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Item 3 a): Integrated Economic Statistics and the place of trade: OECD Stat, the OECD data warehouse now in operation

7TH OECD INTERNATIONAL TRADE STATISTICS EXPERT MEETING ITS and OECD-EUROSTAT MEETING OF EXPERTS IN TRADE-IN-SERVICES STATISTICS (TIS)

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INTEGRATED ECONOMIC STATISTICS AND THE PLACE OF TRADE: OECD.STAT, THE OECD DATA WAREHOUSE NOW IN OPERATION

INTRODUCTION

1. This note briefly describes the new environment into which OECD's trade databases have been migrated. The new OECD data warehouse, OECD.Stat, pulls together the official OECD data for internal access by the numerous OECD analysts, but in particular also provides a "one stop access" for external users who wish to access and work with OECD data without having to worry about where to access the right data.

2. The vision of a modernised OECD Statistical Information System, set out in the Organisation's Statistics Strategy, aims to:

- improve the efficiency of the Organisation's statistical processes
- enable reuse of data within the Organisation for multiple analytical and policy purposes
- improve the quality of the Organisation's statistical data and metadata, notably its timeliness, coherence and availability
- enhance the accessibility of the Organisation's statistical resources to external users

through innovative use of information technologies.

3. After a considerable collective, OECD-wide effort, this system is now in operation. It is hoped that data users across the world will appreciate the new easy and transparency through which OECD disseminates data. Feedback from countries is most welcome and will be used to further improve the service.

1. The role of OECD.Stat as "data integrator"

4. **OECD.Stat** is the central repository ("warehouse") where validated statistics and related metadata and electronic dissemination processes are stored. OECD.Stat is at the heart of OECD's new Statistical Information System. It is in the process of becoming the sole and coherent source of statistical data and related metadata for the Organisation's statistical publication.

5. OECD.Stat enables the Organisation's analysts and statisticians to easily locate needed data from a single online source, rather than having to navigate multiple databases and data formats. They can do this with a familiar tool, Excel, rather than multiple query/manipulation systems. And the access to systematic metadata in OECD.Stat helps ensure appropriate selection and use of statistical information.

6. OECD.Stat has been designed to preserve the decentralised nature of OECD directorates' statistical activities, while making their data and metadata part of a coherent corporate system. Each directorate contributes contents of its production databases to OECD.Stat. Updated statistical data are exported to OECD.Stat from **StatWorks** and other production databases, upon validation by a dataset manager. Similarly, updated statistical metadata are exported to OECD.Stat from **MetaStore** (and, during a transition period, other sources), when validated by a dataset manager.

7. OECD.Stat notably includes an agreed set of "Reference Series" (series frequently used in the calculation of other indicators), to help ensure that economic and social indicators are computed in a coherent and consistent way across the House.

8. An automated "import" gate provides a common basis for loading statistical data and metadata to OECD.Stat. The XML-based design of the import gate allows "loose coupling" of OECD.Stat and production databases. That is, a modification of the structure of OECD.Stat does not necessitate modification of a production database's export routines, and a change in structure of a production database does not require modification of the OECD.Stat import gate. Statistical data are stored in a number of datasets, in a relational database environment, and in multi-dimensional tables (often referred to "cubes"). A Web service provides a common basis for extracting data from OECD.Stat (i.e., for producing statistical publications, for electronic data dissemination, for interfaces to analytical applications, etc.)

9. Metadata can be attached at any level of an OECD.Stat dataset: dataset-level, dimension-level (e.g., "Variable means…"), dimension member-level (e.g., "GDP means…"), and data-level for any lower level (e.g., series level, observation level, etc.). OECD.Stat metadata values are themselves character strings in an XML format -- a standard yet flexible format for managing textual information, which can be easily reformatted (e.g., to HTML) for display.

10. The principal user interface to OECD.Stat -- through which internal users locate, retrieve and display statistical data and metadata -- is based on an Excel "add-in". This add-in, via a sequence of menus, helps users locate and retrieve data series of interest. The choice of Excel as the basis for the user interface was made largely because Excel is a familiar tool to OECD analysts and statisticians, and an Excel-based solution could be quickly developed and implemented. The Excel interface enables a user to pull data together from multiple sources. An Excel table may be stored, and when later opened, the data contained therein will be automatically refreshed from OECD.Stat.

