

Incentives Facing Canadian Universities: Some Possible Consequences

by

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I

In Canada, debates about post-secondary education and health care have much in common. Both activities are largely in the public sector, their provision being the responsibility of provincial governments, albeit with significant federal financial input. In the political domain, debates about both systems focus on funding and accessibility, but, in both cases, economists must also be concerned with the implications for the systems' efficient functioning of the incentives inherent in decisions taken about funding and accessibility. Widespread ideological opposition to allowing the very special structures inherent in market-based activity to play important roles in these sectors has, however, distracted attention from the fact that *any* way of organising them will create incentives that profoundly influence the outcomes they deliver, and that no rational policy choices can be made without their careful analysis.

Though much has been written by economists on these matters, their arguments have yet to make much headway with the public. There is nothing to be done about this but to keep trying: hence the motivation for this brief essay. It will concentrate on universities, for no better reason than that this is the area of post-secondary education with which its author is familiar, and it will discuss, in turn: the incentives that have rendered no longer viable the provisions that Canada made from the 1960s onwards for the funding of a widely accessible university sector; the incentives that have both driven and are inherent in the arrangements that have emerged piecemeal in the last decade or so, and some of their probably baleful consequences; and it will then offer some suggestions for changing the incentive structures currently at work in directions that might improve the system's performance. The use of the phrase "possible consequences" in my title reflects a profound sympathy with the warning issued by Clement Lemelin to this conference that, when it comes to tinkering with any system as complicated as the universities, "the devil does indeed lurk in the details". I am, that is to say, more confident that I am raising at least some of the right questions about this sector than that I am offering the right answers to them.

II

Let me begin with the assertion that there is something to be said for a university system that provides space at close to zero cost for all suitably qualified applicants. Canada created such a system in the 1960s and 1970s, and it seemed to work rather well for a while. In the 19th century we learned to accept the idea that primary education was sufficiently important to an individual's ability to be a fully contributing member of society that its provision should be in significant measure a social responsibility and mandatory for all potential recipients into the bargain. As the 20th century progressed, society became richer and more complicated, the skills needed to function therein became more extensive, and we accepted the widening of this case to cover secondary education, though we stopped short of making school attendance mandatory up to the point of high-school graduation. No doubt this line of argument becomes a harder stretch as we extend it to the community college and university levels, particularly if we honestly face the difficulties inherent in deciding how to, and who should, draw the line between "suitably qualified applicants" and the others, but it does not become irrelevant. Traditional arguments for the collective provision of educational opportunities surely retain considerable validity beyond the age of 18.

The trouble is, however, that Canada's universities have been extraordinarily successful in adding value to what in earlier times would have been regarded as some extremely unpromising raw material, and that the resources required for them to go on doing in the 21st century what they did so successfully for a while in the 20th on a significantly smaller scale, have large opportunity costs in terms of other worthwhile activities. These costs require that difficult choices be made on important margins, and, obviously, the incentive structures that face decision makers will determine how those choices will be made.

As far as university funding is concerned, and particularly long-term funding for base budgets, the primary decision makers are provincial governments, so the alternative uses of resources that are always and everywhere visible when decisions are made are in health care, primary and secondary education, and in providing consumption opportunities to those whose disposable income would be reduced by tax increases. The visibility of these particular margins extends well beyond the bureaucrats and politicians who must make the spending and taxation choices, moreover. Given Canada's demographics, not to mention the public's rather newly developed, but already seemingly deeply entrenched, distaste for higher taxes, these facts make it inconceivable that there can be any hope for a system of public funding for universities that would support the system of its present scale but with the generosity that ruled in the 1970s; nor, on the other hand, does there seem to be any constituency for a significant cut in the size of the university sector.

The piecemeal movement away from a university system almost completely and

generously supported by provincial governments, that we have seen over the last two decades, has not been the product of some deep-laid ideological plot that will be foiled once revealed, nor even of a series of episodes of political opportunism whose effects can be easily reversed. It is, rather, the result of political responses to incentives created by fundamental socio-economic forces - some of them the outcome of the very success of the expansion of the university sector itself. The configuration of the political framework through which these effects are now playing out in Canada is influencing many specific characteristics of the overall process, and frequently not for the better, but the process itself cannot be reversed. To argue that it can be, and to urge that we try to go back to the university system of the 1970s, but on a larger scale, is to be irrelevant. The only appropriate response to the underlying pressures on Canada's universities as they currently exist is to analyse their effects with a view to ensuring that those institutions face an incentive structure that is more likely to produce constructive than destructive outcomes for the sector.

