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International Transactions in Intellectual Property

Note by the Organisation for Economic Co-operation and Development

Summary

As production processes become more global and the processes themselves more complex the role of international trade in intellectual property products, in particular software and research and development, has grown. Their importance grows with the fact that in the 1993 System of National Accounts software and databases are included within fixed assets and in the 2008 System of National Accounts likewise with research and development. However, the difficulty is that little is known about these international flows of intellectual property and related income. The problems facing international transactions are described in the draft Handbook on Deriving Capital Measures of Intellectual Property Products. The Task Force of the Organisation for Economic Co-operation and Development on Intellectual Property Products has developed a prototype survey that might be used to shed some light on this issue.

I. Introduction

1. As more production processes span national boundaries, international trade has grown in intellectual property products (IPPs) such as software and research and development. The need to capture these flows has grown as a result of decisions taken in the 1993 System of National Accounts (SNA) to classify software and databases as fixed assets, and the 2008 SNA to similarly classify the results of research and development.

2. The difficulty however is that little is known about the size and extent of the international flows of intellectual property and related income streams. Multinationals are able to exchange and use intellectual property products across national borders, and the corresponding payments are rarely recorded. Payments for use are more likely to be observed as property income flows back to the parent company.

3. The problem of recording of transactions in software between affiliates has existed since the changes in the 1993 SNA were introduced. The recognition in the 2008 SNA that research and development (R&D) should also be treated as an asset has increased the size of this problem.

4. The recording of these transactions as property income rather than payments for, or for the use of, an asset has an impact on a number of important economic aggregates, including:

(a) gross domestic product (GDP); gross national income (GNI), imports and exports of trade in services;

And the non-recognition of the IPPs as assets affects estimates of:

(b) GDP, gross fixed capital formation (GFCF) and capital stock.

5. The issue is not confined to transactions between affiliates. Correctly recording transactions in IPPs between non-affiliated units has also been difficult since the 1993 SNA was introduced. This reflected the international trade classification systems in use at the time, which did not contain a sufficiently detailed product breakdown of IPPs. This meant that many transactions were grouped under the 'other royalty and license fees' BPM5 category:

'…the authorised use of intangible, non-produced, non-financial assets and proprietary rights (such as patents, copyrights, and industrial processes and designs) and with the use, through licensing agreements, of produced originals or prototypes (such as manuscripts, computer programs, and cinematographic works and sound recording)….

6. The lack of a breakdown by type of royalty (in particular the inability to differentiate between transactions in produced and non-produced non-financial assets) affected estimates of GDP and GFCF. And in the latter case, estimates were affected even if GDP was correctly recorded (reflecting the fact that in many countries supply-methods are used to estimate GFCF).

7. Improvements are however being made in this area. Revisions to the Manual on Statistics of International Trade in Services (MSITS) and the associated Extended Balance of Payments Services Classification (EBOPS) include a more detailed breakdown of intellectual property products, and this is described in more detail below.

8. Given their differences, this chapter separately examines the issues related to trade between affiliates and trade between non-affiliates.

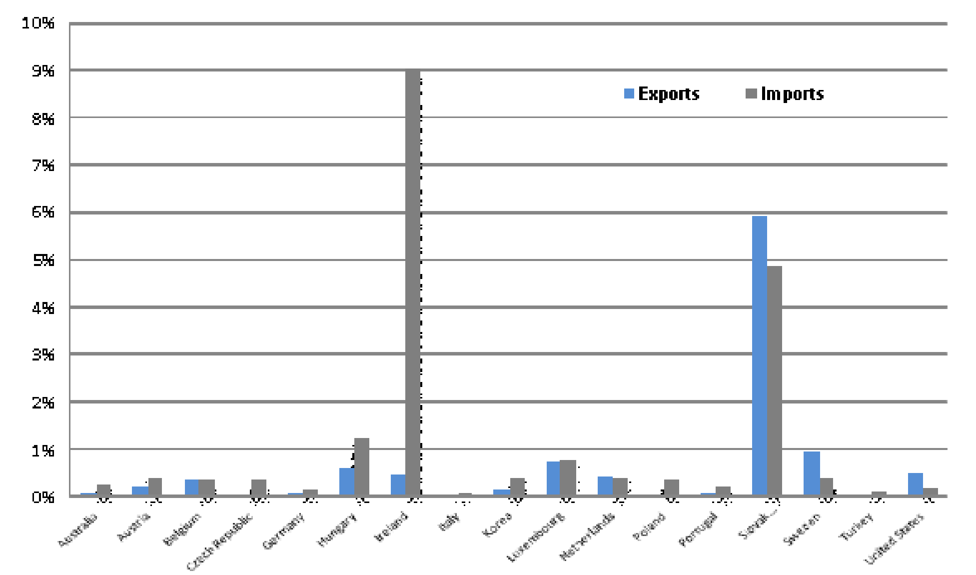
How big is the problem?

[Absolute figures from international trade in IPPs will be inserted.]

9. It is not possible to provide a definitive answer to this question given the difficulty within current statistical collection systems to identify these flows. But the circumstantial evidence supports the premise that the size is significant.

10. For example, trade in “other royalties and license fees” reflects a significant proportion of activity in countries such as Ireland and the Slovak Republic. This is shown in the Figure 1. Although the shares are lower in other countries, for example 0.5 per cent for exports in the United States, they are not insignificant in absolute terms.

