

ISSN 1974-4110 (on line edition)
ISSN 1594-7645 (print edition)



WP-EMS

*Working Papers Series in
Economics, Mathematics and Statistics*

**MATCHING INDUSTRY CLASSIFICATIONS.
A METHOD FOR CONVERTING
NACE REV.2 TO NACE REV.1**

- **Giulio Perani** (ISTAT, EUROSTAT)
- **Valeria Cirillo** (Sapienza University of Rome)

WP-EMS # 2015/02

Giulio Perani, Valeria Cirillo

Matching industry classifications.

A method for converting Nace Rev.2 to Nace Rev.1

Abstract

In 2008, Eurostat updated the Statistical Classification of Economic Activities (NACE) from NACE Rev.1 to NACE Rev.2. Eurostat provided correspondence tables to facilitate conversion between the two coding system at the 4 digit level. However, due to multiple correspondences, there is a need for a more accurate conversion system. This work aims at providing a useful and reliable tool to quickly convert sectoral level data from NACE Rev.2 into NACE Rev.1 through a back-casting procedure. We have developed a conversion matrix where sectoral weights are built on firm level employment data drawn from the ASIA Istat database. The adoption of employment weights to convert sectoral level data requires us to make assumptions on the stability of the economic structure over time and on the comparability between different data sources. We test our conversion matrix on the Community Innovation Surveys (CIS), converting CIS6 (2006-2008) from NACE Rev.2 into NACE Rev.1. In matching CIS6 with previous years, we do not find evidence of structural breaks.

Sintesi

Nel 2008 il sistema di classificazione dei settori NACE Rev.2 ha sostituito il precedente NACE Rev.1. Le tavole di corrispondenza fornite da Eurostat consentono di verificare la relazione fra settori nelle due diverse classificazioni. Tuttavia la presenza di corrispondenze multiple fra settori rende necessario un sistema di conversione. Questo lavoro presenta un utile e valido strumento per convertire dati settoriali espressi in NACE Rev.2 in NACE Rev.1 attraverso un'operazione di *back-casting*. È presentata una matrice di conversione con pesi costruiti su dati occupazionali delle imprese italiane estratti dal database ASIA dell'Istat. L'utilizzo di pesi occupazionali per convertire altre tipologie di dati richiede il soddisfacimento di alcune assunzioni, quali la tendenziale stabilità nella struttura occupazionale nel tempo e la comparabilità fra tipologie di dati da convertire. Infine, testiamo la matrice di conversione su dati della *Community Innovation Survey* (CIS6). Nel complesso, confrontando i dati convertiti della CIS6 con le *wave* precedenti non emergono *break* strutturali.

1. Introduction

Classifications of activities and products are periodically revised. The transition from NACE 1.1, introduced in 1993, to NACE 2.0 adopted in December 2006 and used from 1 January 2008 onwards, forces statistical agencies to revise business statistics. This reclassification has introduced significant changes in the coding system at the two digit level, which is the one widely used by researchers and adopted also by the Sectoral Innovation Database of the University of Urbino (see Pianta et al., 2015).

The European Statistical Office (Eurostat) provides general correspondence tables matching NACE Rev.1 and NACE Rev.2 sectoral classifications. Detailed information at four digit level is provided at the following link: http://ec.europa.eu/eurostat/web/nace-rev2/correspondence_tables

The general summary of such a correspondence between sections is shown in Table 1.

Table 1. Correspondence table between sections of NACE Rev 1.1 and NACE Rev. 2

NACE Rev. 1.1		NACE Rev. 2	
Section	Description	Section	Description
A	Agriculture, Hunting and Forestry	A	Agriculture, Forestry and Fishing
B	Fishing		
C	Mining and quarrying	B	Mining and quarrying
D	Manufacturing	C	Manufacturing
E	Electricity, gas and water supply	D	Electricity, gas, steam and air conditioning supply
		E	Water supply, sewerage, waste management and remediation activities
F	Construction	F	Construction
G	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	G	Wholesale and retail trade; repair of motor vehicles and motorcycles
H	Hotels and restaurants	I	Accommodation and food service activities
I	Transport, storage and communications	H	Transportation and storage
		J	Information and communication
J	Financial intermediation	K	Financial and insurance activities
K	Real estate, renting and business activities	L	Real estate activities
		M	Professional, scientific and technical activities
		N	Administrative and support service activities
L	Public Administration and defence; compulsory social security	O	Public administration and defence; compulsory social security
M	Education	P	Education