III

Universities are institutions whose business it is to create and disseminate knowledge. As Douglas Auld (1996) has reminded us, they are places where researchers teach and teachers do research, and they are neither research institutes nor teaching colleges. This does not mean that every course that a university offers should be, or indeed ever has been, always taught by a researcher, or that every researcher attached to a university must regularly devote a significant fraction of his or her time to the classroom, but it does mean that, in a university, students and researchers alike should routinely encounter one another as members of a community devoted to the advancement of knowledge. That is what happened in Canadian universities, albeit on a small scale, before their expansion got under way in the 1960s, and it is this characteristic that makes them potentially important players in what it has become fashionable to call the "knowledge economy" of the present day. Even so, there is an all important difference between attitudes then and now. The perception that creating and acquiring knowledge for its own sake was not just a privately, but also a socially, valuable activity, and therefore deserving of public subsidy, has been replaced by the idea that these activities are materially productive, and worthy of support for that reason.

This change in some measure reflects the outcome of developments within economics. It has long been understood that if the gains from university research or education, whether these take the form of an agreeable consumption activity, or the creation and acquisition of marketable skills, accrue only to the individuals directly involved in these activities, then there is no strong case for subsidising them, and that the case for their public support must therefore rest on the existence of externalities on one sort or another. Evidence of externalities has been extremely hard to find up till now, however, and, though the climate of opinion might shift in future in the

light of new evidence such as that recently surveyed by James Davies (2003), the case for public support of the generalised pursuit of knowledge for its own sake made on the basis of their existence currently finds few takers among economists.

On the other hand, the ideas that new knowledge in science and technology is materially productive, that it becomes a public good once created, and hence that it is likely to be inefficiently under-provided by any system that relies on private incentives alone, are nowadays extremely popular; so is the related idea that a labour force well trained in these areas is needed to exploit such knowledge; and in addition it is widely held that many of these benefits accrue at the national rather than provincial levels. Small wonder, then, that Canadian university administrators in search of new and more effective arguments to attract public funding have responded to the federal government's "productivity agenda", and have welcomed funding increases heavily biased towards supporting research and advanced training in science and technology.

It is hard to look a well endowed gift-horse in the mouth, particularly when its presentation signifies that the donor believes the recipient to be of vital national importance, and also comes with assurances that the transaction is well justified by the current state of economic knowledge. But there is room for worry that Canadian universities' rush to participate in the knowledge economy owes more to their desire to replace the provincial funding they have recently lost, than to well founded confidence that more research and teaching in science and technology will produce faster technical progress, a higher rate of growth of labour productivity, and therefore more rapidly expanding living standards for the population at large. If the universities fail to deliver here, they will invite a backlash, and the evidence that they will be able to deliver is a good deal more fragile than is commonly supposed.

To begin with, it is, as noted by Laidler (2002) all too easy to confuse the *level of productivity* with its first time derivative, the *rate of productivity growth*, and, as noted by Jeffrey Smith (2002), equally easy to confuse *average* with *marginal* productivity. The evidence that the material returns accruing to those educated at universities in science and technology subjects are comfortably positive, and higher than those in the arts and humanities, is overwhelming. Even if this did imply that a labour force with more rather than fewer workers trained in these fields would generate *higher level* of productivity, it would imply precisely nothing about the capacity of such a labour force to generate productivity that *rises faster*. However, the results that we have for rates of return to education in various fields are for their *average* and not *marginal* values. It may well be that, for the student currently enrolled in the humanities who has, among his or her peers, the best prospects of success in the sciences or technology, there is no difference in the rates of return to be expected in the two fields. That is, indeed, the outcome that a system in which well-informed students pick their own programs on the basis of expected material rewards would tend to produce.