11. Many users appreciate the advanced data manipulation features of Pivot Tables, which are available through the Excel interface. This is of considerable benefit also for trade queries where the number of dimensions of the cube are in general quite large and the pivot option allows quickly to generate meaningful tables. A web-based interface has also been developed, however, to meet the needs of those who simply wish to be able query and display elements from a dataset, in a manner similar to that when navigating the Internet, and possibly transmit them to their favourite analytical tool for further processing.

12. Access rights to datasets in OECD.Stat are managed by the corresponding dataset managers, who grant permissions to update an OECD.Stat dataset, and to access that dataset. Access rights are typically defined when a dataset is initially exported to OECD.Stat. By default, access to a dataset will be public (i.e. open to all staff at the OECD Secretariat), as most information in OECD.Stat consists of validated statistics and metadata destined for publication. For external access, a dataset manager can grant access rights at any time.

13. StatWorks has been developed to provide a common hosting environment for production databases, based on the OECD standard database hosting platform, MS-SQL Server. StatWorks has been designed to host statistical databases irrespective of the number of their dimensions (country, time, subject, etc.). Database dimensions can be defined as "private" and specific to a database, or as "public" and shared among several databases hosted in StatWorks (e.g., country, time). A system of referential integrity common to all databases protects against inadvertent corruption. Access controls ensure that each database manager "sees" only his/her database in StatWorks.

14. MetaStore provides dataset managers with a common interface and common set of tools for managing metadata, and supports adherence to common standards for statistical metadata across the House. MetaStore addresses problems of fragmented metadata located in numerous databases and text files maintained by different Directorates, duplication of effort in metadata preparation, gaps in metadata availability (particularly metadata explaining differences between similar or related series residing in different databases), and inconsistent metadata across databases. MetaStore has been designed to support a set of principles which apply to metadata validated statistical data to be shared or disseminated, whether internally or externally.

15. Technology and publication standards for the OECD statistical products have been defined, enabling the development of modernised tools and processes for producing traditional statistical publications and interactive data products. This is made feasible by the existence of a single source for validated statistical data and metadata, OECD.Stat. Thus, **PubStat** has been developed with the objectives of:

- increasing the efficiency of statistical dissemination processes
- reducing the risk of human intervention and, thus, of mistakes
- reducing time-to-publish
- giving the Organisation's statistical publications and electronic products a common "look and feel"
- reducing the number of different software tools and corresponding support effort involved, and
- minimising the time that statisticians spend dealing with dissemination and formatting issues.

16. PubStat contains, for a given publication, information on the structure of the tables, the statistical data and metadata to be extracted from OECD.Stat, where these data are to appear in a statistical table, the "publication metadata" containing headings and labels, and the templates implementing the graphical presentation of the tables.

