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**LINKAGES OF STRUCTURAL BUSINESS STATISTICS AND TRADE STATISTICS
EUROSTAT'S EXPERIENCES, FIRST RESULTS AND NEXT STEPS**

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Linkages of Structural Business Statistics and Trade Statistics

Eurostat's experiences, first results and next steps

1. Introduction

The merging of external trade statistics and structural business statistics is of great interest to most users. Statistics on the trade in goods focus on presenting trade flows between countries with a breakdown of products whilst structural business statistics highlight the structure and evaluation of the activities of businesses. By combining these two statistical domains it is possible, on the one hand, to get more information on the structure of traders and on the other hand, to complement the data on businesses with trade data. For example, this allows answering questions like which economic sectors contribute most to volume of external trade and what is the contribution of different size enterprises to trade.

In recent years, Eurostat together with Member States has worked with a methodology which allows to produce these statistics by using the data already collected. When trade operators are linked with general business registers it is possible to make new statistics available without additional data collection from enterprises but still maintaining good quality in output.

In the frame of Edicom II program, Eurostat has launched the first pilot study in 2002 (Standardisation Exercise). The main objectives were: first, to test the feasibility of the methodology and second, to reconcile trade according to enterprise characteristics. The results of the study were promising: 9 countries participated in the exercise and were able to produce all or most of the requested tables with good matching rates between trade and business registers. Therefore links to business registers can be seen as one of the key strategies in the development of external trade statistics as new statistical products can be produced with moderate effort.

This paper presents some key methodological issues and main findings of the first pilot study.

2. Methodology

2.1. Activity or product?

The concept of activity is sometimes problematic in the field of external trade statistics. It is not always clear whether the activity refers to economic activity of the statistical unit or to products classified according to their economic origin.

As regards the classification of activities, the classification used in the European statistical system is NACE (Rev. 1 till 2003, Rev. 1.1 from 2003 onwards), which is designed to categorise data related to statistical units. In the frame of external trade statistics, the NACE classification refers to the economic activity of the trade operators, i.e. the enterprises active in external trade. The corresponding classification of products with relation to activities is CPA, which distinguishes each type of goods and services in such a way that it is normally produced by only one activity as defined in NACE. External trade statistics by CPA can be produced explicitly by using the correspondence table between the product classification used in external trade statistics, the Combined Nomenclature, and the CPA.

Explicit trade statistics by activities (NACE) of trade operators are not usually possible to compile in the frame of external trade statistics without a link with business register. Instead, implicit figures are often provided by using the products by activities (CPA) as a substitute for activities. Theoretically, this method could be used for estimations of certain trade flows, for instance exports of the manufacturing sector, because the majority of the goods traded by each enterprise should be typical products of that industry, i.e. commodities whose CPA category corresponds with the NACE category of the enterprise, as the link between these classifications indicates.

However, it is important to note that this approach does not provide the explicit trade figures of that industry; it rather links the traded products with the industries which typically manufacture such products. As only the primary and manufactured goods are covered by international trade statistics, all the trade is consequently allocated to these sectors. The services sector, whose theoretical outputs are classified as services, is thus overlooked. This is particularly problematic for imports, where the services sector usually has an important role and the link between manufactured and traded products is not apparent.

Besides the problems with correct allocation of trade flows to the services sector activities, the allocation within the manufacturing sector may be difficult as well. An enterprise in a given manufacturing sector may trade products of other sectors as well as of its own sector. Therefore any attempt to measure trade flows of each activity sector by using products should be interpreted with caution.

2.2 Links between trade and business registers

2.2.1 Business registers

EEC Council Regulation No 2186/93 on business registers for statistical purposes requires Member States to set up business registers of all enterprises carrying out economic activities contributing to the gross domestic product as well as their dependent local units and the legal units responsible for those enterprises. All statistical units should be recorded, with the exception of NACE sectors A (agriculture, hunting and forestry), B (fishing) and L (public administration and defence; compulsory social security), whose inclusion is optional.

The variables recorded in business registers can be divided into four categories as follows:

Identification variables: ID-number, name, address, etc.

Economic variables: economic activity, size class in terms of number of employees and turnover, etc.

Demographic variables: date of creation and cessation.

Relationship variables: controlling units.

For the purpose of making new trade statistics available, the most important variables are economic characteristics, but the external trade statistics compilation process can benefit from other variables too.

2.2.2 Trade registers

EC Regulation No 638/2004, the Basic Regulation for the statistics between Member States requires Member States to set up a register of intra-Community trade operators. The register of extra-Community trade operators is not mandatory according to the Basic Regulation for the statistics on the European Union's trade with non-member countries (Council Regulation No 1172/95) but many Member States have established a special register of extra-Community traders.

The Regulations do not define explicitly what should be the reference unit. However, considering that these registers use fiscal registers as the source, it can be assumed that the unit of reference is the legal unit.

2.2.3. Statistical unit

The choice of the statistical unit is important for many statistical domains, in particular for business statistics. Some key variables of business statistics, such as activity sector, turnover or number of

employees, depend on the choice of a statistical unit. In addition, the count of reference units could vary substantially depending on which unit is chosen.

When external trade statistics are linked with business statistics, it is important to bear in mind the distinct element between these statistical domains: there is no explicitly defined statistical unit in external trade statistics while in business statistics it is always defined. In external trade statistics the objective is to describe trade flows between countries with a breakdown by products; for this purpose the choice of statistical unit is not relevant.

The Council Regulation (EEC) No 696/93 on the statistical units defines several statistical units. The most common one is enterprise which is the most important statistical unit in structural business statistics. It is defined as follows: “The enterprise is the smallest combination of legal units that is an organisational unit producing goods or services, which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources. An enterprise carries out one or more activities at one or more locations. An enterprise may be a sole legal unit”

It is worth noting that the legal unit is not a statistical unit. Its main function is to link administrative units with a statistical unit (enterprise), therefore it can be considered as an input unit in business registers. The characteristics recorded for the legal unit are of an administrative nature and therefore not suitable for statistical purposes as such.

