Working Party on National Accounts

Survey on intellectual property products

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This document has been prepared by Craig McLaren (OECD – STD/NAD) and will be presented under item 4 of the draft agenda

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Survey on Intellectual Property Products

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Background

• Handbook on Deriving Capital Measures of Intellectual Property Products (OECD, 2010)
  • Detailed background and guidance
• At a previous Working Party on National Accounts (October 2011)
  • Discussion on the need for sharing detail on service lives, depreciation rates and national practices related to Intellectual Property Products
• OECD recent questionnaire on IPPs
  • Covered: Research and Development, Mineral exploration and evaluation, Software and databases, Entertainment, Literary and Artistic originals
  • Thank you for all your responses
  • Not too late to contribute!
• Summary of key issues from 23 countries
Research and Development

Expected impact

- Estimated impacts ranged from 0.5% to 3.5% of GDP with an average of around 1.7% of GDP
- Five countries have not yet fully analysed the estimated impact
A large number of countries have not needed new surveys, although a few countries have captured the new requirements by revising existing surveys.

Main data sources used:

- Specific research and development surveys: e.g. GERD (gross domestic expenditure by government), BERD (gross domestic expenditure by business), and specific surveys for private non-profit bodies.
- Examples of other data sources: administrative data, e.g. universities and grant information, bank and tax records.
- Where data is not available on a regular annual basis, some countries use a supplementary survey for the missing years, e.g. using estimates from other surveys, administrative data, or extrapolation.

All countries implement, or intend to follow, the methods in the Eurostat R&D task forces and the OECD manual.
Examples of outstanding specific source and method issues:

- Source limitations making it difficult to collect information about external funds to post graduate students
- No information about trade margins, or taxes and subsidies on products and changes in inventories
- For some countries all expenditures on R&D have been considered as providing a benefit
- One country noted lags are not used, e.g. R&D is registered as an investment in the same period as production costs occur so there are no changes in inventories

Where Frascati source data does not exist, some countries will use historical survey data and tax data to estimate the missing part of R&D activities, and/or transform it to the definitions according to the Frascati Manual

- E.g. an adjustment for missing size classes and exhaustiveness.
Research and Development
Depreciation

- All countries use the PIM (or plan to)
- Depreciation functions
  - Majority use Geometric; others are Linear, Winfrey
- Mortality functions
  - Delayed linear, Double-declining, Log-normal, Truncated normal, Weibull
- Service lives
  - These can differ based on the type and industry of R&D, e.g. 13 years (basic research), 11 years (applied research), 9 years (experimental development), and for specific industries: 7 years (computer programming), 9 years (electronics), and estimates of 15, 20 and 60 years (chemical and pharmaceutical products).
  - Examples of service lives used for aggregate R&D were: 4.6 years, 6.2 years, 7 years, 8 years, 10 years, and 12 years.
  - Detailed examples: Finland, Israel
  - Number of countries use the recommended default of 10 years
  - Some countries continuing research to derive estimates, e.g. Germany, Sweden and the United Kingdom.
Research and Development
Specific issues

• Historical data
  • A small number of countries have not decided what approach to use.
  • Where estimates do not exist the most common approach is the use of modelling.
  • For some countries, there is detail at a microeconomic level for recent years, but only macroeconomic data for earlier, so models will be used to derive back data.
  • Other approaches are: use of backcasting, use of interpolation or extrapolation based on relative or declining proportions, use of classification adjustments to align earlier data to earlier collected data.

• Double counting
  • Nearly all countries take account of, or use approaches to minimise, double counting.
  • Some countries noted that information on this issue was not easily available, but for other countries it was not identified as a significant issue.
Issues raised included

- An inconsistency between BPM6 and the 2008 SNA, where BPM6 incorporates trade in patents in commercial services under R&D services and includes a much broader definition of patented entities than what is defined as R&D fixed assets in the SNA.
- Clarification needed for the treatment of R&D by multinational corporations, e.g. is the R&D produced by them mostly exports or domestic investments?
- Integrating into calculations the treatment of consumption of fixed capital used for the production of new R&D results, as it can have an accelerating impact on R&D outputs.
- Ensuring consistency between different data sources, e.g. R&D surveys and structural business surveys.
- Choice and sensitivity of the deflation method.
- How to calculate the cost of capital in the R&D output as it could be sensitive to the choice of calculation.
The majority of countries derive estimates
  • Five countries do not estimate this as it is not significant.

