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Measuring International Transfers of Intellectual Property Products in the Netherlands: Contribution to Chapter 3¹

Prepared by Statistics Netherlands

1. Introduction

1. This short note includes a few examples of data limitations of measuring international IPP flows, in particular those related to R&D, in the Netherlands. In addition it provides some suggestions of how these data constraints may be overcome. The situation in the Netherlands may not always be comparable to that of other countries. Differences may involve the types, and designs, of surveys available and used, but may also relate to the typical kinds of global production and related R&D activities taking place in the domestic economy.

2. There are various reasons why international IPP flows are so difficult to capture in hard boiled statistics. Many of these are summed up in section 3.2 of the chapter 3 on 'Recording IPP's in global production chains'. All these reasons relate one way or another to the intangible nature of IPP's which makes it possible to exchange IPP's to any particular place in the world by one simple push on a button of a computer keyboard. This may give rise to the following events:

- IPP's may be exchanged between the affiliates of one multinational without countervailing money transactions, which complicates the measurement of intra-company IPP transfers and determining the location of IPP ownership;
- Legal ownership of IPP's may be handed over to artificial units with the purpose of reallocating a company's revenues to low profit tax areas;
- Product design and its manufacturing may be carried out in separate entities situated on different locations, and this may give rise to outsourcing of physical production to low wage

¹ This contribution could either be presented as a case study, reflecting the situation of the Netherlands, or as a general discussion on (R&D related) data sources, data constraints and possible shortcuts. When used as a general discussion, the scope of this discussion may be broadened to reflect the data situation of a wider range of countries.

countries while directing in-house activities towards research, product development, marketing, logistics etc. which are generally knowledge and IPP intensive.

3. Usually the recording of IPP flows inside global production arrangements requires that these arrangements are reasonably well understood. A mapping of possible IPP user-provider relationships can be found in section 3.3 of chapter 3. A lack of understanding may easily lead to a misinterpretation of survey results.

4. One advantage of the Dutch situation is that business related R&D activities are concentrated in a limited number of large multinational enterprises. Eight multinationals represent together about 45% of all business expenditure on R&D (BERD). But even for this limited number of companies, quite a number of uncertainties remain about ownership issues and intra-company R&D services flows.

5. The next section provides an overview of two data sources available in the Netherlands for measuring R&D imports and exports. The third section contains a number of suggestions on how to overcome data deficiencies, however, without providing definitive answers to all measurement challenges.

2. Key data sources

2.1 R&D surveys

6. The OECD (2010) Handbook on Deriving Capital Measures of Intellectual Property Products indicates that the recording of research and experimental development services as gross fixed capital formation in the national accounts should be defined as in the Frascati Manual. The product classification in BPM6 seems to deviate from this definition. Par. 10.148 in BPM6 explains that “the definition of research and development services used here and in the CPC is wider than the Frascati definition (which is used to define the scope of capital formation in the 2008 SNA); it includes other product development that may give rise to patents.” This may give rise to discrepancies between the national accounts and balance of payments.

7. The Frascati Manual provides the international recommendations for collecting R&D statistics. Logically, the Frascati based survey is in many countries the most important data source for:

- a. Determining R&D output;
- b. Determining gross fixed capital formation of R&D.

8. The OECD Handbook explains how the intramural expenditures on R&D, as defined in the Frascati Manual, can be translated to R&D output in the national accounts. Estimating R&D output is relatively straightforward (in contrast to gross capital formation), given the availability of robust R&D survey results.

9. Assuming that final consumption of R&D is negligible, the linkage between (a) and (b) largely represents the R&D balance of trade. For the reasons mentioned above, the measurement of international R&D services flows is much less straightforward. Recommendation 17 of the OECD Handbook indicates that in situations in which the rights to benefit from R&D are not clearly assigned, the owner is deemed to be the producer of R&D on own account. Particularly, within global production chains arrangements, this recommendation may lead to unsatisfactory outcomes in the national accounts as the R&D asset remains basically disconnected from those production activities to which this knowledge capital is expected to contribute.

10. Turning back to these eight largest R&D performers in the Netherlands, it appears that most of them are affiliated to multinational enterprises with large parts of their worldwide R&D activities concentrated in the Netherlands. This suggests that these Dutch entities would report substantial amounts of export of R&D services, particularly to their foreign affiliates. Otherwise, it is unlikely that this entire R&D contributes to innovation activities in the domestic economy of the Netherlands.

11. R&D survey results may include information on funding of gross expenditure on R&D from the rest of the world. Similarly, these surveys may also provide information on funding by domestic companies of R&D carried out in the rest of the world. Although part of this funding may include actual sales and purchases of R&D, it is important to highlight that these funding flows may also include income transfers such as donations or subsidies. For national accounting purposes, it is highly recommendable to split up these survey questions on international R&D funding between actual sales and purchases of newly produced R&D versus other kinds of transactions (e.g. income transfers).

12. When the actual sales to the rest of the world, and purchases of R&D from the rest of the world, can be separated from other types of funding, the R&D survey may provide a coherent macroeconomic picture of R&D supply (domestic output + purchases abroad) and R&D use (gross fixed capital formation + sales abroad). Please be aware that the obtained supply-use picture primarily reflects newly created R&D. Services obtained from existing R&D assets, such as licences to use, are not reflected in this overview. These flows may be obtained from other sources such as the international trade in services statistics. BPM6 classifies these transactions separately as charges for the use of intellectual property.