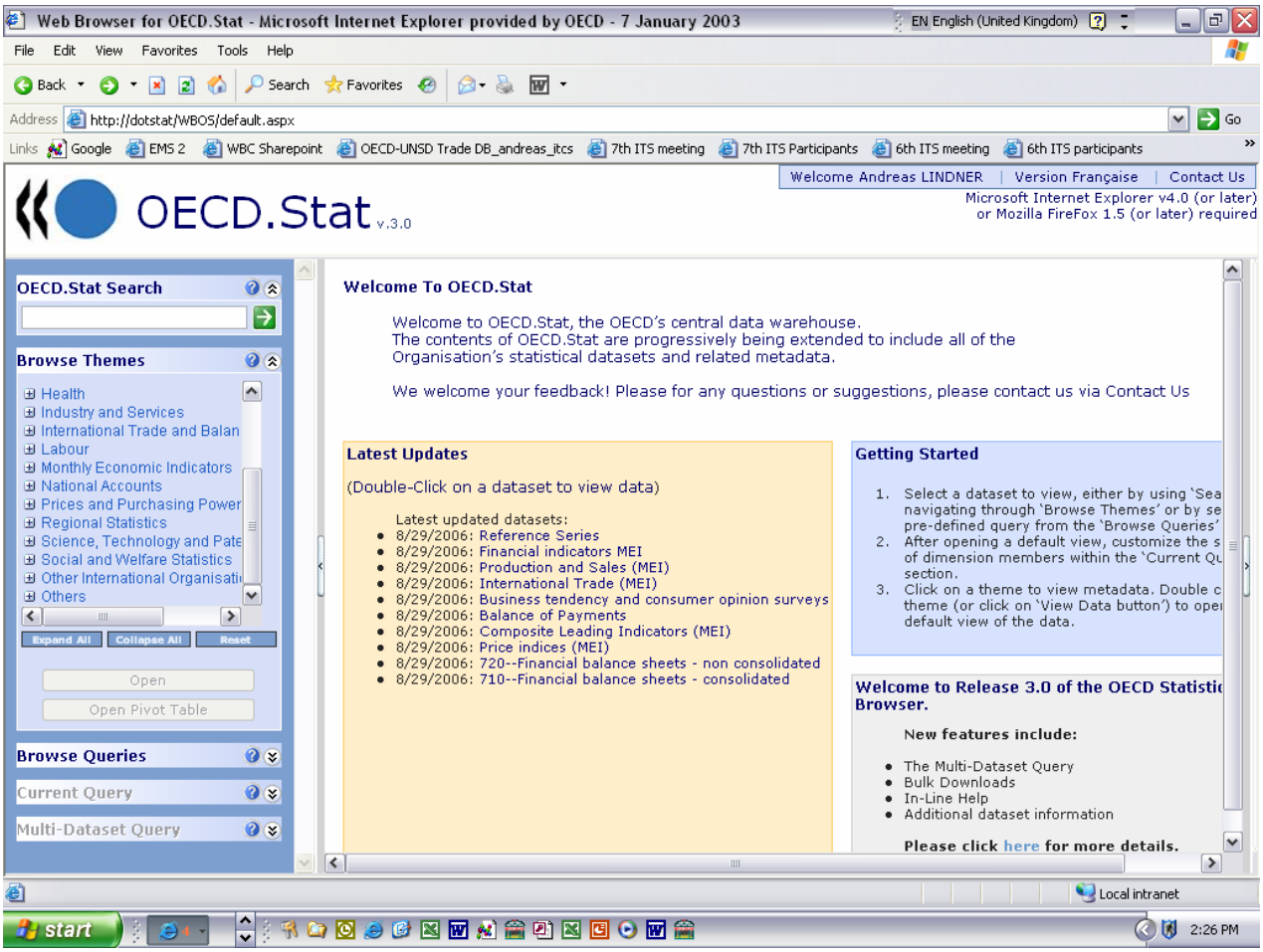
17. In addition, the OECD seeks, wherever feasible, to exchange experience and "best practices" with other international organisations, national statistical office and central banks, in order to make the best possible use of information technologies to facilitate the exchange of statistical data and metadata. Indeed, a number of software tools and standards for management and exchange of statistical information are being developed cooperatively with other international organisations. The OECD, for example, putting great emphasis on the SDMX[1] initiative sponsored jointly with six other international organisations, aiming at finding common solutions for exchange and sharing of statistical data and metadata. The SDMX issue will also be addressed under the next agenda item 3(b).

2. The range of economic statistics held in OECD.Stat

18. Whoever (external or internal user) logs on to OECD.Stat will see the following welcome screen (Figure: 1):

[1] Statistical Data and Metadata eXchange, see www.sdmx.org

Figure 1. Figure 1: The OECD.Stat Home Page



19. On the left side, the different databases are listed, and query selections can be created and saved, including the entirely new feature of multi-dataset queries, which allow combining in one interrogation/download several databases. This has not been possible at OECD until now due to the proprietary nature of individual databases and the use of several software platforms. The term "integration" receives its true sense through this new feature.

20. The themes, that are the datasets contained in OECD.Stat, include:

- Agriculture & Fisheries
- Demography &Population
- Development
- Economic Projections
- Education & Training
- Finance
- Health
- Industry & Services

- **International Trade and Balance of Payments**
- Labour
- Main Economic Indicators
- National Accounts
- Prices and Purchasing Power Parities
- Regional Statistics
- Science, Technology and Patents
- Social and Welfare Statistics
- Other International Organisations' Data

21. As can be seen, the range of available datasets covers the whole spectrum of economic statistics, capable of providing quantitative answers to the main issues of modern societies. The **theme "International Trade and Balance of Payments"** has an important place in the list and is broken down by:

- International Trade by Commodity Statistics (**ITCS**)
  - HS 2002
  - SITC Rev. 3
- Monthly Statistics of International Trade (**MSIT**)
  - Calculated Variables
  - Exchange Rates
  - Trade in Value by Partner Countries
  - Trade in Value Classified by SITC Section
  - Volume, Unit Value and Price Indices
- Trade in Services (**TIS**)
  - Trade in Services by Category of Service
  - Trade in Services by Partner Country
- Trade Indicators Project (**TIP**)
  - Macro Trade Indicators
  - Micro Trade Indicators (HS)
  - Micro Trade Indicators (SITC)
  - Micro Trade Indicators (ISIC)
  - Micro Trade Indicators by Type of Service
- Balance of Payments (**BOP**)
- **MEI** Aggregates International Trade

22. All datasets above have been migrated during the past 12 to 18 months to the new standard environment OECD.Stat. This migration was obviously also a unique opportunity to review, and possibly improve, the quality of the data and metadata.

23. With regard to the annual detailed commodity statistics, **ITCS**, the complex and time-consuming review process together with UNSD has resulted in considerable improvements in the general data quality with regard to calculation, allocation and estimation procedures and routines. The resulting data, located together with the Non-OECD countries of the UN in the Web Browser Client (WBC) application "UNSD-OECD Joint Trade Data Collection and Processing System", has been transferred (for OECD countries only plus the big 6 non-member economies) to OECD.Stat. For the time being, two classifications, HS02 and SITC Rev. 3 have been loaded; the other classifications already contained in the WBC will follow shortly. For a detailed presentation and description of main issues of the WBC, see the next agenda item 3(b).

24. Concerning country definitions, groupings and zones, considerable work has been carried out together with UNSD to align the practices of both organisations and to re-calculate a complete, up-to-date set of detailed trade flows by partner country. Many rules had to be adopted to ensure consistent treatment of reporters and partner countries, taking into account all areas and zones to be included or excluded and ensuring to the extend possible symmetrical treatment or correct allocation.

25. The question may be asked why OECD is keeping identical detailed yearly commodity trade data for OECD countries in two separate databases. The answer is: because of the data environment. The WBC application is the joint database with the UN and covers all countries as in Comtrade. As it is well known, OECD feeds all trade data of OECD countries into ITCS and into Comtrade. The WBC database can be accessed internally by OECD staff and externally by subscribers to OLIS, the OECD online government service. This application is the OECD "mirror" of Comtrade and as such also a good example of this co-operation The advantages of the WBC will be described in the next point of the agenda; suffice to state here that he WBC is a powerful, tailored-to- needs trade statistics application

26. The trade databases in OECD.Stat are part of a standard environment, providing compatibility and inter-operability across databases. The probably unique advantages here are the multi-dataset query capacity, the possibility of generating pivot tables and the uniform metadata environment. As to access, OECD.Stat can be accessed by external users when the database manager of a given database has given the green light. Once this done, databases can also be accessed through **SourceOECD, t**he OECD's Online Library of Statistical Databases, Books and Periodicals. As the name indicates, this service is exclusively linked to "pure" OECD products. Since SourceOECD is a commercial service, revenues are generated from subscribers. This is not the case of OLIS, which is a free government service.

27. A look at a random selection of the standard tables ITCS, which can be generated and easily modified in OECD.Stat shows that the presentation is very clear and rather sophisticated (see Figure 2).