2.2.4. Linking trade and business registers

The regulation concerning business registers defines the link between the business registers and the intra- and extra-Community trade operators. The business registers regulation includes a requirement for specific variables to be kept at legal unit level referring to “intra-Community operators” and to “other associated files, including customs files” (variables 1k and 1j, respectively). Thus the possible link between registers can be obtained through a common unit of reference: the legal unit.

The link between the enterprise in business register and trade operator in trade register is in most cases a direct one-to-one relation. However, there may be cases where an enterprise declares trade through several trade operators.

Trade registers may contain units which are not included in the business register. These are usually operators which do not belong to the coverage of the business register, such as enterprises belonging to NACE sectors A, B and L or non-resident traders. The matching may also be influenced by non-response, thresholds or time lag of registration etc. In addition, the matching rates can be impaired by the missing common identifier between registers.

2.3. Standardisation exercise 2002

Trade data

Nine Member States (Belgium, Denmark, Germany, Italy, Netherlands, Austria, Portugal, Finland and Sweden) participated in the exercise and provided data to Eurostat. All the included Member States produced most of the required tables on intra-EU trade. Data on extra-EU trade were not available for Austria, Germany and the Netherlands. The reference year is 2000 for Germany and Austria and 1999 for the others.

Trade data is provided according to the EU harmonised concept. It is split in 4 non-overlapping classes: intra-community arrivals and dispatches and extra-community imports and exports. The main

breakdowns are by product (CPA 2 digit level) and by partner country (dispatches and exports by country of destination, arrivals by country of consignment and imports by country of origin).

Trade data is linked with business register data. The economic variables are activity code of the enterprise at two digit level of NACE and size-class, in terms of number of employees. In the final tabulation, only the trade figures of identified trade operators which are matched successfully with business registers are used.

In this report the Member States intra- and extra-EU trade data (when available and applicable) are summed up to total imports and exports. The activity sector and size-class are also aggregated at higher levels due to presence of confidential data.

Matching rates

The key factor for evaluating the feasibility of the method is rate of successful linking between trade and business registers, both in terms of number of trade operators and value of trade. Generally, the matching rates were in most cases very high. For intra-EU the matching was perfect or almost perfect in most participating Member States. For extra-EU trade flows the matching rates were also quite good in terms of value of trade, although some Member States recorded fairly unsuccessful matching rates in terms of number of trade operators. This indicates that the unmatched cases were very small traders or private individuals which are not registered in business registers.

3. Results

3.1. Trade by activity sectors

Table 1 presents an aggregate view of the trade by activity sectors. Regarding exports by activities, the share of the whole manufacturing industry sector (NACE sections C – F) was on average 73.5 % while the services sector (NACE sections G – O) accounted for 26.5 % of the total value. Within the manufacturing industry sector, the largest sub-sections were the manufacture of transport equipment (14.5 %), the manufacture of machinery (9.8 %) and the manufacture of electrical equipment (9.5 %). The distributive trade was the biggest contributor within the services sector, covering on average 18 % of total exports.

Regarding imports by activities, the contribution of the services sector was considerably bigger than in exports, covering on average 54.8 % of the value of the total imports. This is mainly caused by the dominant role of the distributive trade. The distributive trade accounted for 44.2 % of total imports, which was almost as much as the share of the whole manufacturing industry sector (45.2 %).

For comparison, the 8-country aggregate trade flows broken down by the products of activities (CPA) are also presented in table 1. Because this classification focuses on traded products, it gives quite a different view of trade. By CPA, practically all of the traded goods (99.0 % of exports and 96.0 % of imports) were classified as products of manufacturing industries.

Table 1: Trade by activities (NACE Rev. 1) and products by activities (CPA), aggregate of 8 Member States (% share of total trade).

		Exports		Imports	
		NACE	CPA	NACE	CPA
Nace Rev. 1 / CPA					
Agriculture and fishing	A-B	.	1.0	.	4.0
Manufacturing Industries	C-F	73.5	99.0	45.2	96.0
Mining and quarrying	C	0.4	1.3	0.1	5.6
Manufacturing	D	72.7	97.2	43.2	90.4
Manufacture of					
food, beverages and tobacco	DA	4.4	6.2	4.0	7.3
textiles & textile products	DB	4.5	5.9	2.5	5.2
leather & leather products	DC	1.5	2.0	0.7	1.4
wood & wood products	DD	1.3	1.6	0.7	1.1
pulp, paper & printing	DE	4.1	4.7	2.0	3.5
refined petroleum products	DF	0.9	1.4	3.0	2.7
chemicals	DG	8.1	11.6	5.9	13.0
rubber & plastics	DH	2.9	3.4	1.8	3.0
non-metallic minerals	DI	1.7	2.1	0.7	1.5
basic metal & metal products	DJ	7.3	8.7	4.3	8.9
machinery	DK	9.8	13.7	3.2	8.8
electrical & optical equipment	DL	9.5	15.1	5.5	16.2
transport equipment	DM	14.5	16.8	8.1	15.3
other manufacturing	DN	2.4	3.9	0.9	2.7
Electricity & gas	E	0.2	0.1	1.5	0.3
Construction	F	0.3	.	0.4	.
Services	G-O	26.5	0.0	54.8	0.0
Distributive trade	G	18.3	.	44.2	.
Motor trade	50	1.8	.	8.3	.
Wholesale trade	51	15.5	.	32.2	.
Retail trade	52	0.9	.	3.8	.
Transport	I	1.6	.	2.8	.
Finance	J	0.1	.	0.8	.
Real estate and business services	K	6.1	0.0	5.3	0.0
Other services	L-O	0.4	0.0	1.7	0.0

Note: Sum of intra-EU trade data of 8 Member States (BE, DK, DE, IT, AT, PT, FI, SE) and extra-EU trade data of 6 Member States (BE, DK, IT, PT, FI, SE).