Figure 1 : Imports and Exports in 'other royalties and license fees



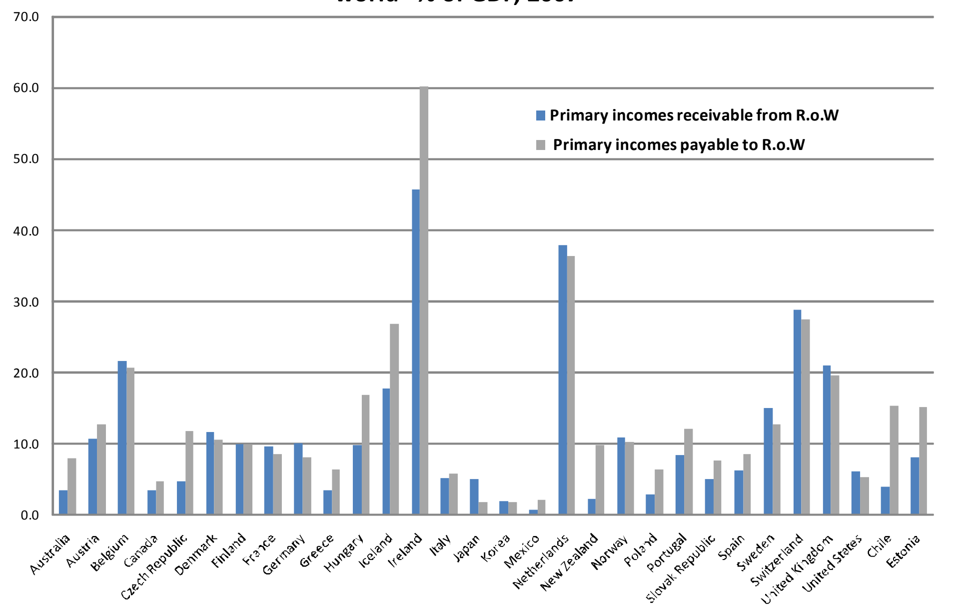
11. It is likely however that many transactions in payments for the use of IPP are missing, as for many countries no transactions are recorded within this category (other royalties and license fees). Moreover, the category itself may not contain all transactions related to the use of IPPs; particularly the use of research and development originals between affiliates. The figures for Ireland and the Slovak Republic, where a large number of hi-tech multinationals have set up base, do suggest however that transactions between affiliates are in part recorded.

12. Comparing the figures for these two countries, it appears that differences caused by a lack of detailed classification systems arise. For example, Ireland has relatively low exports of ‘other royalty etc’ services compared to its import figures, and compared to the Slovak Republic. On the other hand, Ireland’s trade deficit in this area is entirely offset by its surplus in ‘computer and information services’ – whereas the Slovak Republic has a net deficit in this product.

13. Another way of looking at the problem, or rather the potential scale of the problem, albeit in an exaggerated way, is to consider the size of primary income flows receivable from and payable to the rest of the world. (see Figure 2). Clearly such an analysis overstates the potential size of the problem since these flows cover considerably more transactions than just those related to transactions in IPPs between affiliates alone – imputed or

otherwise. But for some countries, such as Ireland, where one might expect significant flows between affiliates to occur, the scale is significant enough to note that even if only a relatively small percentage of these flows related to transactions in IPPs between affiliates, the impact on GDP could be considerable, depending on how these flows were eventually recorded (it is possible for example, as shown later, to continue to record the flows in their current form without seriously compromising the accounts).

Figure 2: Primary incomes receivable from and payable to the rest of the world - % of GDP, 2007



14. The following sections elaborate on the issues raised so far.

II. Statistical treatment recommended in international standards

A. International Trade Classification Systems and IPPs

15. The 2008 SNA recognizes five categories of intellectual property assets:

(a) Research and development;

(b) . Mineral exploration and evaluation;

(c) Computer software and databases;

(d) Entertainment, literary and artistic originals; and

(e) Other IPPs.

16. With the exception of mineral exploration and evaluation, IPPs are subject to substantial international trade. Commonly, the trade relates to copies of IPPs, such as packaged software, and musical and film recordings, or the services provided by them but

trade in originals, such as R&D, can be important. Given their importance, and the widespread use of the supply-side approach to estimating GFCF, the accurate measurement of exports and imports of IPPs is necessary to produce high quality estimates of GFCF and GDP in the national accounts.

17. Transactions in originals and copies of IPPs, and IPP services, are recorded in the goods and services account of the balance of payments (BOP). Chapter 10 of the Sixth Edition of the Balance of Payments and International Investment Position Manual (BPM6) describes the categories in which they are recorded. The level of detail at which international transactions in IPPs are currently collected is not sufficient for measuring GFCF in these assets using supply-side methods.

18. This situation is further complicated by the fact that IPPs can have a dual categorisation – both as goods or services, depending on the mode with which they are transported. This means that the data required to compile total imports, and therefore GFCF, of a particular IPP category such as software, comes from two different collection sources.

19. One of the most important sources for estimating international trade in services are surveys conducted in accordance with the Manual on Statistics of International Trade in Services (MSITS). The 2002 edition of this manual, which is consistent with both the 1993 SNA and BPM5, includes the Extended Balance of Payments Services Classification (EBOPS). The text below, which looks at the three main types of IPP that are internationally traded, describes why the breakdown into product groups currently defined in this classification system is often not sufficient for national accounts purposes However, revisions to both EBOPS and the MSITS have recently been agreed, which should improve the situation. These changes, including a full description of the relevant classification structure within EBOPS for IPPs, are described below.