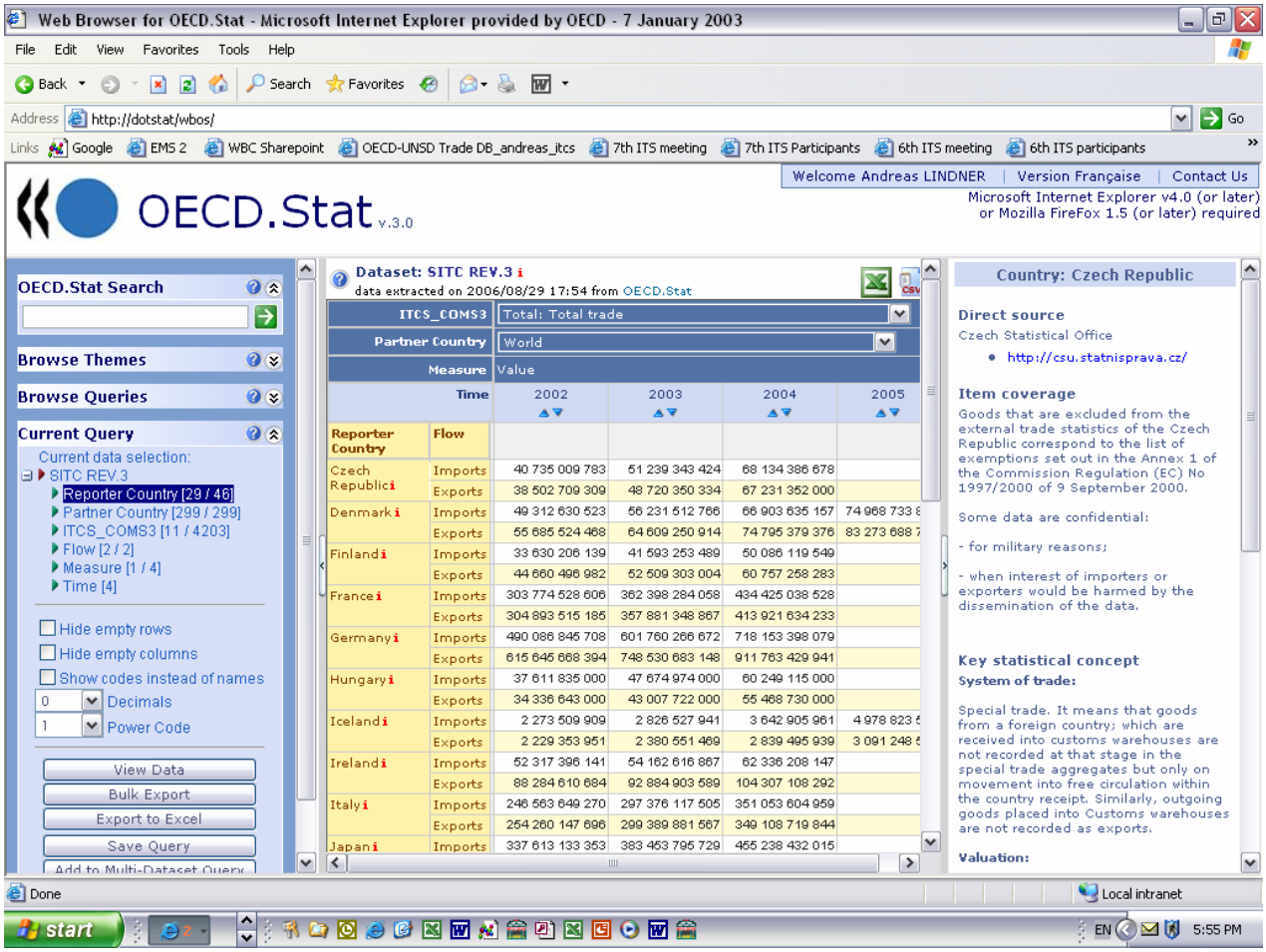
28. Monthly Statistics of International Trade (**MSIT**) have been successfully migrated to OECD.Stat this summer. A double test run of the publication, using both the old and the new environment, is in the process of being carried out at the time of writing and is expected to successfully conclude in September/October. As will be shown in the next section of this paper, MSIT is, after ITCS, also amongst the bestsellers of OECD products.

29. International Trade in Services data (**TIS**) are collected by OECD as two datasets:

- International trade in services by type of service: statistical data by detailed type of service. There is cooperation with Eurostat in the collection of these data: for OECD member countries that are members of the EU, the OECD downloads the data from New Cronos - the Eurostat database. Non-EU member country statistics are collected via a questionnaire. Denmark has considerably increased the level of detail reported this year, following the introduction of a new survey.
- International trade in services by partner country: The Non-EU country information is collected by requesting the countries to send all available data for a given standard set of service groups in any format according to BPM5 standards. The OECD Secretariat then formats data and makes any necessary geographical adjustments. EU member country statistics are downloaded from New Cronos except for Germany, which sends data direct to OECD. Poland has started to provide partner country information this year for reference year 2004. The EU has increased the level of partner country detail available this year as part of the implementation of a Regulation on International Trade in Services.

30. The default view, defined by the database manager, allows easy-to-use and understand interrogation as shown below in Figure 2 for ITCS.

Figure 2. Figure 2: ITCS Selection Screen



31. The OECD **Trade Indicators Project (TIP)** has been fully integrated into OECD.Stat and can be accessed from outside. First feedback received from external users is very positive. This Indicators database pulls together the most relevant trade indicators, at present some 30 indicators, which have the advantage of being extracted and calculated according to a standard methodology and in conformity with the OECD globalisation indicators and handbook (EGI and HEGI). As a matter of fact, the trade indicators team provided the input for the globalisation and trade chapter of both HEGI and EGI. It also provided the corresponding input into the OECD Factbook, another flagship publication of OECD.