Table 2 presents the breakdown of exports by NACE Rev. 1 sectors (at section and sub-section level) in 8 participating Member States. The share of the manufacturing industries varied considerably between Member States: in Finland, Portugal, Italy and Sweden it was over 80 % of total exports, while it was 55.1 % in Belgium and 67.4 % in Denmark.

The manufacturers of transport equipment made up at least 10 % of the total exports in each participating Member States except in Finland and Denmark. The manufacture of chemicals and the manufacture of basic metals were among the most important sectors in most Member States, ranging from 10.8 % (Belgium) to 3.8 % (Portugal) and from 12.1 % (Austria) to 4 % (Denmark and Portugal), respectively. The manufacture of pulp, paper and printing was the most diversified sector: Finland (22.9 %) had the highest share and Denmark (1.4 %) the lowest. The manufacturers of electrical and optical equipment were the biggest contributors to the exports in Finland and in Sweden and were also significant exporters in other Member States, with the exception of Belgium. In Italy and Denmark the manufacture of machinery was the biggest exporting manufacturing sub-section.

Table 2: Exports by activities (Nace Rev. 1) in 8 Member States (% share of total trade).

Nace Rev. 1		BE	DK	DE	IT	AT	PT	FI	SE
Manufacturing Industries	C-F	55.1	67.4	68.0	87.5	75.2	89.2	91.3	80.8
Mining and quarrying	C	0.2	3.1	0.1	0.1	0.2	0.8	0.2	0.9
Manufacturing	D	54.4	63.4	67.6	87.1	73.8	88.0	90.8	79.5
Manufacture of									
food, beverages and tobacco	DA	5.5	13.5	3.4	4.6	2.9	4.8	1.5	1.7
textiles & textile products	DB	3.8	2.4	1.7	9.2	4.3	19.1	1.2	0.8
leather & leather products	DC	0.1	0.6	0.2	4.4	1.3	6.6	0.2	0.1
wood & wood products	DD	0.6	0.9	0.5	0.7	3.1	4.5	6.0	3.2
pulp, paper & printing	DE	2.0	1.4	2.6	2.1	5.7	4.8	22.9	9.9
refined petroleum products	DF	1.3	0.0	0.4	1.2	0.1	1.8	2.3	0.3
chemicals	DG	10.8	10.3	8.2	7.9	4.9	3.8	5.0	5.1
rubber & plastics	DH	2.5	3.0	2.5	4.1	3.5	2.4	2.1	1.9
non-metallic minerals	DI	1.5	1.1	0.9	3.1	1.3	3.5	1.3	0.7
basic metal & metal products	DJ	7.7	4.2	6.2	8.3	12.1	4.1	7.2	7.7
machinery	DK	3.1	12.1	7.5	17.7	9.3	4.1	10.7	10.4
electrical & optical equipment	DL	3.9	8.0	8.1	8.4	11.0	13.8	24.7	20.1
transport equipment	DM	10.0	1.4	24.3	10.3	12.1	12.6	5.0	16.4
other manufacturing	DN	1.6	4.4	1.1	5.1	2.2	2.2	0.7	1.3
Electricity & gas	E	0.2	0.7	0.1	0.0	1.0	0.2	0.0	0.1
Construction	F	0.3	0.2	0.1	0.3	0.2	0.3	0.2	0.4
Services	G-O	44.9	32.6	32.0	12.5	24.8	10.8	8.7	19.2
Distributive trade	G	36.8	29.5	15.8	10.0	18.8	9.6	6.5	12.3
Motor trade	50	5.6	1.2	0.9	0.5	5.1	0.3	0.5	0.6
Wholesale trade	51	30.4	27.4	13.6	8.8	12.5	8.6	5.7	11.0
Retail trade	52	0.8	0.9	1.3	0.7	1.2	0.7	0.3	0.7
Other services	H-O	8.1	3.2	16.2	2.5	6.0	1.2	2.2	6.9

Note: Data of BE, DK, IT, PT, FI, SE is aggregate of intra- and extra-EU trade. Data of DE and AT includes only intra-EU trade.

Table 3: Regarding imports by NACE sectors, the services sector enterprises accounted for more than half of trade in each participating Member State with the exception of Italy, where the manufacturing industries recorded 56.6 % of the total trade. Denmark (72.4 %) had the highest share of total imports generated by the services sector. Also in Belgium and Austria the services sector accounted for at least 60 % of the total imports. The majority of imports of services sector were contributed by the distributive trade, ranging from 38.4 % in Germany to 63.1 % in Denmark. In most Member States the most important sectors within manufacturing were either the manufacture of transport equipment or the manufacture of electrical equipment.

Table 3: Imports by activities (Nace Rev. 1) in 8 Member States (% share of total trade).

