

Commentary on Ian D. Clark's "A new process for assessing and funding research performance in universities"¹

This brief commentary focuses on Ian Clark's "A new process for assessing and funding research performance in universities" submitted to the Ontario government in the July 2012 and revised in late November 2012. The commentary points to some fundamental flaws in the compilation and interpretation of the comparative data that was cited in the paper and highlights the importance of adhering to basic research conventions when engaging in comparative analysis.

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Over the past few years Dr. Clark has led a charge to transform higher education in Ontario arguing that the current system is unsustainable and targeting two factors as the main culprits; system structure (too little differentiation), and faculty workload (too much research and not enough teaching). His solution - a more differentiated system with differentiated funding. I have commented on Clark's work in the past<sup>2</sup> noting that it tends to be long on assertions and short on facts. Accordingly, it is noteworthy that in this more recent paper he marshals some facts from the State of California to support his general argument. The problem is the analysis ignores differences in reporting conventions and the resulting 'apples to oranges' comparisons result in erroneous conclusions. Let me explain.

"A new process..." argues, once again, for greater differentiation. To make the case Clark refers to the public university systems in California and, based on his arithmetic, argues that "California gets substantially more teaching value per dollar than Ontario". He then goes on to suggest that, again based on his arithmetic, California gets much more research value per dollar than Ontario.

There are fundamental shortcomings with the paper:

- First, the submission suggests that the size of the public university system in California is similar to Ontario's and, therefore, infers a level of comparability that is actually very misleading; and
- Second, the main argument is based on a serious misinterpretation of data that ignores major differences in faculty reporting conventions between higher education in Ontario and California.

The following few pages will address each of the shortcomings. **Page 7 highlights the specific points in the California-Ontario comparison table that reflect major differences in reporting conventions.**

<sup>1</sup> [http://ww2.publicpolicy.utoronto.ca/FacultyandContacts/IanClarkWebPageatUofT/Documents/California-Ontario\\_University\\_Productivity\\_Comparisons\\_-\\_Section\\_2\\_of\\_New\\_Process\\_Submission.pdf](http://ww2.publicpolicy.utoronto.ca/FacultyandContacts/IanClarkWebPageatUofT/Documents/California-Ontario_University_Productivity_Comparisons_-_Section_2_of_New_Process_Submission.pdf)

<sup>2</sup> <http://www.snowdonandassociates.ca/Academic%20Transformation.doc>

## 1. California is different

The three tiered *public* California System includes the University of California (UC) system, California State University (CSU) system, and the California Community College (CCC) system. California also has a significant private non-profit university sector (e.g., Stanford, CalTech, and University of Southern California) that accounts for about 30% of all 4 year university enrolment. With respect to the public post-secondary systems the UC and CSU, combined, are reserved for the top one-third of California high school graduates with UC focused on admitting the top one-eighth (12.5%). The remaining 65%-70% of students in the public post-secondary system are in the California Community College system and there are arrangements for some CCC students to transfer to CSU or UC contingent on meeting admission standards. For reference, the graduation rate in the UC system appears to be similar to Ontario universities (~80%). The graduation rate for the CSU system appears to be less than 50% as is the graduation rate for the CCC system.<sup>3</sup> Ontario's Colleges have a graduation rate of about 65%.<sup>4</sup>

Turning to research the critical point to note is that the university research enterprise in the United States, in general, is funded in a completely different way than in Ontario. In Ontario sponsored research is necessarily subsidized by the operating fund because federal (and provincial) research funding generally does not cover the salary costs of the principal investigator and only covers a portion of the estimated administrative /infrastructure or overhead costs – often referred to as indirect costs. In the United States sponsored research funds the costs of the principal investigator while s/he is working on the research project and covers the full indirect costs – with the actual calculation applied to a broader expenditure base than in Ontario. Moreover, in the case of the University of California, there are special arrangements regarding the operation of Federal laboratories that impact on UC's research numbers – personnel, budget and performance.<sup>5</sup> The University of California is clearly a research powerhouse and there are many factors that influence its research success – including the fact, as acknowledged in the paper, that the overall level of grant and tuition operating funding is 2/3 higher. The major differentiator, however, is that in the United States the true costs of research are funded by the sponsoring agency – whether that be the federal or state government.