32. The most noticeable extension of the trade indicators work is the integration of the "micro" level of indicators. Methodologically correct and up-to-date data is available for all OECD countries at the 2 digit level of the HS, SITC and ISIC classifications for the following key indicators:

- Revealed Comparative Advantage (RCA)

- OECD Market Share
- Trade Balance of Goods and Services
- Export Performance

33. The amount of ready-to-use downloadable indicators is substantial and should correspond to a large and varied demand from governments, research institutes and universities. Further indicators are likely to be added after consultation with stakeholders.

34. OECD Balance of payments statistics (**BOP**) are obtained from NSOs for 8 countries. Central Banks provide data for 18 countries and the Euro Area, with the remaining 4 countries' data come from a combination of NSOs, Central Banks and other institutions. When available, data are recovered directly from internet sites or national databases though some countries send electronic files, sometimes in combination with other data for MEI to the OECD. The data collection process has generally improved in efficiency.

35. This short summary update on trade and balance of payments data available now in OECD.Stat shows that a very considerable amount of relevant and sometimes very detailed information is put at the disposal of OECD analysts and external users. As said, the advantage of this integration into the OECD data warehouse is the possibility to navigate across databases without having to leave a current query. Suffice to state, that the inclusion of ITCS has led to a multiplication of the overall size of OECD.Stat.

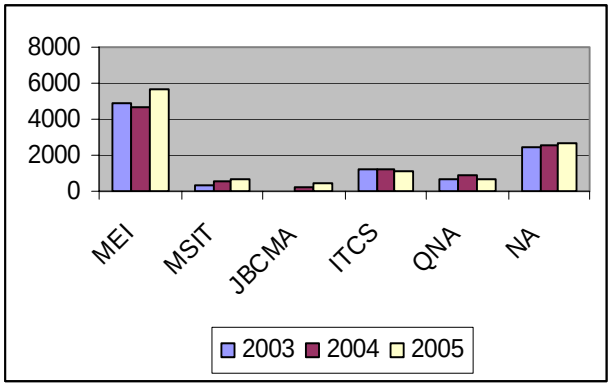
36. After having identified the place of trade-related datasets in OECDs range of economic statistics, the next question is to evaluate to what extend this trade-related data is used. The best, and measurable, yardstick is a look at downloads by external users using **SourceOECD**, hence abstracting from free downloads through the OLIS channel..

3. How does OECD Trade Statistics usage compare against other Core Datasets?

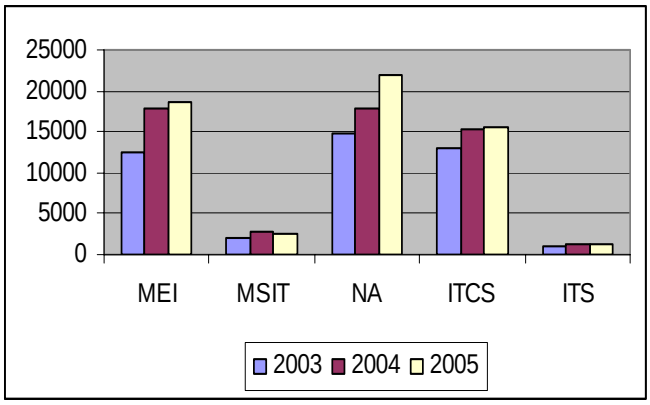
37. The following two graphs show that trade statistics have a very prominent place amongst other OECD datasets. Not surprisingly, the ITCS publication downloads are relatively small compared to the MEI (Main Economic Indicators) or NA (National Accounts). It is a sheer matter of size. The monthly and more aggregate MSIT performs rather well in this comparison with publication downloads superior in number to Quarterly National Accounts (QNA).

38. A look at total downloads of STD databases from SourceOECD provides a very different – and more appropriate – picture given the size of ITCS. In this comparison ITCS comes third after NA and MEI, but when taken together with MSIT and ITS (including trade in services), the total trade database downloads equal MEI.