Nace Rev. 1		BE	DK	DE	IT	AT	PT	FI	SE
Manufacturing Industries	C-F	39.0	27.6	44.6	56.6	38.5	45.1	47.0	40.4
Mining and quarrying	C	0.1	0.3	0.2	0.1	0.1	0.1	0.0	0.2
Manufacturing	D	37.3	26.4	43.0	53.1	37.1	43.3	45.9	39.4
Manufacture of									
food, beverages and tobacco	DA	4.4	4.5	3.4	5.2	2.1	4.8	3.1	2.7
textiles & textile products	DB	2.3	2.0	1.6	4.2	1.8	4.8	1.4	0.7
leather & leather products	DC	0.1	0.4	0.4	1.6	0.7	1.6	0.2	0.1
wood & wood products	DD	0.4	0.7	0.4	1.1	1.2	0.9	0.4	0.6
pulp, paper & printing	DE	1.5	1.4	2.2	2.2	1.8	1.4	3.5	2.2
refined petroleum products	DF	2.0	0.0	3.2	4.5	0.5	5.0	5.5	0.4
chemicals	DG	5.7	3.1	5.5	9.2	3.0	2.9	4.1	3.1
rubber & plastics	DH	1.4	1.4	1.9	2.2	2.4	1.3	1.6	1.4
non-metallic minerals	DI	0.7	0.7	0.5	0.8	1.0	1.1	0.9	0.6
basic metal & metal products	DJ	4.7	2.6	3.2	5.7	3.8	2.7	4.7	4.4
machinery	DK	2.0	3.7	3.1	3.8	3.9	1.9	3.1	4.1
electrical & optical equipment	DL	2.9	2.9	4.7	6.6	6.3	6.4	12.5	8.4
transport equipment	DM	8.5	1.4	12.2	5.0	7.4	7.5	4.3	9.8
other manufacturing	DN	0.6	1.6	0.7	1.0	1.1	1.1	0.6	0.9
Electricity & gas	E	1.1	0.4	1.1	3.1	0.7	1.1	0.8	0.3
Construction	F	0.5	0.4	0.2	0.2	0.5	0.6	0.3	0.5
Services	G-O	61.0	72.4	55.4	43.4	61.5	54.9	53.0	59.6
Distributive trade	G	46.5	63.1	38.4	38.6	54.6	51.4	47.5	51.5
Motor trade	50	8.8	9.1	4.2	11.1	10.5	12.1	7.9	6.9
Wholesale trade	51	34.2	50.7	29.2	25.7	35.7	34.6	37.0	41.0
Retail trade	52	3.6	3.2	5.0	1.8	8.4	4.7	2.6	3.6
Other services	H-O	14.4	9.4	17.0	4.8	6.9	3.4	5.4	8.1

Note: Data of BE, DK, IT, PT, FI, SE is aggregate of intra- and extra-EU trade. Data of DE and AT includes only intra-EU trade.

3.2. Trade by activities and products of activities

The conceptual link between activities and products indicates that most of the output of each enterprise should belong to the same CPA class with its NACE activity class. But it is not obvious that such a link can be directly applied in trade: it is common that an enterprise may trade goods or services which are not considered as typical outputs of that industry. Therefore it is interesting to reconcile trade of enterprises by products, thus focusing on the question how big share of the trade of an enterprise consists of typical products of that industry. This question is particularly interesting in exports because it allows reconciling exports with production statistics.

When measuring trade by activities and products, the traded commodities should be allocated to the economic activity of the trading enterprise and classified either as typical products of the activity or other products. Table 4 shows the reconciliation at aggregate level. On average, 87.0% of goods exported by manufacturing industry enterprises were considered as typical products of that industry. The ratios were at highest in the manufacture of food products, manufacture of textiles and manufacture of leather, where over 92 percent of the exports consisted of typical products. The lowest ratios were recorded in electricity and gas supply (49.5 %), manufacture of rubber and plastic products (69.4 %) and manufacture of refined petroleum products (74.4 %).

Regarding imports, on average 64.0 % of the products imported by the manufacturing industry enterprises were typical products of that industry. The ratios were at highest in manufacture of electrical equipment, manufacture of chemicals and manufacture of basic metals. Likewise, the lowest ratios were found in electricity and gas supply (18.9 %), manufacture of refined petroleum products (29.6 %) and manufacture of rubber and plastic products (36.0 %).

Table 4: Trade by activities (Nace Rev. 1) and products (CPA): typical products/others, aggregate of 8 Member States (% share of total trade).

Nace Rev. 1		Exports		Imports	
		Typical products	Others	Typical products	Others
Mining and quarrying	C	83.4	16.6	58.6	41.4
Manufacture of					
food, beverages and tobacco	DA	93.1	6.9	65.9	34.1
textiles & textile products	DB	92.6	7.4	69.2	30.8
leather & leather products	DC	92.9	7.1	71.2	28.8
wood & wood products	DD	87.7	12.3	56.6	43.4
pulp, paper & printing	DE	91.0	9.0	69.0	31.0
refined petroleum products	DF	74.4	25.6	29.6	70.4
chemicals	DG	88.5	11.5	77.4	22.6
rubber & plastics	DH	69.4	30.6	36.0	64.0
non-metallic minerals	DI	86.9	13.1	41.5	58.5
basic metal & metal products	DJ	80.0	20.0	72.7	27.3
machinery	DK	86.5	13.5	65.4	34.6
electrical & optical equipment	DL	90.9	9.1	81.2	18.8
transport equipment	DM	87.0	13.0	64.6	35.4
other manufacturing	DN	82.0	18.0	39.7	60.3
Electricity & gas	E	49.5	50.5	18.9	81.1
Average		87.0	13.0	64.0	36.0

Note: Sum of intra-EU trade data of 8 Member States (BE, DK, DE, IT, AT, PT, FI, SE) and extra-EU trade data of 6 Member States (BE, DK, IT, PT, FI, SE). Enterprises belonging to service industries are not included in Table 4 since the typical products of such industries are not goods.

An alternative view to examine the relationship between activities and products is to allocate products to the activity of the trader. This reconciliation shows which economic sectors are involved in trading of each category of products. To simplify the analysis, external trade operators are classified into three separate groups according to activity and product as follows: first, the services sector was considered as a single group, and second, the manufacturing industries were divided into two groups depending on whether a given product was imported by an enterprise belonging to the corresponding NACE category as the product or not. By using this reconciliation it is possible to identify products which are mostly traded by the services sector.

The distribution of trade of CPA products by industries is presented in Table 5. On average, 63.6 % of the goods were exported by enterprises of the same NACE sub-section as the product. The services sector accounted for 27.1 % and the different sub-section the remaining 9.3 %. Over 70 % of the exports of paper and wood products, textiles and transport equipments were carried out by manufacturers. The contribution of the services sector was at biggest in the exports of electrical equipment and chemicals.

Regarding imports, the services sector imported 55.3 % of total the products. 28.7 % of imports were recorded by the enterprises belonging to the corresponding NACE sub-section as the imported product and

16 % by the enterprises classified under different NACE sub-section than the product. Regarding the biggest product sub-sections, over 60 % of the imports of electrical equipment and transport equipment were recorded by the services sector while the enterprises of same sector were most active in imports of food products, chemicals and basic metals.