Finally it is important to note that in the case of UC it operates its own health science centers including hospitals and clinics as part of its operation. Unlike Canadian universities where *formal* reporting tends to exclude large numbers of clinical faculty, such faculty are included as part of the UC personnel counts.

The preceding overview illustrates some basic differences between higher education in Ontario and California - differences that need to be considered when attempting to construct a meaningful comparison. In terms of fundamentals the paper appears to have ignored or discounted the importance of peer comparison. And the focus on inputs ignores some basic 'output' information about graduation rates that are clearly of importance. The California 'systems' are fundamentally different than Ontario's and that reality has implications for data collection and analysis.

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<sup>3</sup> <http://www.cpec.ca.gov/StudentData/GradRates.asp>

<sup>4</sup> [http://www.collegesontario.org/outcomes/key-performance-indicators/2011\\_KPI\\_English.pdf](http://www.collegesontario.org/outcomes/key-performance-indicators/2011_KPI_English.pdf)

<sup>5</sup> <http://www.ucop.edu/uer/fed/partnerships.html>

## 2. 'Apples to Oranges' – differences in reporting conventions

A brief review of the financial and faculty data presented in the paper resulted in the identification of comparability issues that have a major impact on the subsequent analysis – especially with respect to faculty counts. For the most part the *revenue* data appears reasonably comparable because the simplified comparison focuses on state / provincial operating grants and fees. In the case of UC the numbers cited in the paper indicate that state grants and fees are about \$9000 **higher** per student (2/3 higher) than the Ontario average. With respect to CSU the revenue information suggests the funding is about 10% lower than the Ontario average. Combined, the UC and CSU 'systems' have about **22% more** grant and tuition funding per student than Ontario universities.<sup>6</sup> The conclusion drawn from the initial financial analysis presented in the paper is that public universities in California are funded at a level **22% higher** than universities in Ontario. So let's be clear - if Ontario's universities were funded at California levels the funding would be higher by over **\$1 billion annually**. (Although not mentioned in the paper 65%-70% of the PSE enrolment in California is actually in the CCC where funding per student is approximately ~\$3,500 less than in Ontario Colleges – or roughly 40% lower.<sup>7</sup>)

Having determined that California's funding is considerably better than Ontario's (at least with respect to universities) Clark sets out to demonstrate that California's "bigger buck" gets a "bigger bang" in teaching and research. It is this part of the analysis where the second fundamental shortcoming emerges; there are serious errors in the faculty numbers that are the focus of the comparison. Moreover, those errors are then subsequently compounded by the use of incorrect expenditure data related to academic salary expenditures.

University financial data and staffing data tends to be relatively complex because the institutions themselves are complex entities with multiple mandates (teaching, research, service). And there are many examples where reporting conventions for students, faculty, staff, and financial information differ by institution within a province (state) and differ by province (state) across the country. Inter-jurisdictional comparisons are fraught with pitfalls and require careful construction to ensure that data is comparable – or at least reasonably comparable.

In compiling numbers on faculty, the paper makes a distinction between full-time tenure track and non-tenure track faculty with the latter designated as "teaching stream" faculty. Rather than use Statistics Canada data for the Ontario figures, the author uses a hybrid approach apparently drawing his estimate of full-time Ontario faculty from Statistics Canada (via HEQCO) but then drawing his estimate of teaching stream faculty from a separate Higher Education Quality Council of Ontario (HEQCO) research report. There are at least four problems with the approach.

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<sup>6</sup> In the United States it is not uncommon to have major swings in state grant levels depending on the state's financial circumstances. Clark uses 2011 for his California data which reflects a significant (-20% to -25%) decrease in state appropriations from the previous year. Both UC and CSU were able to recoup some of the loss in grants through increased tuition, but the point is the California financial data for 2011 may represent a bit of an anomaly from previous years.