If we were starting from such a point, then policies designed to over-ride students' choices and expand science and technology programs would not increase, and might even decrease, the economy's overall level of productivity, let alone its growth rate. Now I hasten to add that I have not the faintest idea whether either of the two conjectures upon which this conclusion is based is true or false, but the point I wish to make is that nor does anyone else. In the current state of knowledge, neither government nor universities have a secure basis for any claim that an expansion of programs in science and technology at the expense of those in other fields will have positive effects on either the level or rate of growth of Canadian living standards. Given the evident strength of their incentives to make such a claim, however, let us hope that they get lucky.

Matters are no different when it comes to university research. Perhaps more research in science and technology will indeed lead not just to more efficiency in productive processes, but to a more rapid rate of growth in that efficiency too. We have seen some dramatic instances of this apparently happening - in electronics and bio-technology for example. But we must be careful not to fall into a "Reefer Madness" interpretation of innovation-driven productivity growth. To show that the tragic decline of a single drug-crazed homicidal maniac began with a single puff of marijuana does not tell us much about the likely effects of a widespread increase in experimentation with that substance among young people. There are many more clusters of universities, some of them even equipped with research parks, than there are Silicon Valleys. It would be nice to know why this is so, and at present we don't.

Though modern endogenous growth theory of the type accessibly surveyed by Paul Romer (1994) has attracted widespread academic attention and admiration, its central features, namely that the creation of a public good called "knowledge" can overcome diminishing returns, and its apparent implication that by subsidising that creation, government can contribute to perpetual economic expansion, seem hard to square with empirical evidence about how productivity growth actually comes about. It may be possible for this approach to meet the challenge implicit in Arnold Harberger's (1998) "Vision of the Growth Process", which arises from his finding that "real cost reduction", as he calls it, seems to be a bottom up phenomenon, whose appearance is more akin to the random sprouting of mushrooms, than the generalised rising of yeast. However, the challenge has not yet been met: if university research generates public goods which are so widely accessible once created that the activity requires public subsidy, the activity should surely lead to across the board productivity increases, if only within specific sectors, but it does not.

And, incidentally, if productivity enhancing knowledge is a public good, perhaps the tax-payers of a smallish open economy like Canada would be better off not subsidizing its production, but free-riding on the efforts of others. This, moreover, is to say nothing of an awkward analytic result generated a little while ago by Philippe Aghion and Peter Howitt (1992)

to the effect that, if innovations cannot be instantaneously replicated by competitors, and if those who make them can capture for a while not just the benefits arising from their own advance, but also the profits that had been accruing to those using the previous “state of the art” technique, then market mechanisms might produce not too little technical progress, but too much of it relative to the resources devoted to bringing it about.

Now as with my doubts about the extent of university teaching’s potential to contribute to Canada’s success in the “knowledge economy” so it is with my skepticism about the productivity payoffs from research in science and technology: I would not deny that there is a potential for such pay-offs that can support a case for subsidizing such activities; but my point is that there are other arguments, at least as plausible, that point in the opposite direction, and that these are currently getting insufficient attention.

IV

Canada’s universities are hardly to be blamed for responding to the incentives presented to them by a changing political marketplace. At the very time that the provincial audience for their older arguments for public support has been losing its enthusiasm, the federal government has grown increasingly attentive to a new case, and one that just might, after all, be valid. But it is hard to avoid the conclusion that the universities are currently taking a gamble on over-selling themselves, and that serious losses are in prospect if their gamble fails.

The losses to which I am referring here go far beyond the simple damage that will be done among the general public to universities’ reputations should the productivity agenda produce disappointing results. They also involve changes that are taking place within universities as a consequence of their having signed on to that agenda which will be hard to reverse if they prove to have been for the worse. Universities are nowadays paying more attention to science and technology and less to what we must now learn to call the “humane sciences”, and also, within both areas, the emphasis has shifted towards applied research on practical problems whose pay-offs are likely to be reasonably sure, not to mention visible.