Examples of different types of data sources:
  • Surveys of the mining industry e.g. quarterly capital expenditure surveys which can capture expenses related to mineral exploration and evaluation; and annual inquiries
  • Administrative data from government departments and other industry groups, e.g. geological surveys, or specialised energy organisations
  • International trade statistics on exploration services.
  • Revenues and budgets, or turnover figures from the monthly manufacturing reports

Methods used can differ greatly
  • Use of data directly from surveys or administrative datasets
  • Sum of costs approach where costs can be related to development, implementation or expenses paid to others involved
  • Pro-rating of aggregate estimates based on percentages of sub-components, e.g. exploratory and commercial drilling.
Mineral exploration and evaluation
Depreciation assumptions

• All countries use the PIM
  • Two countries do not currently calculate capital stock and depreciation

• Depreciation functions
  • Geometric, Linear, Winfrey, Hyperbolic, Delayed linear

• Mortality functions
  • Winfrey, Simultaneous, Double declining, Gamma, Log-normal, Truncated normal, Weibull, Normal

• Service lives
  • Most commonly used were: 10 years, 20 years and 30 years. Ranged from 1 – 40 years.

• Some countries are using the implementation of SNA 2008 to update assumptions e.g. depreciation function, service lives
Software and databases
Sources and methods

- All responding countries compile estimates (or have plans to)
  - Some have difficulty to separate databases

- Wide range of data sources. Some examples include
  - Specific surveys on Information and Communication Technology or administrative records or reports, e.g. trade associations
  - Labour force surveys, e.g. hours worked on development of own-account and database creation
  - Capital expenditure e.g. value of expenditure on computer software and databases
  - Some countries are planning to enhance their data sources to separate out the collection of database information.

- Methods differ greatly between countries and can also be complex
  - Use of data directly from either industry specific surveys or administrative data
  - Production cost method, where labour and non-labour costs are estimated, e.g. using data such as wages, working hours, number of employees.
  - Details on methods used in Canada, Czech Republic, Germany and Sweden methods (see references).
Software and databases
Depreciation assumptions

• All countries use the PIM
• Depreciation functions
  • Geometric, Linear, Double declining, Winfrey, Delayed linear, Hyperbolic
• Mortality functions
  • Delayed linear, Log-normal, Winfrey, Truncated normal, Double declining, Gamma, Normal, Weibull, Constant
• Service lives
  • Most commonly used were: 4 or 5 years. Ranged from 3 to 10 years.
  • Some countries use different service lives for different groups.
    – Denmark: 4 years for software purchases, 6 years for own account
    – Germany noted that software for mainframes had a longer service life with 10 years compared to 5 years for desktop software
    – Israel use 4 years for imported pre-packaged software, and 5 years for own-account and customised software; Sweden use a service life of 5 years for purchased software and 10 years for own developed software and databases.
• Where no estimates of service lives available guidance was based on administrative sources and recommendations from OECD manuals Measuring Capital (2001 and 2009) and previous task forces.
Software and databases

Issues

• Difficult to separate databases from software in practice
  • Even with the existing guidance and previous task forces, the quality of the estimates could still be improved (for some countries).

• Other aspects were
  • Improving coverage for small businesses
  • How to distinguish between databases which are fixed assets and those that are not.
  • The distinction between regular maintenance and software maintenance work to be considered as investment.
Entertainment, Literary and Artistic originals
Sources and methods

• Majority of countries who responded compile estimates
• Wide range of data sources are used in practice
  • Industry specific data about royalties and royalty flows
  • For originals without an established system of royalty flows a production cost approach can be used
  • Some countries noted that external experts were being used, e.g. liaising with patent offices and academics.
• Methods differ greatly between countries and can be quite complex
  • Cost based valuation methods directly from data sources, e.g. income, purchases of programmes
  • Use of the value of royalties received as a proxy for the value of originals created
  • Modelling relationships using data such as expenses, royalties or interest rates.
Entertainment, Literary and Artistic originals

Depreciation assumptions

• All countries use the PIM
• Depreciation functions
  • Geometric, Linear, Double declining, Winfrey, Delayed linear
• Mortality functions
  • Delayed linear, Log-normal, Simultaneous exit, Winfrey, Double declining, Gamma, Normal, Truncated normal, Weibull, constant
• Service lives
  • Most commonly used were: 3 years, 5, years, 7 years, and 10 years.
  • The Netherlands use different service life assumptions for different assets, e.g. for originals: service life of 5 years, and for royalties a service life of 10 years.
  • Germany estimated average service lives for motion pictures, TV productions, sound storage media, music compositions, artistic performances and texts (Schmalwasser and Schidlowski, 2007).
Entertainment, Literary and Artistic originals

Issues

• Improving coverage of the computer gaming industry
• How to record transactions of Special Purpose Entities (SPEs) involved in royalties and licensing
• Using the SNA 2008 / ESA 2010 as an opportunity to introduce changes
  • e.g. improving specific data sources to increase coverage of activity abroad, changing depreciation assumptions and including additional outputs
Discussion points

• More details available in the paper
• Are there any views or opinions on
  • What is the best approach to disseminate the detailed information so that it is useful for individual countries?
  • How can this information be used alongside the existing Handbook on Intellectual Property Products (OECD, 2010)?
  • Do Member Countries consider it useful to initiate some follow-up activities in this area? If so, what additional activities should be pursued with priority?

• Thank you