1. Computer software and databases

20. The supply-side approach to estimating GFCF requires that a breakdown of products is possible between those destined for intermediate consumption and those for GFCF. Such a breakdown has been developed conceptually as shown in summary detail below (with the entry in brackets reflecting the conceptual destination category). More detailed information can be found in the OECD Handbook on Deriving Capital Measures of Intellectual Property Products. Computer software and databases can therefore be broken down into the following categories:

(a) Customized software and non-customized originals (GFCF)

(b) Non-customized software – outright sales of copies and long-term (more than one year) licences to use (GFCF)

(c) Non-customized software – short-term (one year or less) licences to use (IC)

(d) Non-customized software - licences to reproduce (resembling an operating lease) (IC)

(e) Non-customized software - licences to reproduce (not resembling an operating lease) (GFCF)

(f) Hardware and software consultancy, implementation and installation services; analysis, design and programming of systems ready to use (GFCF)

(g) Repairs and maintenance of computers and peripherals; data recovery services, provision of advice on matters related to management of computer resources; systems maintenance and other support services, such as training; data processing; web page hosting services; provision of applications, hosting clients' applications, and computer facilities management (IC).

21. However, the product breakdown currently provided in the MSITS (2002) is at a more aggregate level. The current (2002) version of the EBOPS classification contains a specific classification for Computer Services but with no further breakdown. It does not capture trade in Licences to use non-customised products provided on disks, etc. and which convey perpetual use, which are instead recorded as trade in goods rather than trade in services. Neither does it capture licenses to reproduce software separately, as they are included in the more general heading of "Other Royalties and License fees

22. The new MSITS (2010), and corresponding EBOPS, have been developed to better accommodate the needs of the national accounts in this regard. At its March 2009 meeting, the Interagency Task Force on Statistics of International Trade (TFSITS) approved a number of changes to the EBOPS classification. Those affecting the measurement of software are introduced as follows:

(a) A separate category, Licenses to reproduce and/or distribute software, within Charges for the use of intellectual property (previously referred to as Royalties and License fees).

(b) A breakdown of Computer Services into Computer software and Other computer services, with a further of-which item for the former, reflecting software originals.

(c) The inclusion of a supplementary item Computer Software Transactions (which includes licenses to reproduce/distribute software, computer software and importantly, transactions in computer software goods).

(d) The inclusion of a further supplementary item licenses to use computer software (which includes all licenses to use computer software, irrespective of whether they are classified as goods or services).

23. Such a breakdown should enable data collection to improve the quality of supply-based methods of GFCF.

2. Entertainment, literary and artistic originals (Audiovisual products)

24. As for computer software, MSITS (2002) contains general product categories for audiovisual products such as "Audiovisual and related services" and "Royalties and License fees".

25. A product breakdown is needed that facilitates supply-based estimates of GFCF,. Fortunately, as with software, planned and agreed revisions to the EBOPS will improve the situation here. Those affecting the measurement of audiovisual products are as follows:

(a) A separate category, Licenses to reproduce and/or distribute audiovisual and related services, within Charges for the use of intellectual property.

(b) A breakdown of Audiovisual services into Audiovisual products and Other audiovisual services, with a further of-which item for the former, reflecting Audiovisual originals.

(c) The inclusion of a supplementary item Audiovisual transactions

(d) The inclusion of a further supplementary item Licenses to use audiovisual products.

26. This new product classification will enable data to be collected that can significantly improve the quality of supply-based estimates of GFCF. The supplementary item Licenses to use audiovisual products will, for example, include transactions in audiovisual 'goods'

(CDs, DVDs etc), and Other audiovisual services will separately record those transactions in audiovisual products, such as fees to actors, payments to encrypted television channels etc that should not be recorded as GFCF.

3. Research and Development

27. In the 2002 MSITS, R&D transactions fall into three categories: Other royalties and licence fees, Research and development services and Acquisition or disposal of non-produced, non-financial assets. The first two of these categories are in the current account and the third is in the capital account. In BPM6 R&D transactions fall into two categories: Charges for the use of intellectual property and R&D services. As far as R&D is concerned, the major change in categorization is that payments for the acquisition of patents have been moved from Acquisition or disposal of non-produced, non-financial assets in the capital account to R&D services in the current account. This reflects the change in the 2008 SNA that R&D expenditures can be recognised as GFCF, and, so, as produced assets. In the 1993 SNA payments for these assets were often recorded as transactions in patents.

28. The definition of R&D services in BPM6 is wider than that in the 2008 SNA and the Frascati Manual because it includes testing and other product development activities that may give rise to patents (see BPM6 paragraph 10.148). The planned revision to EBOPS, however, has been designed to separately identify this component of R&D services, as shown in the table below:

Table 1
2010 Extended Balance of Payments Services Classification (EBOPS 2010)

8 Charges for the use of intellectual property, n.i.e.
- 8.1 Franchises and trademarks licensing fees
- 8.2 Licenses for the use of outcomes of research and development
- 8.3 Licenses to reproduce and/or distribute computer software
- 8.4 Licenses to reproduce and/or distribute audiovisual and related products
  - 8.4.1 Licenses to reproduce and or distribute audiovisual products
  - 8.4.2 Licenses to reproduce and/or distribute other products

9 Telecommunications, computer, and information services
- 9.1 Telecommunications services
- 9.2 Computer services
  - 9.2.1 Computer software
  - of which: 9.2.1.a Software originals
  - 9.2.2 Other computer services
- 9.3 Information services
  - 9.3.1 News agency services
  - 9.3.2 Other information services

10 Other business services
- 10.1 Research and development services
  - 10.1.1 Work undertaken on a systematic basis to increase the stock of knowledge
    - 10.1.1.1 Provision of customised and non customised R&D services
    - 10.1.1.2 Sale of proprietary rights arising from R&D
      - 10.1.1.2.1 Patents
      - 10.1.1.2.2 Copyrights arising from R&D
      - 10.1.1.2.3 Industrial processes and designs
      - 10.1.1.2.4 Other
  - 10.1.2 Other

EBOPS 2010 Complementary groupings

C.1. Audiovisual transactions
of which: C. 1.1 Licenses to use audiovisual products
C.3. Computer software transactions
of which: C.3.1 Licenses to use computer software products

B. Movement of IPPs between affiliated enterprises

29. The transactions related to IPPs between affiliated enterprises, are not thought to be well covered in international trade statistics. There are two separate issues. The first concerns ownership and associated transactions in IPPs. The second is whether there has been an increase in the value of the original, and how it should be dealt with.