Table 5: Distribution of trade of CPA products by industry of trading enterprise, aggregate of 8 Member States.

CPA		Exports			Imports		
		Same industry	Other industries	Services sector	Same industry	Other industries	Services sector
Agriculture and fishing	A,B		11.0	89.0		32.0	68.0
Mining and quarrying	C	22.9	15.0	62.1	1.4	60.9	37.7
Food, beverages and tobacco	DA	65.8	1.7	32.5	36.4	4.1	59.6
Textiles & textile products	DB	70.3	4.5	25.2	33.7	6.4	59.9
Leather & leather products	DC	69.2	5.6	25.1	35.3	6.1	58.6
Wood & wood products	DD	74.0	5.9	20.1	33.2	13.4	53.5
Pulp, paper & printing	DE	79.7	5.2	15.1	40.6	10.0	49.5
Refined petroleum products	DF	45.3	5.7	49.0	33.1	19.0	47.9
Chemicals	DG	61.2	7.2	31.6	35.1	18.0	47.0
Rubber & plastics	DH	58.8	22.3	18.9	21.6	30.6	47.8
Non-metallic minerals	DI	67.7	10.4	21.9	20.6	26.7	52.7
Basic metal & metal products	DJ	66.7	11.2	22.1	35.1	20.1	44.8
Machinery	DK	61.8	17.2	21.0	23.8	25.4	50.8
Electrical & optical equipment	DL	57.1	9.5	33.4	27.8	8.9	63.4
Transport equipment	DM	74.6	5.8	19.5	34.0	2.6	63.4
Other manufacturing	DN	51.2	11.5	37.3	12.9	9.1	78.0
Electricity & gas	E	57.0	1.3	41.7	88.0	1.2	10.9
Average		63.6	9.3	27.1	28.7	16.0	55.3

Note: Sum of intra-EU trade data of 8 Member States (BE, DK, DE, IT, AT, PT, FI, SE) and extra-EU trade data of 6 Member States (BE, DK, IT, PT, FI, SE).

3.3. Trade by size-class of enterprises

The structure of external trade can be reconciled also by size-class of traders, in terms of number of employees. This approach shows the contribution of enterprises of different sizes to total trade. The breakdown is shown in table 6. On average, the biggest enterprises with 1000 or more employees accounted for one quarter of exports and almost one fifth of imports, while the corresponding figures of the smallest enterprises with less than 10 employees were 16.8 % and 18.2 %, respectively.

Table 6 shows also the breakdown between the manufacturing industries and the services sector. The contribution of the biggest enterprises to total trade flow is bigger in the manufacturing industries than in the services sector: the largest enterprises with 1000 or more employees recorded one third of exports and 36.4 % of imports of the manufacturing industries, while they account for only 4.0 % of exports and 6.5 % of imports of the services sector. Respectively, 44.8 % of the total exports of the services sector and 27.0 % of the imports of the services sector were contributed by the smallest enterprises.

Table 6: Trade by size-class of enterprise, aggregate of 9 Member States (% share of total trade).

Number of employees	Exports			Imports		
	Total	Manufacturing Industries	Services sector	Total	Manufacturing Industries	Services sector
0-9	16.8	6.6	44.8	18.2	6.9	27.0
10-49	14.5	11.5	22.7	18.6	11.0	24.6
50-249	22.3	23.8	18.1	24.5	22.2	26.2
250-999	21.1	24.9	10.4	19.1	23.5	15.7
1000 +	25.3	33.1	4.0	19.6	36.4	6.5

Note: Sum of intra-EU trade data of 9 Member States (BE, DK, DE, IT, NL, AT, PT, FI, SE) and extra-EU trade data of 6 Member States (BE, DK, IT, PT, FI, SE).

Table 7: The biggest enterprises were by far the most dominating in the trade flows of Finland and Sweden; over half of exports and about 30 % of imports were generated by them. The smallest enterprises with less than 10 employees had the highest share of trade in Belgium and Denmark. In exports, they accounted for at least one third of the trade, while in imports their contribution was more than one quarter.

Table 7: Trade by size-class of enterprise in 9 Member States (% share of total trade).

	Number of employees	BE	DK	DE	IT	NL	AT	PT	FI	SE
	0-9	32.6	36.8	14.8	10.4	12.6	12.3	5.8	1.8	5.6
	10-49	12.4	11.4	20.8	20.4	19.6	6.8	12.5	5.0	6.8
Exports	50-249	14.9	20.6	32.2	26.9	31.1	26.9	28.6	13.0	15.8
	250-999	18.6	22.0	24.1	18.4	21.7	30.1	27.4	22.9	22.3
	1000 +	21.5	9.3	8.0	23.9	14.9	23.8	25.7	57.3	49.5
	0-9	29.5	26.2	18.9	12.7	11.0	17.2	9.9	8.3	12.5
	10-49	13.9	21.7	25.9	18.1	22.1	17.0	23.5	17.7	19.1
Imports	50-249	21.8	24.2	32.0	23.4	31.9	26.9	32.8	20.9	19.3
	250-999	17.5	18.4	18.1	20.1	19.0	21.4	15.0	23.6	20.5
	1000 +	17.3	9.5	5.1	25.8	16.1	17.6	18.8	29.5	28.5

Note: Data of BE, DK, IT, PT, FI, SE is aggregate of intra- and extra-EU trade. Data of DE, NL and AT includes only intra-EU trade. Data of DE are not comparable with other Member States due to high number of enterprises whose number of employees was missing. These were mostly big enterprises with multiple locations.

4. Way forward

The results presented above show the main findings of the first pilot study. A revised version of the pilot study was launched 2004 November. This version introduces some minor changes to the methodology and the requested data, e.g. the integration of new EU Member States and a new table showing the number of enterprises by activity sector and size-class. The data collection has recently finished and the data is currently under treatment and validation. The results of the study are expected to be published late 2005.