13. Surprisingly, in the Dutch R&D survey the eight largest R&D producers report very limited amounts of funding received from the rest of the world (i.e. R&D sold to the rest of the world). Given that some of these payments may represent actual sales of R& services, this outcome seems to contrast the hypothesis that at least some parts of R&D carried out by these companies should serve the R&D needs of foreign affiliates. However, it is also possible that the Dutch R&D producers are compensated by their foreign subsidiaries by way of royalty payments which remain unobserved in the R&D surveys. This would indicate that the economic ownership indeed remains in the hands of the producer.

14. In order to obtain a better understanding of intra-company R&D funding, open interviews were held with the R&D managers of five multinational companies (representing almost one third of the R&D business expenditure in the Netherlands). The interviews clearly showed that internal funding mechanisms may differ considerably between companies. Internal R&D funding flows do not always correspond one-to-one to actual R&D use (or obtained benefits from R&D). Although multinational enterprises are generally able to breakdown their R&D activities at the national level, they often are not capable of providing in detail information on the actual use of R&D on a country-by-country basis. Based on these interviews it was concluded that the funding questions in R&D surveys will not necessarily lead to meaningful results.

15. In the 2009 R&D survey Statistics Netherlands approached 18 of the largest R&D performing companies with a small number of additional questions. These questions concerned R&D performed inside the company but intended to serve the needs (the innovative capacities) of foreign subsidiaries. Responses on these additional questions were received from 15 companies. The results confirmed prior expectations that part of this R&D output was indeed intended to serve foreign subsidiaries. The results also confirmed that economic ownership is not necessarily transferred to the actual users of R&D. One

may conclude that R&D is often considered as corporate property and its location in terms of ownership is for these companies not necessary a relevant issue.

16. The decision tree presented in chapter 3 suggests attributing under these conditions economic ownership of the R&D to the IPP producing unit (or parent), under the assumption that the unit will receive payments in the future, if not now. It is important to emphasise that these payments could be reported as earnings from foreign direct investment. In other words, it may not always be easy to record these earnings correctly in the national accounts or balance of payments, i.e. as capital services (services account) instead of property income (primary income account).

2.2 International trade in services survey

17. There are several conceptual differences between the international funding questions in the R&D survey and the observation of R&D related flows in the international trade in services surveys. As already mentioned the funding questions in the R&D survey may include current transfers and subsidies which should remain unobserved in the international trade in services survey. On the other hand, the international trade in services survey may capture royalty and licence payments, i.e. payments for the use of existing (R&D) assets, which do not show up in the funding questions of the R&D survey.

18. Looking at the international trade in services survey of the Netherlands, the largest R&D performers again report relatively low export levels of R&D services. The results of both surveys indicate that in general these Dutch R&D producers, which are expected to serve to certain degree the R&D needs of foreign affiliates, do not receive substantial revenues from foreign affiliated companies:

- a. Neither as compensation for the R&D services provided to them;
- b. Nor as compensation for granted access to existing R&D assets on their own balance sheets.

19. Most of this R&D should probably be considered as ‘corporate property’. Under such circumstances the decision tree in chapter 3 recommends to assign economic ownership to the parent (or the R&D producer). The income flows gained from this R&D capital are expected to be largely contained in the returns to direct investments. The possibilities to make the R&D constituents of these investments explicit, and also the returns to these investments, are limited and require a sequence of imputations in the accounts which are circumvented with uncertainties and therefore not generally recommendable. The downside of this shortcut is that the mapping of global value added chains, including the value added shares of IPP inputs, for example based on (internationally linked) supply-use tables, becomes infeasible.

20. Contrary to the observations discussed so far, a few multinationals reported in the international trade in services statistics rather extreme amounts of R&D services exports (and imports). Further investigation of these results led to the conclusion that these outcomes reflected the R&D cost redistribution flows via the headquarters of these companies which are not directly related to intra-company services flows of R&D. These extreme results were corrected in the survey outcomes after having consulted these companies.

3. Possible ways forward

21. It seems reasonable to conclude that in the case of the Netherlands both the Frascati based R&D survey and the international trade in services survey underreport on intra-company R&D service

flows. Adjustments of these results can be made only on a case-by-case basis and after consultation with the respondent. As indicated before, the observation problems of intra-company R&D flows may be restricted to the larger companies. This probably makes a custom-made surveying approach more realistic.

22. The designs of these surveys may be further adapted to the needs of national accountants. In the R&D survey questions on international R&D funding may be split up between actual sales and purchases of newly produced R&D versus other kinds of transactions (e.g. income transfers). This is particularly relevant for those companies with internal 'pay on demand' R&D services units. For other companies this refinement in the R&D questionnaire may not be sufficient. In addition the survey may address R&D performed inside the company but intended to serve the needs (the innovative capacities) of foreign subsidiaries. In this context it may also be useful to detect R&D carried out by factoryless producers.

23. Obviously, similar kinds of observation problems may exist for those companies making use of R&D developed abroad by affiliated R&D producers. One option to overcome this problem is to include additional questions in the community innovation survey (CIS) about the use of R&D performed by affiliated foreign companies.

24. From 2012 onwards the international trade in services survey is adjusted to BPM6 requirements in the following ways:

- a. Sales of existing originals are split up between R&D related and other IPP's related. The key purpose of this change is to move these R&D related transactions, according to BPM6 guidelines, from the capital account to the goods and services account.
- b. Technical testing related services and analytical services related to patenting are separated from R&D services on demand.

25. Unfortunately the current survey in the Netherlands does not provide many details on the international flows of royalties and licences payments. As explained in the BPM6 (par.10.140) these payments may include aspects of property income, i.e. putting a non-financial non-produced asset at the disposal of another unit. It is indicated that in principle, it would be desirable to separate the income and service elements. However, it may not generally be feasible to do so in practice. This may complicate integrating these survey results in the national accounts supply and use tables.