30. The key difficulty is that IPP-related transactions between affiliates are rarely recorded by either party. When an IPP is provided by one affiliated enterprise to another, either in its entirety or via a license to use or reproduce, a number of possibilities for recording the transaction arise:

(a) There is either a sale or licence agreement between the provider and the recipient: the provider provides access to the IPP in exchange for a fee that is observable and should be recorded in the BOP and SNA goods and services accounts.

(b) There is a capital transfer from the provider to the recipient, i.e. the IPP is a gift. This should be recorded in the BOP and SNA capital accounts, but it is very likely to go unrecorded.

(c) The IPP is provided by the parent to a foreign subsidiary without a fee but with the expectation of receiving increased property income from the affiliate in the future. In effect, the parent is providing the IPP for a fee and then using the fee to increase its foreign direct investment in the subsidiary. This is likely to go unrecorded. This can include access to reproduction rights without explicit observable fees charged.

(d) The IPP is provided to the parent by the foreign subsidiary without a fee but in response to previous foreign direct investment. In effect, the parent is receiving the IPP in lieu of property income. This, also, is likely to go unrecorded unless steps are taken to monitor what is happening to the output of foreign-owned units created to undertake the production of IPPs.

31. Transactions between affiliates also impact on the valuation of the original IPP. There are two possibilities:

(a) The aggregate value of the asset has increased within the multinational: in other words the expected present value of future benefits has increased, as could occur, for example, if the multinational acquired a new affiliate and so obtained economic rights within a country that were not expected at the time of the original valuation. This would be recorded in the other changes in the volume of assets account of the provider. Such recordings have been rare in practice. A consequential difficulty is related to the split, if any, of the asset across the different countries where economic rights exist.

(b) The aggregate value of the asset has not changed: the provider expected to share the asset in some way at the time it was acquired. In other words the original valuation reflected the scope for its use across different countries.

32. It is not because of changes in the 2008 SNA that these problems have arisen; they have always existed but the increasing use of IPPs and the recognition that R&D should be considered an asset have increased the size of the problem.

III. Measurement problems

33. Because of improvements that have already been identified in international trade classification systems, the key focus of the remainder of the chapter is on trade between affiliates.

34. The section above highlighted the four areas that describe transactions in IPPs between affiliates. The following discusses these and the implication on the accounts more generally – in particular the implication on capital stock estimates; a key input used in the calculation and derivation of productivity estimates.

A. Observable sale or licence agreement between affiliates

35. The 2008 SNA provides clear guidance on the treatment of observable and measured transactions in IPPs. The following accounting entries arise when affiliates engage in transactions in IPPs:

- *When the entire IPP original (produced in a prior accounting period) is sold by one affiliate for sole use by another:* The accounts should record an export and negative GFCF in the exporting country and a corresponding import and positive GFCF in the importing country.

- *When the entire IPP original (produced in the same accounting period) is sold by one affiliate for sole use by another:* The accounts should record an export in the exporting country and a corresponding import and positive GFCF in the importing country.
- *When a licence to reproduce is sold by one affiliate to another:* Assuming that the creation and acquisition of the license to reproduce does not change the value of the underlying original, the accounts should record an export and negative GFCF in the exporting country and a corresponding import and positive GFCF in the importing country. This is a change from the treatment in the 1993 SNA which recommended that payments for licenses to reproduce should be recorded as payments for services provided by the 'original' IPP. The 2008 SNA treatment also holds in the case when part of the 'original' is sold. When a license to reproduce or part of an original is sold for use in a territory that had not prior been factored into the valuation of the original, the accounts should also record a positive increase in other changes in the volume of assets account (cancelling out the negative GFCF incurred through the sale of the license/part of the original).
- *When a copy or licence to use is sold by one affiliate to another:* As long as the copy or license-to-use satisfies the requirements that it can be treated as an asset, the accounts should record an export (equivalent to the value of the copy/license) and a corresponding import and positive GFCF in the importing country.
- *When the underlying asset is used to provide services only:* This is equivalent to the provision of a license-to-use or license to reproduce that do not satisfy asset requirements. In these circumstances the accounts should record an export (equivalent to the value of the services) and a corresponding import in the importing country.

36. For convenience paragraphs 10.99 and 10.100 of the 2008 SNA, which relate to all cases above, are shown below:

'10.99 Some IPPs are used solely by the unit responsible for their development or by a single unit to whom the product is transferred. Mineral exploration and evaluation is an example. Other products, such as computer software and artistic originals, are used in two forms. The first is the original or "master copy". This is frequently controlled by a single unit but exceptions exist as explained below. The original is used to make copies that are in turn supplied to other units. The copies may be sold outright or made available under a licence.