In the future the objective is to continue the data collection annually. This will require an update for the current legislation. Currently, a draft version of the revision to Extrastat Regulation is under

preparation in Eurostat. Besides the revision to the legal basis of external trade statistics with non-member countries, the draft includes a special chapter on “Additional statistical information on the trading of goods”, which relate to both external trade statistics and intra-Community trade statistics. Trade by enterprise characteristics is listed as one scope of these statistics.

In addition to the reconciliation of trade flows according to size-class and activity, which are describing the structure of traders from the domestic viewpoint, there is a possibility that in the future the links to business registers can be used to categorize traders according to their global status. The current Business Register regulation, which dates back to 1993, is partly outdated, in particular concerning the enterprise groups. Therefore Eurostat has prepared a revision of Regulation, which takes into account new statistical requirements. One of the main changes of the revision is to include enterprise group information to business registers. This information is crucial for further development of external trade statistics because a complete recording of enterprise groups can be used to classify whether an enterprise belongs to a multinational enterprise group and further, whether this enterprise group is domestically or foreign controlled. Eventually, external trade statistics would benefit greatly of this additional information, because it will allow measuring the contribution of multinational enterprise groups to the external flows or the share of foreign affiliates of the total trade without additional data collection.

ANNEX: STANDARDISATION EXERCISE: METHODOLOGY AND TABLES

Reference population

The reference population should cover all the enterprises recorded in the Business Registers, except NACE sectors A (agriculture, hunting and forestry), B (fishing) and L (public administration, and defence; compulsory social security) whose inclusion is optional.

Tables 1.1 and 1.2 aim at measuring the coverage losses caused by the merging of trade and business registers. For these tables, the reference population is the whole set of trade operators (1.1) or the total set of enterprises contained in the BR (table 1.2), including unmatched units. For the other tables (tables 2 to 8), the reference population is limited to the set of matched trade operators and enterprises.

Thresholds

The value of total trade, including adjustments for trade thresholds and non-response, is requested in Table 1 as a denominator needed for the calculation of trade coverage.

For other calculations the following rules concerning thresholds should be followed:

- Only the above (yearly) assimilation-threshold trade and trade operators must be taken into account. Trade below assimilation threshold should not be taken into account although some Member States may have this information available by trade operator or adjusted by partner country or product level.
- Estimates for non-response (partial or total) can be taken into account, if the adjustments are applicable for the purpose of the exercise. It is up to Member State to decide whether the adjusted data can be used together with normally declared data.

Trade concept

All trade data must be provided according to the EU harmonised concept (special trade) including inward/outward/economic processing.

Reference period

The reference year for all the tables is 2002. Member States whose Business Register is not valid for this year should use the newest available year and mention it as a basis for the study.

If possible, Member States are recommended to compile tables also for reference years 2001 and 2000 and deliver them to Eurostat. This would enable comparison over time. Furthermore, Member States are recommended to evaluate results with a special focus on trade operators. It is important to bear in mind that results are influenced not only by changes of trade flows but also by reclassification of variables (for instance, the enterprise may be reclassified under another activity code or size-class).

Trade flows

It is reminded that trade flows can be split in 4 classes: intra-community arrivals, extra-community imports, intra-community dispatches and extra-community exports. Trade operators can be split in 4

overlapping classes: intra-community "arrivers", extra-community importers, intra-community "dispatchers" and extra-community exporters.

As the reference year is before the recent enlargement, the intra-community trade covers the trading of goods between 15 old Member States. The trade flows of 15 old Member States with the 10 new Member States should be treated as extra-community trade. 10 New Member States should treat all their trade flows as extra-community trade.

Geographical breakdown

The geonomenclature 2002¹ must be used as a reference for all geographical breakdowns.

Statistical unit

The statistical unit to be used is the enterprise² which means that trade data, that are generally collected and registered by VAT declaring unit, must be connected to statistics available in the business register (employment, economic activity, etc...) for the whole enterprise concerned. Note that the statistical unit to be used is neither the VAT unit nor the enterprise group unit, but the enterprise unit as identified in the Business Register. This means that several VAT codes may have to be aggregated at enterprise level when matching trade with Business Register data.

Link between trade and business registers

<i>Register</i>	<i>Unit</i>	<i>Code</i>	<i>Variable</i>	<i>Relationship</i>
<i>Business Register</i>	<i>Enterprise (usually identified on the basis of legal unit)</i>	<i>ID number in business register</i>	<i>Economic Activity, Employment, Etc ...</i>	<i>1</i>
<i>Trade Register</i>	<i>Trade operator (identified on the basis of declaring unit)</i>	<i>VAT number</i>	TRADE VALUES	<i>$N \geq 1$</i>

An enterprise may have its trade declared by one or several trade operators each of them being identified by a specific VAT code. There is therefore a 1 to N relation, with $N \geq 1$, between the enterprise codes of the BR and the VAT codes of the trade register.

A particular case of matching failure happens when the VAT number is artificial (e.g.: crude oil in the UK) or not provided at all. The impact of these cases should be taken into account in row "All trade operators except incomplete or wrong VAT codes" of Table 1.1.

¹ The geonomenclature 2002 can be found in http://europa.eu.int/comm/eurostat/ramon/geonom/geonom_en.html

² An enterprise, as defined in the Council Regulation (EEC N° 696/93), is the smallest combination of legal units that is an organisational unit producing goods or services, which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources.

It is also possible that one trade operator enterprise makes declarations for several enterprises. These cases should be separately identified in Table 1.1.

The difference between the number of foreign *trade operators*, successfully matched with the BR in table 1.1 and number of *enterprises* in the BR, matched with trade data, in table 1.2, indicates the general difference between the normal statistical units used in external trade statistics and business statistics.

Economic activity

The activity code should be the activity carried out by the enterprise according to NACE Rev.1.1. The code within the BR should refer to the principal activity during the reference year. The 2-digit level of the NACE code should be used.