<sup>7</sup> See, Presentation to the Board of Governors California Community Colleges, September 12, 2011 by Dan Troy, Vice Chancellor, College Finance and Facilities Planning and Patrick Perry, Vice Chancellor, Technology, Research and Information Systems <http://californiacommunitycolleges.cccco.edu/Portals/0/DocDownloads/2011BOGSlideshow/Sept%202011%20Presentation%20to%20the%20Board.pdf>

- First, the methodology assumes all full-time ranked faculty (Full, Associate and Assistant professors) are tenure-track; that is not correct. For example, some faculty members carry the rank of Full, Associate or Assistant but have special non-renewable appointments.
- Second, the methodology assumes that all faculty reported to Statistics Canada are, in fact, in provincially assisted universities. In fact the faculty numbers include other institutions such as the Royal Military College and Redeemer University College. Enrolments from those institutions are not included in the analysis.
- Third, the HEQCO report referenced in the paper provides an estimate of 535 teaching stream faculty based on survey responses from 7 universities. Ontario has more than 7 universities. A cursory glance at Statistics Canada faculty data for Ontario indicates over 1100 'Other Ranks Combined' faculty that represent full-time Lecturers and Instructors who, are generally considered as "teaching stream faculty". And, Statistics Canada reports over 2000 full-time non-tenure track faculty in its compilation of Ontario full-time faculty numbers.<sup>8</sup> It is clear that the data cited by Clark does not reflect reality – a fact that has been pointed out to Dr. Clark.
- Fourth, the methodology assumes that the reporting conventions for full-time faculty in Ontario are the same as the reporting conventions in the California university systems. The following detail points to the problem with that assumption.

While the under-reporting of teaching-stream faculty in Ontario is clearly an error, it is overshadowed by a much more serious problem of data interpretation that leads to the over-reporting of teaching-stream faculty in the UC system. The figure for UC looked anomalous and led to a more detailed review that resulted in the identification of an 'apples to oranges' comparison. Essentially, the categorization of faculty appointments in UC is quite different than in Ontario – especially with respect to faculty in the health sciences. The fact is over 90% of the California faculty members assigned to the teaching stream category are in the health sciences and many are actually clinical faculty.<sup>9</sup> The Ontario data used in the comparison (Statistics Canada) is simply not comparable because of quite different reporting conventions and does not reflect large numbers of clinicians involved in the health sciences in Ontario. For the record it should be pointed out that even within Canada there is no common agreement on how to categorize and count clinical faculty.<sup>10</sup> Therefore it should come as no surprise there are differences in reporting methodologies between Ontario and another jurisdiction.

The data interpretation error is pivotal because – as part of the attempt to construct a measure of 'Relative Teaching Load' – Clark assigns a much higher teaching 'weight' to teaching stream faculty in his calculations. In fact a major part of the argument about 'bang for the buck' relative to Ontario hinges on the supposed presence of relatively large numbers of teaching stream faculty in the UC system – which is simply incorrect. By ignoring some research fundamentals the subsequent analysis is then subject to the old axiom – "garbage in, garbage out."

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<sup>8</sup> CAUT, *Almanac of Post-Secondary Education 2012-13*, Table 2.13 (data from Statistics Canada)

<sup>9</sup> <http://regents.universityofcalifornia.edu/regmeet/jan11/j1.pdf> See Figures 6A and 6B

<sup>10</sup> The Association of Faculties of Medicine of Canada, *Canadian Medical Education Statistics, 2011*. See p.87 for the different definitions of full-time faculty.

There are other points in the paper that deserve comment.

- Due to the under-reporting of teaching stream faculty in Ontario, the number of Ontario “tenure-track” faculty is actually over-reported. If one adjusts the number to reflect reality and re-calculates a student-to-faculty ratio the Ontario figure is very similar to the California UC and CSU combined figure.
- Clark also argues that the semesters in California are longer and he attempts to factor the difference in the length of the terms into his calculations. A check of this point revealed that most of the UC universities<sup>11</sup> use a quarter system as do some of the CSU institutions. The adoption of a quarter system or semester system has a major impact on teaching loads and the actual amount of faculty classroom time.<sup>12</sup> The author’s assertion simply does not stand up in the face of the evidence.
- The logic and arithmetic in the calculation of ‘Relative Teaching Load’ is somewhat confusing and appears to be entirely dependent on three data points: the incorrect faculty numbers noted earlier; the author’s own simplistic set of ‘teaching weights’; and the author’s own rather convoluted calculation of academic salary expenditures that seem to bear little resemblance to expenditure information in Ontario or UC.<sup>13</sup>

So let’s be clear. There are a few facts about California public universities that seem evident. The California UC and CSU systems *are different* than Ontario’s university system. California funding per student (UC and CSU combined) is considerably higher – over \$1 billion annually. The graduation rates at UC are similar to Ontario’s but considerably lower at CSU. On the research front, the UC system is an acknowledged research powerhouse and – according to a soon to be released HEQCO report – apparently Ontario compares very well with other jurisdictions in Canada. **Just think if Ontario’s universities had a \$1 billion more in operating funding! And imagine if sponsored research was funded properly in this country!**

For the past few years Clark and his colleagues have been very successful at ‘spinning’ a story about too little teaching and too much research into an argument for greater differentiation. Greater differentiation – it is argued – is more efficient and therefore less expensive and therefore more sustainable. The fact is they have provided little evidence to support their case and, as illustrated by the California example, when evidence is provided the one indisputable fact is that it is clearly not less expensive on a per student basis.

**Is it better?** Well, it appears graduation rates are not better. And it appears that access to *university* is more limited. And it appears UC tuition is higher and CSU tuition is similar. But I am the first to acknowledge that the answer to that question needs to be based on concrete evidence and more research needs to be done – a role, perhaps, for HEQCO. And at the same time HEQCO could also examine why funding levels for Ontario’s colleges appear to be quite a bit higher than funding levels for California Community Colleges.

In the meantime, I hope this very brief commentary provides a bit of a pause and makes decision-makers, analysts, and researchers think very hard about the validity of the

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<sup>11</sup> [http://en.wikipedia.org/wiki/University\\_of\\_California](http://en.wikipedia.org/wiki/University_of_California)

<sup>12</sup> See University of California, FACULTY INSTRUCTIONAL ACTIVITIES, Annual Report to the Legislature February 2007. p.21

<sup>13</sup> There has been no attempt to check the CSU figures.

arguments regarding greater differentiation. While adopting a more prescriptive approach to system planning is clearly an option – as argued by Clark and his colleagues – one hopes that the assessment of such an option is based on evidence and not just opinion. Of course one could also make a strong argument that over the past fifty years Ontario's **competitive / collaborative model** has been extraordinarily successful in meeting Ontario's needs.

Let me conclude by saying that it is unfortunate that the serious matter of Ontario's research funding has taken a back seat to a commentary about 'apples and oranges' and the problems of inter-jurisdictional comparisons. The Drummond Commission noted that attention must be paid to the real costs of research and innovation. The innovation agenda is critical to Ontario's future and it deserves to be funded accordingly; it should not be funded at the expense of undergraduate education. There are a variety of mechanisms that could be employed to address that challenge but whatever mechanism is chosen it must be based on a realistic assessment of costs and allocated in a fashion that recognizes – first and foremost – quality and excellence.

### **Note to readers**

This commentary is based on a very brief review of data and information from the State of California, the UC, CSU and CCC systems and Ontario universities. I do not claim to have checked each and every number or calculation in Dr. Clark's paper, nor do I claim to have expert knowledge of the California 'system' or in-depth knowledge about the various reporting conventions in California higher education.

It is important to note, however, that the State of California and the public higher education systems in California do produce considerable amounts of data and analytical reports. In addition to the references cited in the preceding commentary the following websites may be of interest.

The University of California  
<http://www.universityofcalifornia.edu/>

The California State University  
<http://www.calstate.edu/>

The California Community Colleges Chancellor's Office  
<http://www.cccco.edu/>

California Postsecondary Education Commission  
<http://www.cpec.ca.gov/>

**It should also be noted that I have not tried to reproduce Dr. Clark's analysis with "corrected data" because the basic methodology ignores the very complexities that must be taken into consideration in such comparative analyses. Moreover, while I believe some of the more obvious comparability errors have been identified in the commentary, it is reasonably clear to me that there are likely other factors that have, as yet, not been identified. For example, as noted in the commentary, I have spent no time examining the numbers or reporting conventions in the CSU system. Dr. Clark was provided with an earlier version of this commentary and has acknowledged the UC faculty number error in his revised paper.**