10.100 A copy sold outright may be treated as a fixed asset if it satisfies the necessary conditions, that is, it will be used in production for a period in excess of one year. A copy made available under a licence to use may also be treated as a fixed asset if it meets the necessary conditions, that is, it is expected to be used in production for more than one year and the licensee assumes all the risks and rewards of ownership. A good, but not necessary, indication is if the licence to use is purchased with a single payment for use over a multi-year period. If the acquisition of a copy with a licence to use is purchased with regular payments over a multi-year contract and the licensee is judged to have acquired economic ownership of the copy, then it should be regarded as the acquisition of an asset. If regular payments are made for a licence to use without a long-term contract, then the payments are treated as payments for a service. If there is a large initial payment followed by a series of smaller payments in succeeding years, the initial payment is recorded as gross fixed capital formation and the succeeding payments as payments for a service. If the licence allows the licensee to reproduce the original and subsequently assume responsibility for the distribution, support and maintenance of these copies, then this is *described as a licence to reproduce and should be regarded as the sale of part or whole of the original to the unit holding the licence to reproduce.'*

B. (Unidentifiable) IPP transactions between affiliates

37. At the heart of cases (b), (c) and (d) above is the fact that one affiliate makes an IPP available to another without an explicit transaction related to the IPP being observed.

38. When an IPP is made available by one affiliate to another, a transfer of an IPP asset or services related to the use of the asset takes place. In accounting terms, the exchange of an asset can be accounted for by a capital transfer, a loan, or a payment for the asset. For services provided by the original, an imputation reflecting payment for the services is needed.

39. In practice it is difficult to identify the precise nature of the exchange between affiliates (transfer of a copy, original, license to reproduce, services etc) as the rationale by a business will often be driven by a desire to minimise taxes, and so the accounting treatment will reflect this aim. Ideally, new surveys targeted at multinationals should be launched to directly address the measurement of these transactions. However, any such survey will need to fully address the needs of the national accounts and to some extent these needs remain to be fully articulated. The key question in this respect relates to whether the transfers satisfy the criteria to be treated as such in the national accounts sense. Further research will be needed in this area and some proposals that could form part of a research agenda are included in Section IV below.

IV. Recommended Future work on the issue

40. The previous section highlighted some of the difficulties that transactions in IPPs within multinationals present for the accounts, and in particular the dearth of information and indeed practical rules that currently exist to assist internationally comparable measurement.

41. It is clear that further work on both fronts is needed. Better surveys are essential but so is further research and guidance on whether transfers between multinationals (often designed to minimise taxes) should be treated as such in the national accounts.

42. This section provides proposals on both these fronts.

43. Concerning the guidance on the treatment of transfers, the discussion that follows makes a proposal that could minimise international incomparability in major aggregates, such as GDP and GNI. The impact can be minimised, if one takes the conceptual position that the flows relate to pre-existing assets: a proposal that will need to be further considered in the form of a Task Force or via another forum such as the ISWGNA.

A proposed solution for measuring transfers in IPPs between affiliates

44. When transfers in IPPs are made between affiliates, from a national accounts perspective, it can be argued that the underlying asset, or a copy of the asset (that also satisfies the conditions that it can be recorded as an asset), has been made available to the receiving affiliate, rather than services provided by the original. It seems unlikely that the affiliate will only receive the 'services' (or the rights to use the asset) for one year. More realistically the affiliate will receive the 'services' for at least one year (typically it is likely to receive them for the duration of the lifetime of the underlying original). Therefore the flow of 'services' received is closer to a license-to-use (a copy) or a license-to-reproduce.

45. This argument conveniently allows any discussion on the flows that need to be imputed in relation to transactions in IPPs between affiliates to reflect a transfer of IPP assets.

46. When IPP assets are transferred between affiliates the first step is to impute the flow that reflects the exchange of the asset between the two parties. This can be achieved either via: a capital transfer; a loan (and acquisition transaction) and subsequent repayment(s) of interest; or via a payment for the asset, whether the payment is at the point of acquisition or over the lifetime of the asset's production.

47. For simplicity it is useful to consider the following two cases: (a) a transfer of an asset from the parent company to an affiliate and (b) a transfer from an affiliate to the parent (with possible reallocation to other affiliates).

A. Transfer from the parent to an affiliate

48. There is an increasing tendency for multinational companies to legally transfer intellectual property products, developed or acquired in one territory, to another, with the sole purpose being to minimise taxes. Unfortunately such transactions (the original transfer and subsequent income earned by the transferred asset) are rarely recorded. And in the case of the income subsequently generated by the asset the transactions, if recorded, are more probably recorded as property income rather than as transactions in goods or services.

49. It is instructive to consider how these flows should be recorded in the national accounts. In practice (when flows are recorded as property income and not as identifiable transactions in IPPs) the parent company transfers the rights to an IPP to an overseas affiliate. This transfer will often not be recorded – meaning that exports and imports of IPPs are underestimated, with GFCF in the territory of the parent company overestimated and underestimated in the territory of the affiliate. Subsequent to the transfer of the (whole) asset the affiliate will generally charge the parent company for using the IPP in production. These transactions are likely to be recorded as property income payments by the parent company (with subsequent retransfers of (profits) property income from the affiliate to the parent and, possibly, reinvested earnings from the parent to the affiliate).

50. However, it is important that the accounts attempt to reflect the true economic flows and not those that have been engineered by the multinational for tax purposes. Even if the parent company explicitly makes property income payments related to the use of the IPP on an annual basis, it is clear that, in practice, the parent company fully intends to make use of the IPP throughout its working life, and that, despite its transfer, to the affiliate for tax purposes, it retains, at the very least, rights to reproduce, that satisfy asset requirements. Following this reasoning, transfers related to the IPP should be recorded as transactions in existing assets. This helpfully means that the transactions have no direct impact on GDP in either the parent or the affiliate's territory.