Number of employees

The number of employees is defined as those persons who work for an employer and who have a contract of employment and receive compensation in the form of wages, salaries, fees, gratuities, piecework pay or remuneration in kind. The annual average should be considered, and not employment on a particular date. The number of employees must be measured in head counts and not in full-time equivalents.³

Product classification

*The product classification to be used is the Classification of Products by Activity in the European Economic Community (CPA 2002). The 2-digit level of CPA should be used.*⁴

Quality checks

It is advisable to run quality checks when matching trade and business register statistics like, for example, comparing the ratios: "trade after matching / trade before matching" for each economic activity. If the ratio is far below the average level, it may indicate that the matching procedure chosen is not appropriate for the enterprises/trade operators of the economic sector concerned. Also the total number of operators and value of trade between tables should be checked.

Confidentiality

Confidential figures must be underlined and marked in red characters. Eurostat will hide the confidential data according to a procedure to be approved by the Member State concerned.

Units in tables

Data is requested either by number of enterprises or by value of trade. All the values should be expressed in thousands of euros.

³ See Commission Regulation (EC) N° 2700/98 of 17 December 1998 concerning the definitions of characteristics for structural business statistics (<http://forum.europa.eu.int/irc/dsis/bmethods/info/data/new/legislation/sbsdefns.pdf>.)

⁴ The link between CN and CPA can be found in the Ramon (<http://europa.eu.int/comm/eurostat/ramon/>)

The tables required are the following:

- Tables 1: relate to methodological issues and aim at quantifying the coverage losses caused by the matching of business and trade registers [2 tables];
- Tables 2: describe the structure of enterprises engaged in international trade by size-classes. The tables relate both to number of employees and to value of trade [2 tables];
- Tables 3: present trade data by size of the enterprise crossed by economic activities (NACE 2-digit level). Tables are expressed both in terms of number of enterprises and in value of trade. Tables are requested for arrivals, dispatches, imports and exports [8 tables];
- Tables 4: for each of the four types of traders (arrivals, dispatches, imports and exports) data has to be provided by level of trade broken down by products (CPA at 2-digit level). The indicators are expressed both in terms of number of enterprises and in value of trade. The aim is to measure the concentration of trade in a particular product category [8 tables];
- Tables 5: allocate the trade of each commodity to the economic activity of the trading enterprise. This allows reconciling external trade figures with production statistics and national accounts and makes available the study of which economic sector is engaged in trading which category of products [4 tables];
- Tables 6: quantify the number of enterprises trading with the main partner countries/zones of the European Union [1 table];
- Tables 7: measure the presence of trading firms in main geographical markets/zones [2 tables];
- Tables 8: quantify the trade with the main partner countries/zones of the European Union, for each economic sector [2 tables].

II. Tables

Table 1: Matching the trade and business registers (BRs)

Table 1.1: Trade Registers					
<u>Population concerned</u>		Intra		Extra**	
		Arrivals	Dispatches	Imports	Exports
All trade operators	Number of foreign trade operators ⁱ				
	Trade coverage (%) ⁱⁱ				
All trade operators except incomplete or wrong VAT codes	Number of foreign trade operators ⁱ				
	Trade coverage (%) ⁱⁱ				
Trade operators successfully matched with the BR	Number of foreign trade operators ⁱ				
	Trade coverage ⁱⁱⁱ (%)				
	<i>Of which</i> Number of operators making declarations for several enterprises				
	Trade coverage ⁱⁱⁱ (%)				

i : as defined by the VAT number. Includes only the above assimilation threshold operators.

ii : trade identified in the trade register, as a proportion of total trade. Total trade includes an estimation of below-thresholds trade.

iii: trade identified in the trade register, and matched with the BR, as a proportion of total trade. Total trade includes an estimation of below-thresholds trade.

Table 1.2: Business Register					
	Matched with Intra-trade data		Matched with Extra-trade data **		Total (matched or not)
	Arrivals	Dispatches	Imports	Exports	
Number of enterprises ^{iv} in the BR. (all NACE sectors except A, B and L)					

^{iv} As defined in the Business Register. For the difference between trade operator and enterprise, see the methodological introduction.

Tables 2: Trade and number of enterprises by size-class (number of employees)

Table 2.1: Number of enterprises by size-class									
Number of employees	Intra			Extra**			World**		
	<u>Arrivers</u>	<u>Dispatchers</u>	<u>Intra-traders</u>	<u>Importers</u>	<u>Exporters</u>	<u>Extra-traders</u>	Importers or Arrivers	Exporters or Dispatchers	<u>Trade operators</u>
0-4									
5-9									
10-19									
20-49									
50-99									
100-249									
250-499									
500-999									
1000 or more									
<i>Unknown</i>									
Total									

Table 2.2: Trade (000s €) by size-class				
Number of employees ⁱⁱ	Intra		Extra**	
	"Arrivers"	"Dispatchers"	Importers	Exporters
0-4				
5-9				
10-19				
20-49				
50-99				
100-249				
250-499				
500-999				
1000 or more				
<i>Unknown</i>				
Total				

Tables 3: Trade and number of enterprises by economic activity and employment size class

- Table 3.1 : table variable = arrivals (in number of enterprises and in 1000 €)

Table 3.1a: Number of enterprises by economic sector and employment size class							
		NACE Rev. 1 (2-digit level)					Total
		1 st Division	2 nd Division	Etc.	Last Division	<i>Unknown</i>	
Number of employees	0-4						
	5-9						
	10-19						
	20-49						
	50-99						
	100-249						
	250-499						
	500-999						
	1000 or more						
	<i>Unknown</i>						
Total							

Table 3.1b: Trade (000s €) by economic sector and employment size class							
		NACE Rev. 1 (2-digit level)					Total
		1 st Division	2 nd Division	Etc.	Last Division	<i>Unknown</i>	
Number of employees	0-4						
	5-9						
	10-19						
	20-49						
	50-99						
	100-249						
	250-499						
	500-999						
	1000 or more						
	<i>Unknown</i>						
Total							

- Table 3.2 : same as 3.1a and 3.1b with variable = dispatches (in 1000 €)