Graph 1: Total downloads of publications from SourceOECD

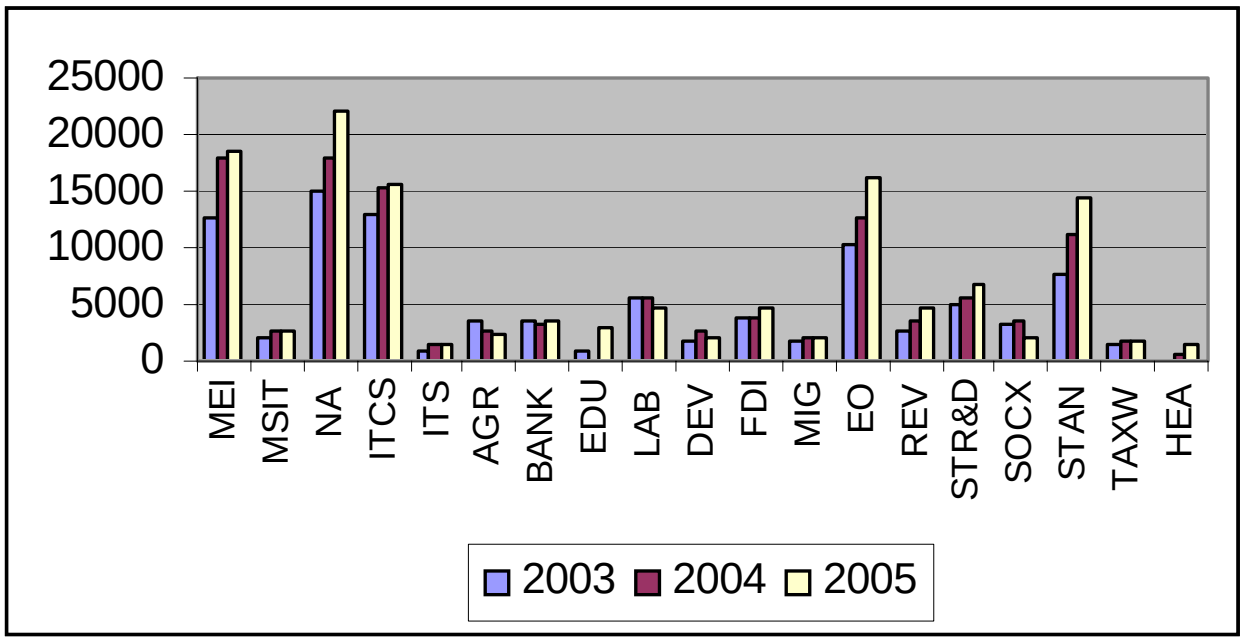


Graph 2: Total downloads of STD databases from SourceOECD



39. The following graph confirms the importance of ITCS and MSIT on an OECD-wide scale. It can be said that these datasets are amongst the first three flagship databases.