1. Transfers from a parent to an affiliate not engaged in SNA production

51. In the simple case where the multinational transfers the asset to an affiliate that does not engage in any SNA production (in a true sense) but merely permits the parent to make use of the transferred original, the flows that should be recorded in the accounts are relatively easy to deal with. The accounts would need to record a transfer from the parent to the affiliate but then a retransfer of a license to reproduce equivalent to the value of the original; meaning that the net position on GFCF in both countries is unaffected. Equally, as the affiliate is not engaged in any other activities, it also means that, any transactions related to the use of the IPP have no impact on GDP; reflecting the fact that the affiliate is merely an accounting construct to mimimise taxes.

52. In the unlikely event that transactions between the affiliate and the parent are recorded in trade statistics (as annual payments for services) these should instead be recorded as finance lease payments (reflecting the acquisition of a license-to-reproduce by the parent) and, so, as property income.

53. Following this logic through therefore, the inability to fully record transactions related to the transfer of an asset from a parent to an affiliate does not have a significant impact on the accounts. The impact is largely restricted to lower import and export figures. In any case, because the transfer is, to some extent an accounting construct, not recording such flows (a transfer of an original and a retransfer of a license to reproduce equivalent in value to the original) may be a more meaningful option, at least as far as the national accounts is concerned.

54. In terms of other economic variables the impact on KLEMS type productivity measures will be largely unaffected in practice. The balance sheets of the affiliate should not reflect the value of the IPP (which has been retransferred to the parent via a license-to-reproduce), which is consistent with the fact that the affiliate produces no value-added related to the IPP. Equally, for the parent, the balance sheets will already reflect the value of the original IPP asset (which will be equal to the value of the retransferred license to reproduce).

2. Transfers from a parent to an affiliate engaged in SNA production

55. A more difficult case to resolve concerns the case where the affiliate is also engaged in some production related to the use of the IPP. In this case it is clear that the transferred IPP asset is being used in production but the value of the underlying asset is, as is the case above, reduced by the value of the implicit licenses-to-reproduce that have been 'sold' back to the parent company.

56. Ideally the resale of (part of) the asset from the affiliate to the parent as a license-to-reproduce should be treated as if it was never transferred from the parent. The less attractive alternative is to consider imputing an acquisition payment from the parent to the affiliate. However because there is unlikely to be such a payment in practice (rather, there will be a series of payments over time reflecting the charges made by the affiliate for using the original), it will also be necessary to impute a loan and series of finance lease payments which will impact on net-lending.

57. As above, the simpler treatment restricts the problems to trade, GFCF, and balance sheets (capital stock and so KLEMS measures). But importantly because the trade concerns pre-existing assets, GDP is not affected.

58. Concerning the impact on balance sheets and KLEMS it is important to put this into context. The valuation of IPPs is generally done on a very conservative basis (typically reflecting the sum of costs).

59. In that sense it might be simpler to consider the issue of balance sheets separately from the transfers of IPPs by allowing the values of transfers to be reflected in the revaluation of assets rather than through imputed transfers.

60. In other words, however assets are transferred from a parent to an affiliate the following could be assumed in practice, and form the basis of a research agenda:

(a) No imputation is needed in trade in goods and services, and correspondingly,

(b) No imputation is needed to reflect the transfer of the asset as flows in pre-existing assets.

(c) Any charges for the use of the asset by the affiliate to the parent that are currently recorded as payments for the use of the asset in trade in goods and services should be reclassified to property income payments. If these charges are also included as positive contributions to GVA in the affiliate and negative contributions to GVA in the parent, it will also be necessary to treat these as income flows.

(d) Every attempt, using survey sources (see below) should be made to accurately reflect the value of the IPPs on the balance sheets of the affiliate and the parent. For the affiliate this will mean that a revaluation change occurs despite the fact that an underlying IPP asset was never recorded as being transferred or produced, which, although conceptually incongruous, is a practical compromise.

B. Transfer from an affiliate to the parent

61. Of the possible flows described above to reflect the initial transfer of the asset (or part of) from the affiliate to the parent, the most appropriate accounting treatment (given the typical relationship between parents and affiliates) is to record an acquisition payment or series of payments by the parent company.

62. At present the accounts are likely to record any flows related to the transfer as property income/FDI.

63. This means that trade in goods and services will be underestimated. Equally GFCF in the parent company will be underestimated and GFCF in the affiliate overestimated (if the asset developed by the affiliate is not intended for use by the affiliate).

64. If the asset is intended for use by the affiliate, an appropriate imputation is to assume that a copy of the original or license to reproduce has been transferred to the parent. In practice a license to reproduce is the more appropriate of the two options as it is unlikely that the parent would not acquire these rights. This distinction is important since if a copy was transferred to the parent this would reflect output by the affiliate that would not currently be recorded and so GDP in the affiliate's country would also be underestimated; although GFCF would not be overestimated. If it were assumed that a license to reproduce was transferred however, GDP would not currently be affected (although GFCF would be) – since the license to reproduce is considered, within the accounting framework as being analogous to part of the original. This assumes that the license to reproduce is only realised after the original has been created and valued in the accounts of the affiliate.

65. Because it is literally impossible to ascertain that the asset will not be used by the affiliate in production it is simplest to consider that it will be (even if the original (or part of) only resides with the affiliate for tax purposes) and that any transfer from the affiliate to the parent is in relation to part of the original. Equally, as above, it is simplest, for sake of argument, to also assume that the initial valuation of the original takes into account the transfer of some rights (license to reproduce) to the parent, and that subsequent changes in the value of the asset merely reflect revaluations. As before, this means that the license to reproduce is only realised after the original is created.