N	Health and social work	Q	Human health and social work activities
O	Other community, social and personal services activities	R	Arts, entertainment and recreation
		S	Other service activities
P	Activities of private households as employers and undifferentiated production activities of private households	T	Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
Q	Extraterritorial organizations and bodies	U	Activities of extraterritorial organizations and bodies

However, the detailed tables produced by Eurostat simply report that some units of analysis that were present in one “old” sector have ended up in one or more “new” sectors. In case of multiple correspondences, there is no information on the share of an “old” industry that is transferred to different “new” ones. In other words, the available information does not allow to build a proper conversion matrix. Therefore, it is not possible to convert data from NACE Rev.2 to NACE Rev.1 or viceversa, as users do not know the portion of data expressed in one classification that has to be switched to the new one.

What is needed is a conversion matrix showing the distribution of the number of units in the two classifications. In order to fill this gap, we propose a conversion matrix built on Italian data on firms. The matrix proposed allows the conversion of aggregate data at the two digit level from NACE Rev.2 into NACE Rev.1.

The rest of the paper is organized as follows. Section 2 revises the principal methodologies used for back-casting; section 3 describes the conversion matrix explaining its construction on Italian microdata and its application for conversion of aggregates. Section 4 tests the methodology on *Community Innovation Survey* (CIS6) data, showing correlations with previous waves and testing the presence of structural breaks that would invalidate the conversion procedure. Section 5 concludes.

2. Methodologies for back casting procedure

The revision of coding systems can be applied following at least four methods (Buiten et al., 2009). First, using **recoding key** on published series; second, having access to **microdata**; third, through a **transition or conversion matrix**; fourth, combining the micro and macro approaches by estimating benchmarks years with a micro method and interpolating with macro techniques or by back-casting conversion matrices (Buiten et al., 2009, p. 3).

The first method relies on a recoding “key” available at the lowest aggregation level in both classifications. The conversion appears straightforward in case of 1-to-1 or many-to-1 changes from the old to the new classification. This condition is met for high levels of aggregation - such as the total for *Industry* - but it is not possible at the two digit level, that is generally more complex and involves 1-to-many relationships.

In the micro approach, data coded in the new classification are reassigned to each statistical unit in the new classification. As stated by Buiten et al. (2009), this technique does not depend on the relationship between old and new codes, allowing conversion of relations of the type 1-to-many and many-to-many between “old” and “new” classifications. The micro method requires information for each unit on the classification it would have had in terms of the revised classification code. At the moment of the implementation of NACE Rev. 2, this information is available in the business register where a double code for every unit is present.

The macro approach is based on aggregate data allowing a redistribution of data by a conversion matrix containing a set of transition coefficients. In order to create the conversion matrix, a double code is needed for at least one year. The construction of a conversion matrix is based on micro data for the double coded year. Following this last approach, in the next section we describe the conversion matrix built on Italian data.

3. The micro/macro approach: the conversion matrix for Italian data

The conversion matrix we present relies on employment data available in double code for 2008 in the *Italian Archive of Businesses of the Italian Statistical Office*, ISTAT¹. The ASIA (*Archivio Statistico delle Imprese Attive*) archive has a census base containing information on Italian enterprises operating in retail, manufacturing and service sectors. Firms included in the census are those producing for at least six months in a year. The census includes information on firm’s economic activity, location, number of workers engaged in the local units at municipal level. Due to the confidentiality of information, the ASIA archive is not public. For the year 2008, ASIA contains information on enterprises registered in both codes, NACE Rev. 1 and NACE Rev.2. Following the same firm in the reference year, we can relocate firm total employment from one sector to another. Different variables can be used to compute “conversion factors” as number of firms, turnover, value added or number of employees. Employment data have long proved to be the most stable indicator of the relevance of industries’ economic activity, and we have adopted such variable for calculating

¹ More information on ASIA is available on <http://dwcis.istat.it/cis/docs/1-3.htm>

conversion weights. The census characteristic of our micro data avoids problems of lack of representativeness.

For the reference year the conversion matrix can be applied to variables other than employment, assuming that they have a similar distribution. If we assume that over time there is a little change in such a relative reassignment of economic units to different industries, we can apply a given conversion matrix also to years other than the reference one. On a case by case basis, the researcher should verify the accuracy of such assumptions.

In order to create the conversion matrix, we follow the above operations:

1. We reassign the employment of each statistical unit – in our case, a firm - from sectors of NACE Rev. 2 to the relevant sectors of NACE Rev.1;
2. We calculate the shares of total employment of sectors of NACE Rev.2 that have to be assigned to NACE Rev.1; conversion weights are expressed as percentages.