These tendencies are not simply a result of changes in the incentives associated with public support. The business sector is an increasingly important source of funding for universities, whether in the form of research contracts or donations. That sector has its own obvious interest in results-oriented research, and it also exerts influence through its lobbyists on governments’ expenditures at all levels. In some jurisdictions indeed, a corporatist agenda of public-private partnerships that impinges heavily on the universities has been actively adopted by government: Ontario’s Super-Build Program and its Research and Development Challenge Fund,

are two cases in point

The increasing attention paid to “inter-disciplinarity” not just among funding agencies, but also within universities, provides striking evidence of the above-mentioned shift of emphasis, and the universities’ response to it. Practical problems seldom respect the boundaries of academic subjects, and it should go without saying that research designed to have a relatively early payoff can also have considerable value. Co-operation among disciplines is often a vital to achieving such a pay-off, moreover, and there can be no harm in helping researchers to adopt the best means available to meet their ends. But Research Councils and universities now make inter-disciplinarity an end in itself, as John Polanyi, as quoted by John Chant and William Gibson (2002, p. 147) has pointed out, and in so doing, they also *ipso facto* privilege applied and policy oriented work over basic research.

We can be sure that their faculty and graduate students will respond to the incentives that they thereby have created, and that those who are particularly interested in basic research will consider making a move to other jurisdictions, to be replaced by those of a more practical bent. One does not have to take a position on whether basic discipline-based work has been over- or under-emphasised in the past to conclude that these current trends must be changing not just the balance of the research that gets done in universities, but also of the teaching. After all, universities are, or should be, places where the bulk of the teaching is done by researchers.

Other incentives inherent in current ways of financing universities also impinge with particular force on their teaching activities. Research in science and technology of the type that best meets the productivity agenda tends to be building and equipment intensive, and it is a platitude among university fund-raisers that it is easier to raise private money for new buildings than for other causes such as maintenance budgets. Even after recent changes in their rules, however, grants from the federal research councils do not fully cover the overheads of the projects they support, while certain public programs (eg. Ontario’s Super Build), not to mention some private donations, devoted to financing of new buildings and equipment, require that matching funds be provided by the university. Moreover, the ongoing provincial funding programs on which universities rely for their base budgets, those from which they are expected to meet their long-term commitments to provide laboratories and equipment as well as to pay the salaries of tenured and tenure track faculty and career members of support staff, are typically based on student numbers. Though they weight students by the academic level of their programs, they do not generally differentiate among disciplines, while the scope available to universities to set different fees for their programs based on the costs of providing them vary considerably across provinces and is severely limited in all of them.

The interactions here face universities with strong incentives to expand their activities in relatively expensive areas, even though the direct funding available is not sufficient to meet all

the cost of that expansion, and the key to understanding how this can be lies in their ability to support the expansion of activities that are attractive to government and other donors by internal subsidies drawn from surpluses in operating grants and tuition revenue generated elsewhere within the institutions. Such cross-subsidisation is, of course, a time-honoured practice. Twenty or thirty years ago, no-one expected that provincial government grants that were nominally attached to enrollments in arts and social science faculties would all be spent within those units. It was understood that medical schools and faculties of science and engineering, for example, had particular needs for equipment and supplies and that the overall levels of provincial grants had been set with this in mind. So long as the latter condition held, an untidy system of internally determined redistribution was workable and even desirable, which is why so well informed a commentator as Claude Montmarquette (2004) still regards it with some favour.

But provincial grants have long since ceased to be adequate, and the desires of governments and business donors to see expansion of expensive operations have simultaneously become more intense. That is why universities now face the temptation to abuse the mechanisms that permit the internal redistribution of funds by running courses, or even whole programs, not to meet academic goals but to generate revenue out of which other operations can be supported. Hard information on what is actually happening on this front are difficult to come by, but there is anecdotal evidence that such abuse is already taking place, particularly in the humane sciences, where the costs of providing instruction are, in any case low. Rubenstein and Clifton (2001), for example, suggest that some universities are turning a blind eye to falling academic standards in undergraduate programs in the humanities because of their desire for the revenue that these generate.

A little speculation with round numbers will, in any event, reveal the incentives nowadays faced by universities seeking to meet the need for matching funds, or to cover the overheads of research projects that are attractive in the political and business circles on which they rely for so much of their support. Suppose that the physical and administrative structure of a Faculty of Arts or Social Science is already in place, that it costs \$40,000 in direct outlay to staff one full course, and that five such courses make up a full student load. If the average class size is 50 students, and each student pays \$4,500 in tuition fees and brings in \$3,500 in government grants, then the mark-up on the marginal student is \$4,000 per annum. Readers may make their own calculations about the effects on this figure of, for example, (a) employing sessional instructors at a cost of about \$25,000 per course, (b) operating with average class sizes of 75 or 100, (d) accommodating more students by increasing the sizes of already existing classes, from, say, 50 to 100, or they may substitute their own assumptions. The point of this example is not to provide exact estimates of anything that might now be happening in any particular institution, but merely to illustrate the possibilities open to any one of them should it decide to turn one or more of its academic units into what is sometimes referred to as a “cash-cow”.