66. Put simply this means that when a transfer related to an IPP between an affiliate and a parent occurs, a transfer of a license to reproduce should in theory be imputed. Unfortunately, given the current data situation, identifying the point in time and value at which a transfer occurs is literally impossible. The only meaningful information that exists relates to flows of property income and FDI between the affiliate and the parent.

67. However, from a practical perspective, the decision to treat such transfers as licenses to reproduce perhaps minimises the impact on the accounts of not being able to measure the flows. In this case the only real impact need concern trade and GFCF figures. Trade figures are lower because they do not capture the export/import of a license to reproduce and GFCF figures in the parent company are lower and in the affiliate higher. Importantly however,

not recording these flows will not affect GDP (although net domestic product will be affected). Total factor productivity estimates will also be affected but, in reality, such estimates are rarely produced using exhaustive estimates of capital stock. Moreover, typically, estimates of originals produced on own-account tend generally to be very prudent – so, in practice, GFCF estimates in the affiliate are not likely to be overestimated despite not recording a reduction in value related to a 'sale' of a license to reproduce.

68. All of the above assumes that the IPP produced by the affiliate is capitalised before any subsequent transfer to the parent occurs. This neatly means that GDP estimates are unaffected and that only trade in existing assets and capital stock estimates are affected. If however the parent company pays for the development of the asset during its production with the specific intent to have it transferred on completion, the underlying trade is no longer restricted to existing assets but GDP estimates are again not affected. In any case identifying these payments from the parent company is literally impossible with current data sources and so it is simpler to assume that the transfer (and implicit related payments) only occurs after the IPP has been capitalised on the accounts of the affiliate.

69. There will be an impact on the recording of net lending estimates however. At present the acquisition of an asset by a parent from an affiliate is likely to be recorded (incorrectly) in the income account, with flows between the affiliate and the parent netting out so that the overall effects in the separate income accounts of the affiliate and the parent are zero with net-lending also unaffected. But the acquisition of the asset by the parent should in theory be recorded in the capital account. This means that net lending figures in the parent would be lower and in the affiliate, higher, if the acquisition was correctly recorded. This presupposes that the asset is transferred to the parent on completion. However the financing of the asset acquired by the parent may have occurred in earlier periods (via increased FDI for example) and so identifying the periods when net lending is affected is in the absence of data, impossible.

70. In summary, given the difficulties involved, the following could be assumed in practice, and form the basis of a research agenda:

(a) No imputation is needed in trade in goods and services, and, correspondingly,

(b) No imputation is needed to reflect the transfer of the asset as flows in pre-existing assets.

(c) Any charges for the use of the asset by the affiliate to the parent that are currently recorded as payments for the use of the asset in trade in goods and services should be reclassified to property income payments. If these charges are also included as positive contributions to GVA in the affiliate and negative contributions to GVA in the parent, it will also be necessary to treat these as income flows.

(d) Every attempt, using survey sources (see below) should be made to accurately reflect the value of the IPPs on the balance sheets of the affiliate and the parent. For the parent this will mean that a revaluation change occurs despite the fact that an underlying IPP asset was never recorded as being transferred or produced, which, although conceptually incongruous, is a practical compromise.

C. Summary proposal for transfers in IPPs between affiliates

71. For practical purposes therefore, concerning intra-company trade in IPPs, the following guidelines should be considered for further research:

(a) Transactions within multinationals relate to pre-existing assets. That is, assets that have already been created and reflected in the balance sheets of one affiliate prior to their transfer (in part or otherwise) to another.

(b) Transfers relate to transfers part of the original or licenses-to-reproduce and not the entire original or a copy of the original.

(c) The original value of the asset, when produced or purchased, should be assumed to reflect the rights to use the asset in all subsequent territories in which it is eventually used. This means that any changes in the value of the original reflect revaluation changes, appearing on balance sheets, and not other changes in volume.

(d) If transactions between one affiliate and another for an IPP are recorded as payments for services provided by the original, these should instead be reclassified as finance lease payments related to the prior acquisition of a license-to-reproduce. For practical purposes they can be recorded simply as property income.

(e) Transactions in IPPs should be recorded within trade in goods and services of IPPs, as purchases and sales of pre-existing assets but it is accepted that the current scope for recording such transactions as such is limited. In the absence of dedicated surveys that capture these transactions they can be ignored with the associated flows instead recorded under property income.

(f) Estimates of IPPs on balance sheets should follow the principal that they are only partly transferred after they have been capitalised on the accounts of the affiliate that transfers them. Attempts should be made via dedicated surveys to correctly capture the value of these assets within affiliates in order to create balance sheets, estimates of GFCF, and in particular estimates of capital stock and KLEMS type productivity estimates.

72. The operational guidelines for treating flows between multinationals shown above are a pragmatic proposal to a very difficult measurement problem that currently exists. They provide a conceptual basis that minimises the impact of mis-measurement on the accounts by treating transactions between affiliates as transactions in pre-existing assets and by recommending that trade flows in these assets are ignored (or, for sake of argument, assumed to be of negligible value with revaluations subsequently occurring after transfers have occurred).