More in detail, the frequencies f_t^1 of firms in NACE Rev. 1 can be computed from the frequencies f_t^2 of firms in NACE Rev. 2 in the double coded year (2008) applying the following formula:

$$f_t^1 = \sum_i p_t^{2,1} * f_t^2 \quad (1)$$

where $0 \leq p_t^{2,1} \leq 1$, being p_t the proportion of businesses in “new” NACE classification transferring to the “old” classification. Generalizing, we have:

$$Y_t^1 = \sum_i p_{Y(t)}^{2,1} * Y_t^2 \quad (2)$$

where Y_t^2 is a new variable (employment, value added, turnover, etc.) expressed in NACE Rev.2 and $p_{Y(t)}^{2,1}$ is a set of weights distributing the quantity of Y in NACE Rev.2 over NACE Rev.1.

More simply, in our case considering the total employment of NACE Rev.2 as 1 (or 100%), we obtain in our matrix a set of weights allowing data transformation from one code (NACE Rev. 2) to another (NACE Rev. 1).

The full conversion matrix is shown in Figure 1; each column represents an industry of NACE Rev.2; each row represents an industry of NACE Rev.1. When researchers convert a variable, the

(horizontal) vector of data in NACE Rev.2 has to be multiplied by the conversion matrix, obtaining the (vertical) vector of NACE Rev.1. Problems could arise in presence of missing NACE Rev.2 data, as the multiple correspondence would be incomplete.

A summary of the conversion links, with the full names of industries and main shares of sectors in the conversion from NACE Rev.2 to NACE Rev.1 is provided in Table 2.

The use of the conversion matrix could be clarified through an example. From the matrix in Figure1, the total employment of sector 15 – **Food Products and Beverages** (NACE Rev.1) - will be the sum of 96% of employees from sectors 10 – Manufacture of Food Products (NACE Rev. 2), 97,8 % of employees of sector 11 - Manufacture of Beverages (NACE Rev. 2) and a small fraction – 2% - of employment from sector 20 – Manufacture Of Chemicals And Chemical Products (NACE Rev.2).

For some sectors such as 10 (NACE Rev.1) and 5 (NACE Rev.2) there is a straightforward correspondence, meaning that all activities of sector 10 (Nace Rev. 1) correspond to activities of sector 5 (Nace Rev. 2).

Table 2 Summary of classification systems and conversion percentages

NACE REV.1	Code	% of NACE REV.2 into NACE REV.1	Code	NACE REV. 2
Food Products And Beverages	15	96%	10	Manufacture Of Food Products
Food Products And Beverages	15	98%	11	Manufacture Of Beverages
Tobacco Products	16	100%	12	Manufacture Of Tobacco Products
Textiles	17	93%	13	Manufacture Of Textiles
Wearing Apparel, Dressing And Dying Of Fur	18	81%	14	Manufacture Of Wearing Apparel
Leather, Leather Products And Footwear	19	98%	15	Manufacture Of Leather And Related Products
Wood And Products Of Wood And Cork	20	91%	16	Manufacture Of Wood And Of Products Of Wood And Cork, Except Furniture; Manufacture Of Articles Of Straw And Plaiting Materials
Pulp, Paper And Paper Products	21	95%	17	Manufacture Of Paper And Paper Products
Printing And Publishing	22	95%	18	Printing And Reproduction Of Recorded Media
Coke, Refined Petroleum Products And Nuclear Fuel	23	98%	19	Manufacture Of Coke And Refined Petroleum Products
Chemicals And Chemical Products	24	97%	20	Manufacture Of Chemicals And Chemical Products
Chemicals And Chemical Products	24	99%	21	Manufacture Of Basic Pharmaceutical Products And Pharmaceutical Preparations
Rubber And Plastics Products	25	91%	22	Manufacture Of Rubber And Plastic Products
Other Non-Metallic Mineral Products	26	94%	23	Manufacture Of Other Non-Metallic Mineral Products
Basic Metals	27	93%	24	Manufacture Of Basic Metals
Fabricated Metal Products, Except Machinery And Equipment	28	91%	25	Manufacture Of Fabricated Metal Products, Except Machinery And Equipment
Radio, Television And Communication Equipment; Medical, Precision And Optical Instruments	32, 33	46%, 33%	26	Manufacture Of Computer, Electronic And Optical Products
Electrical Machinery And Apparatus, