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TECHNICAL REPORT

Health Research Evaluation Frameworks

An International Comparison

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Prepared for the Canadian Academy of Health Sciences and as part of RAND Europe's Health Research System Observatory series, funded by the UK Department of Health

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Executive Summary

The creation of new knowledge and its translation into innovation does not occur overnight. The underlying processes are complex and characterized by challenges revolving around (among other things) the ability to appropriate the returns to investment in research and asymmetric information (e.g. between researchers and research funders).

It is often argued that, as a consequence, there is a role for public policy with regard to supporting research and its translation into innovation.[2] Moreover, there is an increasingly prevalent view that evaluation can play a crucial role in this context.[3] It can: help to overcome problems of "asymmetric information"; provide a better understanding of results flowing from policy interventions; allow learning from past experiences; and provide elements for improving strategy definition.

More specifically, in this report we identify and discuss four rationales for research evaluation. We argue that research evaluation (if well designed and implemented) provides the ability to: 1) hold researchers, funding bodies and/or policy-makers better accountable for their action; 2) "steer" research (into a desired direction); 3) "signal" ability (on the part of researchers, for example to show that they are worth funding); and 4) provide input into the research management process (helping to improve strategy definition etc).

The main part of the report is based upon, and compares, eight international research evaluation frameworks in use: the Leiden University Medical Center (LUMC) framework; MORIA; PART; the Vinnova; Payback and UK Department of Innovation Universities and Skills (DIUS) frameworks and the frameworks of the European Union and the Congressionally Directed Medical Research Programs. The frameworks were identified on the basis of desk research and chosen in discussion with the Chair of the CAHS Panel.[4]

On the basis of these frameworks, in a first step, we identify and discuss five key elements of research evaluation frameworks:

- Evaluation objectives, which flow from the four rationales of evaluation outlined above: accountability; "steering"; signalling; and advocacy;
- Outcome measures, ranging from output measures, comprising the goods and services directly produced to impact measures, capturing the long-term changes research brings about;
- Levels of aggregation, which may be low (in case of an individual researcher, for example), intermediate (in case of a faculty or research programme) or high (when a whole research discipline is evaluated);
- Timing, which can be cross-sectional (if an evaluator is interested in the outcomes of one piece of research) or longitudinal (if the evaluator is interested in the outcomes from a re-

[2] Fahrenkrog, G. et al (2002): *RTD Evaluation Tool Box – Assessing the Socio-Economic Impact of RTD – Policy*; IPTS Technical Report Series.

[3] Boehkolt, P. (2002): *Innovation Policy and Sustainable Development: Can Innovation Incentives make a difference?*; IWT Observatory

[4] Other frameworks can be found in Hanney et al. (2007): *An Assessment of the Impact of the NHS Health Technology Assessment Programme*; Health Technology Assessment; 11(53)

search group over a certain period of time, for example, rather than a particular piece of research); and

- Evaluation methods, comprising statistical data analyses, modelling methods (such as microeconometric modelling) and qualitative and semi-quantitative methods (such as interviews and case studies).

Comparing the evaluation frameworks we studied along these five key elements we find that the frameworks differ significantly: The payback framework, for example, has an accountability objective, output measures, a low level of aggregation, a short (longitudinal) time frame and is based on a handful of qualitative and semi-quantitative methods. The DIUS framework, on the other hand, has a "learning" objective, impact measures, a high level of aggregation, a cross-sectional time frame and a whole plethora of evaluation methods it draws upon.

In a next step, we look at the interdependencies of these key elements. We examine to what extent an evaluator or policy maker faces trade-offs between the choices he or she makes with regard to different key elements. That is, we look if the choice of an accountability objective for example has any bearing on the choice of an outcome measure. This question is highly relevant from an evaluator's and/or policy-maker's perspective, because (if such a trade-off exists), this suggests that there are better (and worse) combinations of key elements and that a careful (rather than ad hoc) examination of the choice of these elements is crucial.

We suggest that, from a theoretical perspective, it is likely that such trade-offs exist. In addition, we use correlation diagrammes (based on the frameworks studied) to further explore these tade-offs. The small sample size of eight frameworks does not allow us to come to a definitive answer. Yet, we find some evidence in the direction that trade-offs exist:

- Accountability and advocacy objectives, we find, tend to be associated with "upstream measures" (i.e. outputs/outcomes), whereas "steering" and "learning" objectives tend to be associated with "downstream measures" (i.e. outcomes/impacts).
- Upstream measures, in turn, we find, tend to be associated with low levels of aggregation, whereas downstream measures tend to be associated with high levels of aggregation.
- Similarly, upstream measures tend to be associated with shorter evaluation intervals (in case of longitudinal evaluations), whereas downstream measures with longer intervals.
- Low levels of aggregation, we find, tend to be associated with fewer evaluation methods, whereas high levels with more methods.

From this a second conclusion follows: trade-offs in the choice of key elements of evaluation frameworks are likely to exist. As a consequence, key elements should be chosen very carefully – taking into account that elements which appear appropriate in isolation need not be a good choice when combined with other key elements.

In particular, the choice of an evaluation objective, we find, is immensely important. It, directly or indirectly, influences the appropriateness of all other key elements.

Further empirical research is required, however, to base this conclusion on a more robust basis.