D. Proposing new surveys

73. Guidance on practical accounting rules is one part of an overall solution. But these need to be complemented with an arguably longer-term solution to design and collect information via new surveys on multinationals. The OECD Task Force on IPPs investigated this issue and developed a proto-type questionnaire, shown below, that could form an important input into research and testing of new surveys that directly tackle the question of IPP trade between affiliates. It was designed with the measurement of R&D in mind but it could just as easily apply to any IPP asset, and would need to be supplemented with additional questions on balance sheets of multinationals. Another possible future source for statistics on transfers of (completed or in-progress) R&D is Frascati Manual based surveys, assuming the definition of transfers in the Frascati Manual and SNA are reconciled in the future. R&D surveys could ask for the cost of producing R&D that is subsequently transferred outside the performing unit.

Annex I

Extract from Draft Handbook on Deriving Capital Measures of IPPs

III. International trade in R&D services and R&D output produced in the past (such as patents) between (i) affiliated enterprises and (ii) non-affiliated enterprises (recurrent)

Questions for R&D survey respondents

1. International R&D transactions within your company

A. Would your company be able to report payments for R&D performed for you by others within your company but located outside this country?

i. transactions involving your foreign parent company

ii. transactions involving other foreign members of your company

B. Would your company be able to report revenues for R&D performed by you for others within your company but located outside this country?

i. transactions involving your foreign parent company

ii. transactions involving other foreign members of your company

2. International R&D transactions with others outside your company

A. Would your company be able to report payments for R&D performed for you by others outside your company and also located outside this country?

B. Would your company be able to report revenues for R&D performed by you for others outside your company and also located outside this country?

C. Can you separate out R&D grants from contracts for R&D services?

3. International transfers of R&D or patents (inflow)

A. Have you received free transfers of R&D or patents from the following sources?

i. Your foreign parent company? (if applicable)

ii. Other foreign members of your company (if applicable)

iii. A foreign university or research institute?

iv. A foreign government unit or international organization?

B. Would you be able to estimate the production cost or value of these transfers?

4. International transfers of R&D or patents (outflow)

A. Have you donated R&D or patents to the following recipients?

i. Your foreign parent company? (if applicable)

ii. Other foreign members of your company (if applicable)

iii. A foreign university or research institute?

iv. A foreign government unit or international organization?

B. Would you be able to estimate the production cost or value of these transfers?

Questions for international services trade respondents

1. R&D services vs. other business and technical services - (one-off)

A. Have you reported R&D services exports/imports to include transactions in the following services? (this question assumes R&D services is a survey category in your survey,

B. otherwise skip)

i. commercial testing services

ii. software development services

iii. engineering services

iv. design services

v. customer services (post-sales)

vi. royalties and license fees

C. Would you be able to separate out R&D services exports/imports from transactions involving the following services?

i. commercial testing services

ii. software development services

iii. engineering services

iv. design services

v. customer services (post-sales)

vi. royalties and license fees

2. International R&D transactions within your company

A. Would your company be able to report payments for R&D performed for you by others within your company but located outside this country?

i. transactions involving your foreign parent company

ii. transactions involving other foreign members of your company

B. Would your company be able to report revenues for R&D performed by you for others within your company but located outside this country?

i. transactions involving your foreign parent company

ii. transactions involving other foreign members of your company

3. International R&D transactions with others outside your company

A. Would your company be able to report payments for R&D performed for you by others outside your company and also located outside this country?

B. Would your company be able to report revenues for R&D performed by you for others outside your company and also located outside this country?

4. International royalties, license fees for the use or sale of intangible property

Note: For the purposes of this question intangible property includes patents, trademarks, copyrights, and trade secrets.

A. Total royalties, license fees, and other fees for the use of intangible property (IP), EXCLUDING cross-licensing:

Payments

Receipts

of which:

Industrial processes and products (except software licensing)

Payments

Receipts

Software licensing

Payments

Receipts

B. Total royalties, license fees, and other fees for the use of intangible property (IP), in a CROSS-LICENSING arrangement:

Payments

Receipts

of which:

Industrial processes and products (except software licensing)

Payments

Receipts

Software licensing

Payments

Receipts

Are these cross-licensing measures net or gross transactions with respect to cross-licensing? If net, could you estimate the gross value of these transactions?

C. Total fees paid or received for the sale or purchase of intangible property (IP):

Payments

Receipts

of which: industrial processes and products (except software)

Payments

Receipts

Questions for FDI survey respondents: new investments

These questions should be directed to either –

a) a local business enterprise when a foreign parent company establishes or acquires directly, or indirectly through an existing affiliate, a 10 percent or more voting interest in that enterprise, or

b) existing affiliates of foreign parents when they acquire, or merge with, a local business enterprise, or a business segment or operating unit in the compiling country.

Have you or your foreign parent company engaged in the following investments in this country?

- Created a new legal entity, either incorporated or unincorporated, including a branch, which is organized and operating as a new business enterprise.
- Bought or secured a voting equity interest in a previously existing, separate legal entity that was already organized and operating as a business enterprise and it continued to operate as a separate legal entity, either incorporated or unincorporated, including a branch.
- Bought or secured a voting equity interest in a business segment or operating unit of an existing business enterprise, which is organized as a new separate legal entity, either incorporated or unincorporated, including a branch.
- Bought and merged another local business enterprise, or business segment or operating unit of a business enterprise, into your own operations rather than continuing or organizing it as a separate legal entity.

For M&As of existing businesses, would you be able to report the magnitude of the following items (where applicable) at the time of the M/A?

- employment
- R&D expenditures
- stock of patents issued
- stock of patent applications

For newly established businesses, would you be able to report: (one-off)

- if the new business is intended for R&D performance?
- if you plan to sell or license R&D to the new business?
- if you plan to sell or license patents to the new business?
- if you plan to transfer (for free) R&D or patents to the new business?