] They would include non-harmonized income tax credits or other alterations (*e.g.*, tax on income)[30] related to taxes administered under tax collection agreements. They also include other taxes, such as corpo-

rate income taxes or provincial and territorial retail sales taxes that are not harmonized with the counterpart federal tax.

- Fully harmonized taxes—The Agency would administer these at no cost to the province/territory (based on agreements between the Minister of Finance and the province/territory). They are defined as taxes that fully replicate the federal tax and include income taxes now under tax collection agreements (the existing tax-on-tax system) and harmonized sales tax. They also include certain income tax credits that the federal government now ad-ministers on a fee basis but which are fully harmonized, such as the political contribution tax credit.

Notes

1 When it is competition among jurisdictions within a country that is at issue, the view that such competition needs to be restrained often draws additional force from fears that subnational jurisdictions will be more responsive to business pressures than national governments or from an expansive view of entitlements to government benefits attendant to citizenship that only strong central governments can defend. Noel 1999: 197–98 provides a useful survey of such views.

2 See Edwards and Keen 1996.

3 In this respect, the Tiebout model contrasts with much of the tax competition literature, which has tended to focus on mobility of tax bases rather than mobility of individuals (Brueckner 2000) and typically assumes identical tastes among individuals. Taking both aspects together has been an important extension of the fiscal competition literature (Henderson 1994, Wilson 1997) and below we draw on this work.

4 An implication of this view is that the separate communities ought to be more homogenous than the overall population. Given the multitude of dimensions along which individuals can differ, this implication is hard to test empirically. For an unfavourable judgment, see Rhode and Strumpf 2000.

5 The specific Tiebout assumptions are that the average cost per person of providing public goods is a U-shaped function of the number of residents and that communities attract residents until the minimum per-capita cost is reached. If there were scale economies to be had, the optimal size of a jurisdiction would become infinitely large, with diseconomies of scale leading to the opposite result.

6 Such as observed in interstate agreements on Chesapeake Bay and international agreements on the Great Lakes basin.

7 This aspect of competition is too little explored in the literature. Wilson 2000 is a notable, if partial, exception.

8 Such as where the demand for local public goods is highly inelastic; another likely possibility is where governments are able to tax inframarginal locational rents.

9 And, the implication of this is that in a Nash model of provincial tax competition, finding a positive slope on a given reaction function is not necessarily evidence that there is tax competition among the provinces; the slope might be negative or indeterminate and yet "competition," broadly writ, would still be the appropriate description of the continuing dynamic. It follows, therefore, that we might not recognize tax competition when we see it or might claim to see it when it is not necessarily there.

10 Huber 1999 makes the point that depending, for example, on the wealth distribution within states, coordinating capital tax levels among states may leave overall welfare higher, the same, or lower than without such coordination.

11 As would be the case if revenue-maximizing or rent-seeking policy makers focused on productivity-enhancing public expenditures, to the detriment of spending that benefitted labour as opposed to capital. The possibility of "too much" spending in support of capital investment is raised in Keen and Marchand 1996; the outcome is easy to enough to picture in the context of revenue-maximizing public policy makers.

12 An important (related) paper is the analysis of municipal behaviour by Brett and Pinkse 2000 .

13 A recent instance: *Province of Alberta Budget 2000*: 98–102.

14 The former paper also looked for competition on personal income taxes but the data suggested few conclusions.

15 Among the numerous difficulties is loss carry-forwards that can produce fluctuations in effective average rates while having nothing to do with provincial tax policy choices or current economic conditions. See Mintz 2000 for a more complete list of complications.

16 See Mintz and Smart 2001. The allocation of corporate taxes on multiprovince firms among provinces is governed by a formula making reference to shares of sales and employment, which limits, though it does not eliminate, opportunities for income-shifting.

17 While there has been some theoretical work on commitment (time-consistent policy choices), there have been no empirical studies dealing with announcement effects. For example, Nash and Stackelberg models that have been tested have used one-year lags as indicative of the action horizon; but it seems very unlikely that recent choices in Alberta and Ontario have not been affected by their own and others' announced plans for future years.

18 The relationship holds across a number of specifications.

19 This result is consistent with the finding in Bird and Mintz 2000 that Quebec, among all provinces, has an extremely high ratio of corporation taxable income to assets, which is also consistent with the notion that in Quebec, labour is relatively less mobile than capital, as compared with other provinces.

20 If Canada and, therefore, the provinces are governed by the usual small-open-economy assumptions, this is clearly welfare-enhancing, as capital (or, at least, corporate profit) is drawn in from the world at large. If there is a fixed amount of capital available over the relevant time scale, the gain in activity is not necessarily net welfare-enhancing—we need to know what is happening on the expenditure side.

21 We use the measure assuming straight-line depreciation (i.e., unpublished Statistics Canada data for constant dollar net capital stock by province).

22 The assumption is reasonable to the extent, for example, that inter-provincial differences between corporation income tax bases are small.

23 Where those firms are not required to allocate income according to formula.

24 Derived via Statistics Canada's Social Policy Simulation Database and Model, Release 8.1; responsibility for the results and interpretation lies with the authors.

25 Again, assuming Canada's economy is not fully open or the national supply of capital is somehow fixed.

26 Indeed, rent-seeking is a generic problem for regimes with high tax rates and exemption mechanisms (like Ontario's credit) that shrink the base. When rates are low and the base broad, there is less return to lobbying for exemptions for any particular activity.

27 It may be useful to contemplate this model in the context of congestion. If these external costs increase with density—say, as roadways approach capacity—a higher-than-otherwise tax rate may be necessary in the core region, so that firms do not locate there rather than the periphery. But, this analysis does not force any conclusion other than that provinces should not lower tax rates beyond what is commensurate with the capital investment (density) they wish to build up. On the other hand, constraints on tax competition should not force tax rates higher than commensurate with province's desired growth target. Ludema and Wooton 2000 shows the link between agglomeration forces, economic integration, reduced tax competition, and higher tax rates.

28 This is an apt point at which to observe that provinces that receive Equalization may not engage in tax competition in same way that non-recipients do. One reason may be that provinces that do not compete (do not protect or enhance their tax bases) are compensated for their action or inaction by way of grants under that program, which are explicitly tied to differences in tax bases; see Smart 1998. If provincial policy makers are relieved of full responsibility for raising the revenue they spend, moreover, the equalization program is another wedge creating room for provincial policy makers to seek rents.

29 Supplementary materials attempt to distinguish between nearly harmonized measures, for which the CCRA would charge the incremental cost of administration, and nonharmonized measures, which would be billed at the average or full cost of administration.

30 In fact, tax on income may fall in the nearly or fully harmonized category, and thus be charged at a lesser rate.

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