It is not conducive to the maintenance of academic standards in Canadian universities to expose their hard pressed administrators to such incentives, not least, it might be noted, because, when it comes to the matter of replacing established faculty with sessional instructors in the classroom, they invite a weakening of that essential characteristic of a university, namely that it be a place where researchers teach and teachers carry out research.

V

Accountability has become something of a buzz-word in Canadian universities, and the line of responsibility to which it seems to refer runs from faculty members and other employees, through administrators, to donors, bureaucrats and politicians. Politicians in turn, being elected to office, are presumed to represent the interests of the general public in this scheme of things. There is some logic to this approach. Donors are surely entitled to keep an eye on how their money is spent if they so wish, and a university which does not want to allow them such a privilege is always free to reject their gifts. Furthermore, if significant amounts of tax-payers' money are being used to support universities' teachers and researchers, then the case for making them answerable for their activities to the elected representatives of those tax-payers is surely iron-clad.

Even so, something important is all too often missing from current discussions of the accountability of universities, namely an acknowledgement of their direct responsibilities to their students for the quality of the instruction that they offer. Matters are in flux here at the moment, however, because tuition fees have been rising, and already constitute a significantly larger fraction of university budgets than they once did. Some programs indeed, often but not solely in professional schools, are already operating on what amounts to a full cost recovery process. The central theme of the foregoing discussion has been that universities seem to respond to the desires of those who provide them with the resources they need to operate, and if the importance of students in this respect is increasing, then they are likely to get more attention.

The continuation of the trend towards greater reliance on tuition income is eminently feasible because of the positive returns that accrue to recipients of university education. It would also be well worth encouraging because, as I have argued at some length elsewhere (Laidler 2002), it is in this trend that we seem to have the best chance of finding a meaningful counter-weight to the universities' excessive reliance on the business sector, and a government sector motivated by a productivity agenda. To be sure, students' decisions, based on their own information and desires, might in fact reveal that the doubts that I have expressed above about the desirability of the current balance of activities in universities, and of ongoing changes therein, are misplaced; but then again, they might not; and in either case we could have a great deal more confidence in the social desirability of the outcome than we do now.

To allow the fees of different programs to reflect the costs of providing them, and to have students themselves pay those fees - where they might get the wherewithal to do so is an issue I shall take up in a moment - would address many difficulties inherent in current arrangements, which have already been touched on. Such a system would draw for us the line between suitably qualified applicants and others. Those whose perceptions of the benefits likely to accrue to them from going to university were such that they were willing to pay the costs of going, would apply, and the others would not. And any individual university's own perception of any applicant's likelihood of success would determine who, among the applicants, got admitted. There would be no need for bureaucrats to engage in research in order to make decisions about these issues from the centre of the system.

Similar processes would also work to determine the allocation of students among disciplines within universities, and among discipline-based and inter-disciplinary programs too. There would no longer be any need for bureaucrats to worry about their ignorance of discrepancies between average and marginal returns to various programs as they made decisions about how many places to provide in them, nor would they then need to design measures to get those places filled. Those decisions would no longer be made centrally but by the interactions among individual students and university teachers and administrators, once more with students' own information and desires playing an important part in the process. To the extent that the outcomes here were in accord with currently held ideas about the likely pay-offs from the "productivity agenda" they would encourage the latter, and to the extent that they did not, they would inhibit its over-enthusiastic pursuit. In either case, it would be much harder to argue about the desirability of the outcome than it is under current circumstances.

A decision would also be likely to emerge from such a system about a matter that is often discussed, but about which those currently in charge seem unwilling to make up their minds: namely, whether Canada should seek to concentrate scarce academic talent in a few universities, and allow others to operate at lower standards, or whether to seek equality among all institutions. At the moment, no-one seems willing to make up their mind about this matter and we have a system in which, obvious differences notwithstanding, myths about the universality of high quality still persist, at least in the domain of political rhetoric. Such a state of affairs would not long survive in a framework in which the choices of well-informed students played a significant role in the allocation of resources within the country's university system.