- Table 3.3** : same as 3.1a and 3.1b with variable = imports (in 1000 €)

- Table 3.4** : same as 3.1a and 3.1b with variable = exports (in 1000 €)

Table 4 : Trade and number of enterprises by CPA-2digits commodities and trade levels

Table 4.1a: Number of enterprises by level of arrivals						
	CPA (2-digits level)					Totalⁱ
	1 st Division	2 nd Div.	Etc.	Last Div.	<i>Unknown</i>	
< 100 000 €						
0.1 - 0.2 m €						
0.2 - 0.5 m €						
0.5 - 1 m €						
1 - 2 m €						
2 - 5 m €						
5 - 10 m €						
10 - 20 m €						
20 - 50 m €						
50 - 100 m €						
100 - 200 m €						
200 - 500 m €						
500 - 1 000 m €						
≥ 1 billion €						
Total						

ⁱ: number of enterprises whose value of trade belongs to a given trade level ≠ sum of all columns.

Table 4.1b: Arrivals (000s €) of enterprises by level of arrivals						
	CPA (2-digit level)					Total
	1 st Division	2 nd Div.	Etc.	Last Div.	<i>Unknown</i>	
< 100 000 €						
0.1 - 0.2 m €						
0.2 - 0.5 m €						
0.5 - 1 m €						
1 - 2 m €						
2 - 5 m €						
5 - 10 m €						
10 - 20 m €						
20 - 50 m €						
50 - 100 m €						
100 - 200 m €						
200 - 500 m €						
500 - 1 000 m €						
≥ 1 billion €						
Total						

- Table 4.2 : same as 4.1a and 4.1b with variable = dispatches (in 1000 €)

- Table 4.3** : same as 4.1a and 4.1b with variable = imports (in 1000 €)

- Table 4.4** : same as 4.1a and 4.1b with variable = exports (in 1000 €)

Tables 5 : Trade by commodities (CPA) × economic sectors (NACE-rev.1)

- Table 5.1 : variable = arrivals (in 1000 €)

Table 5.1: Arrivals (000s €) by commodity and economic sector							
		NACE Rev. 1 (2-digit level)					Total
		1 st Division	2 nd Division	Etc.	Last Division	<i>Unknown</i>	
CPA (2-digit level)	1 st Division						
	2 nd division						
	Etc ...						
	Last Div.						
	Unknown						
Total							

- Table 5.2 : same as 5.1 with variable = dispatches (in 1000 €)

- Table 5.3** : same as 5.1 with variable = imports (in 1000 €)

- Table 5.4** : same as 5.1 with variable = exports (in 1000 €)

Table 6 : Presence of enterprises by partner zone**

Table 6 : Presence of enterprises by partner zone			
Partner zone	Importers/"Arrivers"	Exporters/"Dispatchers"	Total number of trading enterprises
Belgium			
Germany			
Greece			
Spain			
France			
Ireland			
Italy			
Luxembourg			
Netherlands			
Austria			
Portugal			
Finland			
EMU12			
Denmark			
Sweden			
United Kingdom			
EU15			
Czech Republic			
Estonia			
Cyprus			
Latvia			
Lithuania			
Hungary			
Malta			
Poland			
Slovenia			
Slovakia			
EU25			
Norway			
Switzerland			
Russia			
Turkey			
Europe (incl. EU25)			
Canada			
USA			
North America (incl. CA, US)			
Brazil			
South America (incl. BR)			
Japan			
China			
Asia (incl. JP, CN)			
Africa			
Oceania			
Unknown/Secret			
Total			

Member States that have no registers or customs files for extra-community trade are requested to fill only the intra-community rows (trade with 15 old Member States and aggregates based on them).

Tables 7 : Number of enterprises according to the number of partner zones

- Table 7.1 (intra-EU): each Member State is considered as a partner zone.

Table 7.1: Number of enterprises according to number of Intra-EU partner zones			
	"Arrivers"	"Dispatchers"	Total number of intra-EU trading enterprises
1 partner zone			
2 partner zones			
3 partner zones			
4 partner zones			
5 partner zones			
6 partner zones			
7 partner zones			
8+ partner zones			
<i>Unknown</i>			
Total			

- Table 7.2** (intra + extra-EU) : the partner zones to be considered are the following : EU15; 10 New Member States; EUROPE except EU25; North-America; America except North-America; ASIA; AFRICA and OCEANIA.

Table 7.2** : Number of enterprises according to number of Intra+Extra partner zones			
	Importers/ Arrivers	Exporters/Dis patchers	Total number of (importing or exporting) trading enterprises
1 partner zone			
2 partner zones			
3 partner zones			
4 partner zones			
5 partner zones			
6 partner zones			
7 partner zones			
8 partner zones			
<i>Unknown</i>			
Total			

Table 8 : Trade by partners × economic sectors (according to NACE-rev1, 2digits)**

Table 8.1: Arrivals/Imports (000s €)						
	NACE Rev. 1 (2-digit level)					Total
	1 st Division	2 nd Division	Etc.	Last Division	Unknown	
Belgium						
Germany						
Greece						
Spain						
France						
Ireland						
Italy						
Luxembourg						
Netherlands						
Austria						
Portugal						
Finland						
EMU12						
Denmark						
Sweden						
United Kingdom						
EU15						
Czech Republic						
Estonia						
Cyprus						
Latvia						
Lithuania						
Hungary						
Malta						
Poland						
Slovenia						
Slovakia						
EU25						
Norway						
Switzerland						
Russia						
Turkey						
Europe (incl. EU25)						
Canada						
USA						
North America (incl. CA, US)						
Brazil						
South America (incl. BR)						
Japan						
China						
Asia (incl. JP, CN)						
Africa						
Oceania						
Unknown/Secret						
Total						

- Table 8.2: same as 8.1 with variable = Dispatches/exports (in 1000 €).

Member States that have no registers or customs files for extra-community trade are requested to fill only the intra-community rows (trade with 15 old Member States and aggregates based on them).