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**Title page and Exhibit 1 from Ian D. Clark's paper.**

[http://ww2.publicpolicy.utoronto.ca/FacultyandContacts/IanClarkWebPageatUofT/Documents/California-Ontario\\_University\\_Productivity\\_Comparisons - Section 2 of New Process Submission.pdf](http://ww2.publicpolicy.utoronto.ca/FacultyandContacts/IanClarkWebPageatUofT/Documents/California-Ontario_University_Productivity_Comparisons_-_Section_2_of_New_Process_Submission.pdf)

**CALIFORNIA-ONTARIO UNIVERSITY PRODUCTIVITY COMPARISONS**  
**Section 2 of**

**A new process for assessing and funding research performance in universities:**  
 How research contribution units could be calculated using on-line resources

A submission to the Ministry of Training, Colleges and Universities  
 in response to the invitation in the paper  
*Strengthening Ontario's Centres of Creativity, Innovation and Knowledge*

Exhibit 1 is from the original paper. The UC teaching stream figure was revised in the late November update after receipt of an earlier version of my commentary.

Exhibit 1. Ontario - California Comparators (see Notes in separate box)

|                                                    |       | Ontario   |        | California |        | Ratio   |
|----------------------------------------------------|-------|-----------|--------|------------|--------|---------|
|                                                    |       | (2010-11) |        | (2011-12)  |        | Cal/Ont |
|                                                    | Notes | UC        | CSU    | UC+CSU     |        |         |
| FTE Students (thousands)                           | 1     | 434       | 238    | 332        | 570    | 1.31    |
| Provincial or State Grant (\$millions)             | 2     | 3,347     | 2,374  | 2,103      | 4,477  | 1.34    |
| Grant per Student (\$)                             |       | 7,703     | 9,983  | 6,339      | 7,861  | 1.02    |
| Tuition & Fees (\$millions)                        | 3     | 2,461     | 2,925  | 1,871      | 4,796  | 1.95    |
| Tuition & Fees per Student (\$)                    |       | 5,665     | 12,300 | 5,642      | 8,422  | 1.49    |
| Grant, Tuition & Fees (\$millions)                 |       | 5,808     | 5,299  | 3,974      | 9,273  | 1.60    |
| Grant, Tuition & Fees per Student (\$)             |       | 13,368    | 22,282 | 11,981     | 16,282 | 1.22    |
| Full-time Tenure-track Faculty                     | 4     | 14,935    | 8,452  | 9,502      | 17,954 | 1.20    |
| Full-time Teaching-stream Faculty                  | 5     | 535       | 5,777  | 1,827      | 7,604  | 14.2    |
| Full-time Faculty                                  |       | 15,470    | 14,229 | 11,329     | 25,558 | 1.65    |
| Students / Full-time Tenure-track Faculty          |       | 29.1      | 28.1   | 34.9       | 31.7   | 1.09    |
| Students / Full-time Faculty                       |       | 28.1      | 16.7   | 29.3       | 22.3   | 0.79    |
| Relative Teaching Load for Full-time Faculty       | 6     | 1.00      | 1.41   | 1.58       | 1.48   | 1.43    |
| Relative Teaching by Full-time Faculty per Student |       | 1.00      | 2.28   | 1.47       | 1.81   | 1.81    |
| Semester-adjusted FTF Teaching per Student         | 7     | 1.00      | 2.69   | 2.69       | 2.08   | 2.08    |
| Tenure-track Faculty Salary (\$millions)           | 8     | 2,134     | 1,212  | 944        | 2,157  | 1.01    |
| Average Tenure-track Faculty Salary (\$thousands)  |       | 121       | 122    | 84         | 102    | 0.84    |
| Tenure-Track Salary / Academic Salary              | 9     | 0.71      | 0.57   | 0.56       | 0.57   | 0.80    |
| Tenure-track Salary / Grant, Tuition & Fees        |       | 0.37      | 0.23   | 0.24       | 0.24   | 0.63    |
| Cost of Available Time on Research (\$millions)    | 10    | 854       | 485    | 189        | 674    | 0.79    |
| Cost of Available Time on Research / Students (\$) |       | 1,965     | 2,039  | 569        | 1,183  | 0.60    |