But, of course, everything in the last few paragraphs hinges on the assumption that the students making the choices would be "well-informed". On this contentious point, I must confess to the economist's usual optimism about peoples' ability to seek out information and to use it wisely - when faced with the right incentives, it should go without saying. Even now, the amount of attention given to the information about Canada's universities provided by *Maclean's* survey

suggests that there is a great deal of interest in getting their decisions right among potential students. To judge from some recent anecdotal evidence, they are also acting on the data this survey provides to the point of inducing responses from universities, not all of them to their credit be it said. A system in which students paid more of the costs of their programs than they now do would create a demand for more and better information than is now available. It is hard to believe that the market would not provide it, and even harder to believe that such a state of affairs would not represent an improvement over the *status quo*. Would “cash-cow” courses and programs (if indeed they do exist under present circumstances) long survive the scrutiny of well informed full-fee-paying students?

Even so, the well known trouble with making universities rely on tuition fees for a substantial portion of their revenue is that, if undertaken in isolation, such a measure would not only limit access to them, but would do so in a socially divisive way as well: richer students would attend and poorer ones would not. Here, it is important to recall that this well known problem has complicated roots, not all of which lie in economic inequality. There is a well-understood gap in the capital market that arises from the fact that a loan taken now cannot be secured by offering a claim on the human capital it will be used to create should the borrower later default. And there are also well-understood solutions to this problem involving government intervention in the educational-loan market. If there were no more to the matter than this, there would be no case for making subsidies a part of any such intervention.

There is more to it, however. Though the pay-off from university education is undoubtedly high enough to make financing its acquisition through unsubsidized loans an attractive prospect *on average*, we also need to worry about what happens *on the margin*. The pay-off from this particular investment is risky for any individual, and in some instances, it does *ex post* fall below a value that would justify having undertaken it. This consideration suggests the desirability of an insurance market in this area, and the widely-held belief that those from poorer families are more averse to such risks than others adds greater weight to the case for providing such insurance by making the repayment of student loans income-contingent. But of course, wherever there is insurance, there arise questions about adverse selection and moral hazard. Beyond noting that income contingent loan schemes can come in many shapes and sizes, and that extremely careful attention be paid to the incentives implicit in the alternatives before a choice is made, space prevents me carrying discussion of this important matter any further.

Even the best of income contingent loan programs will still leave the children of richer families with easier access to university education than the children of poorer families. Of course, having better or worse access to all sorts of things is what being richer and poorer are all about in the first place, but in the case of university education this observation cannot be the end of the matter. Inequalities of income and wealth among agents may be tolerable to the extent that they reflect the outcomes of the efforts of the agents in question, but if such inequalities impinge upon

the educational choices of their children, they create distasteful inequalities of opportunity. That is why it may be desirable to supplement any program of loans whose repayment is contingent upon borrowers' *future* economic status with a program of grants that are contingent upon their *current* economic status. Here too, though, there are incentive effects to be considered that impinge on household labour supply and savings decisions, not to mention on the very process of household formation itself, that require much more discussion than space permits here.

VI

I remarked at the outset of this brief essay that there is still something to be said in favour of the old arguments for the public support of post-secondary education in general and universities in particular based on ideas of promoting equality among agents in their opportunities to participate fully in society. And to this I would add that an important aspect of that participation involves the promotion of constructive and critical thought about social and political issues. As I noted in Laidler (2002), the fact that economic analysis is not well adapted to discussing considerations such as these does not mean that they are of minor importance. Rather it means that there is much more at stake in the current debate about universities than economic matters. Accessibility, and the provision of funding to ensure that what is accessible is also socially worthwhile, are indeed important and need to be debated as the ethical and political issues that they are.

But universities use materially productive resources, and they create them as well, and for these reasons alone, economics must play a part in any debate about them. Economics is not useful only for discussing the material aspects of social issues, however. It also yields insights into the role played by the incentives that exist within any form of organisation in determining what outcomes, material and otherwise, it is likely to generate. This is the matter that I have tried to emphasise in this brief essay, and I hope that I have shown that it must be an important part - though only a part, nevertheless - of our ongoing debate about the future of our universities.

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