Graph 3: Total downloads of OECD databases from SourceOECD



Graph 4: Top 12 areas of SourceOECD

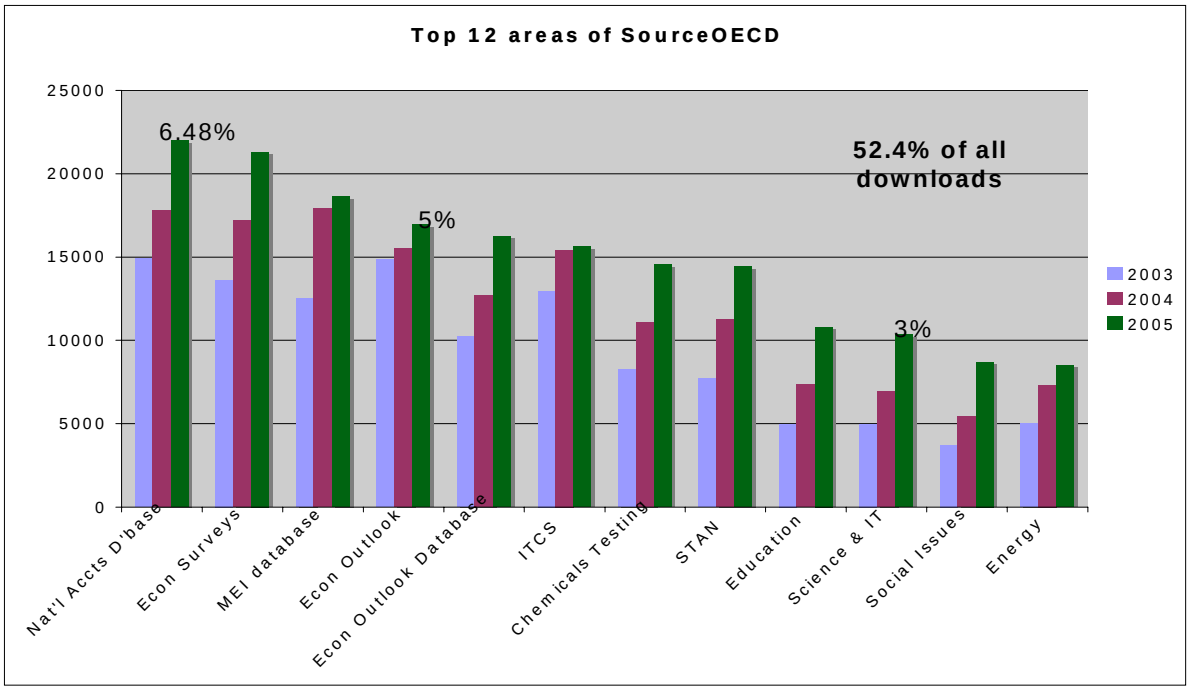


Table 1.

Key	AGR: Agriculture and Food Statistics; BANK: Bank Profitability Statistics; EDU: Education at a Glance – OECD Database; EO: Employment Outlook; FDI: Foreign Direct Investment; ITCS: International Trade by Commodity Statistics; ITS: International Trade Statistics; JBCMA: Journal of Business Cycle Measurement and Analysis; LAB: Employment Statistics; MEI: Main Economic Indicators; MSIT: Monthly Statistics of International Trade; NA: National Accounts; QNA: Quarterly National Accounts; REV: Revenue Statistics of OECD Member Countries; SOCX: Social Expenditure Database; STAN: Industry Structural Analysis Database;

40. Graph 4, above, shows that downloads from OECDs key databases strongly increased throughout during the period 2003-2005, probably facilitated by the increasingly user-friendly IT-interface. The number of downloads is considerable. Perhaps the best illustration of how important trade is amongst all other OECD statistics is in terms of total number of downloads in 2005. The following table shows that ITCS came fourth with 14321 downloads and MSIT was 12th with 2246 downloads.

Table 1: The Top 12 OECD Statistics Databases Downloads in 2005

Title	2005 No.	Rank
National Accounts	**19274**	**1**
Main Economic Indicators	**16374**	**2**
Economic Outlook Statistics	**14355**	**3**
ITCS International Trade by Commodity Statistics	**14321**	**4**
STAN Industry Structural Analysis Database	**12843**	**5**
Science and Technology Database	**5949**	**6**
Revenue Statistics of OECD Member Countries	**4203**	**7**
Employment Statistics	**4020**	**8**
International Direct Investment Statistics	**4174**	**9**
Bank Profitability Statistics	**3074**	**10**
Education at a Glance – OECD Database	**2431**	**11**
Monthly International Trade Statistics (MSIT)	**2246**	**12**

Source : Graphs 1 to 4 and table 1: STD/CSTAT/RD(2006)3

41. Combined, the trade databases ITCS and MSIT were downloaded in 2005 **16567 times** which placed them 2nd after National Accounts, and before the Main Economic Indicators. In other words, on average over 1300 trade data downloads per month from users across the world are a clear signal that trade data is indispensable for economic analysis and the 2nd popular of OECDs databases.

4. Concluding remark

42. The past 12 months have seen the successful accomplishment of the very complex migration of OECDs trade statistics to the new software environment OECD.Stat, but also to the WBC, the joint UNSD-OECD trade data system. It has been shown why the WBC has to remain separate from OECD.Stat. As to the latter, it has moved from a nucleus of last year to a fully operational, integrated system, OECDs data warehouse. OECDs trade statistics; trade indicators and BoP data form an integral part of this warehouse and are a key component of it. Its place amongst the top 3 of OECD has been shown as well as the dynamics of growing usage. The Secretariat wishes to express its gratitude to national data providers who make this important OECD service possible. One of the main purposes of this paper is to show, besides the place of trade in economic statistics, how useful the trade data is in the international context. The very large number of downloads, which places trade second in the top league of OECD databases, undisputedly shows that the effort made by national data providers to send to OECD timely and high quality data is a very worthwhile one through the world-wide use of these data.