

Research and Development (R&D)

Regarding the provisional recommendation to capitalise R&D, we find that this is a fundamental change to the system, and with the unresolved problems of theoretical, methodological and empirical nature that have been identified in the updating process it is clearly outside the scope of this update. We see the issue of R&D as just one single element of the much broader question of the treatment of intellectual capital and the knowledge-based economy in general. The ongoing international discussion of these items, both in terms of their relevance for economic growth and the measurement of productivity is inconclusive, and recently the *Seminar on Creation, Recognition and Valuation of Intellectual Assets* held by the UNSD in New York 13-14 July 2006, illustrated the range of unresolved conceptual problems and weakness of data sources. Similarly, the background document to the *Joint Meeting of the Canberra II Group and NESTI [National Experts on Science and technology Indicators] – Capitalisation of R&D* in Berlin, May 31-June 1, 2006 points to the range of the unresolved problems. It is noticeable that both these meetings took place after the provisional recommendation on capitalisation of R&D was made in July 2005.

Although many countries do collect data on R&D expenditures according to the guidelines in the *Frascati Manual*, it is recognized by the OECD that the results have major shortcomings concerning comparability over time, between industries and between countries. The reference to the existing OECD data as a proof that the data problem can be solved is premature. Thus, the OECD finds that the data reported by the individual countries have serious quality problems, and consist of fragmented series that “may have large discontinuities, making international comparisons impossible”. Against this background the OECD only uses the reported official data as input into a data model that on a number of assumptions produce an estimated data set (ANBERD), which may differ significantly from the reported data (Source: *Research and development expenditure in industry, 2004 edition, OECD 2005*). These problems are confirmed by our knowledge of our national R&D figures (compiled by an independent research institute). In order to have an empirical basis for our position on this issue, Statistics Denmark has just completed a satellite system for R&D for the years 1990-2002, following the provisional recommendation of AEG¹.

We believe that existing data on R&D expenditures are basically only *indicators* related to scientific and technological developments, and as such not absolute measures fit for introduction into the national accounts. For example, an examination of Danish R&D expenditure data has revealed that as much as one third of the reported expenditures are closer related to the current operations of the enterprises than to the creation of future income. In addition there are major conceptual and empirical measurement problems related to both output values and capital stock values, and the choice of imputation methods and other assumptions become decisive for the levels of these values that have no observable counterpart in the real world. It will for example be completely arbitrary how much of the current capital services from existing R&D capital should be assumed to enter into the cost-determined output value of R&D.

It is remarkable that the present discussion of R&D has been resumed on the premises of the discussion that took place 20 years ago in connection with the 1993 SNA (and which can be found very well documented on the UNSD SNA web site). Major new developments in the

¹ *Nationalregnskabsmæssigt satellitregnskab for forskning og udvikling 1990-2002* (With an English Summary). Available on Statistics Denmark’s web site www.dst.dk later this month.

knowledge economy in the meantime do not play any role, and new concepts, such as innovation expenditures other than R&D, are not explicitly dealt with (the first edition of the *Oslo Manual* on innovation data was published in 1992). In the case of Denmark, it has been found that this type of innovation expenditures is of the same magnitude as the reported R&D expenditures.

Some have argued that the national accounts would lose *relevance* if R&D were not to be capitalised. We find this argument difficult to follow. Firstly, if this were in fact the case, this shortcoming has obviously existed throughout the 50-year period, where national accounting has gained huge influence. Secondly, capitalisation of R&D, as now suggested, would not make national accounts a sufficient R&D data source for productivity analysis. Analytical users would still have to rely on supplementary data or satellite system for their R&D studies, and would probably prefer not to be limited by the assumptions and imputations made on R&D output and capital in the national accounts.

The by now rather obvious failure by the large majority of countries in implementing the 1993 SNA recommendation on own-account production of software should be seen as an indication of the major conceptual and practical problems related to obtaining expenditures by purpose.

We have also noted that those who, in principle, support the capitalisation of R&D have not come to any agreement about the treatment of (or even the definition of) “free” R&D. Considering the extent of government participation in R&D in many countries, these differences cannot be seen as trivial, as it now seems to be the position taken in the provisional recommendation.

The fundamental change implied by capitalisation of R&D is also illustrated by the fact that in practice it would *hardly be feasible to compile long back series*, as the implementation of this change depends on new or improved statistics that do not yet exist, and cannot be carried back in time more than perhaps 5 or 10 years. Even though the first version of the *Frascati Manual* appeared in 1963, R&D data for individual countries are, in general, only available (if at all) for a much shorter period. Consequently this change would imply a permanent break in the time series. The nature of the proposed change is, therefore, more fundamental than, for example, the distribution of FISIM or capitalisation of mineral exploration, where source data were largely available back in time. Also this aspect speaks in favour of postponing any decisions on possible changes to the core accounts, until a much broader and consistent approach related to the knowledge economy and intellectual assets has been fully investigated and shown to be empirically feasible – and in that case most probably resulting in a fundamentally different system of national accounts where, for example, the net aggregates will be the central concepts. But such a system cannot be introduced step-wise.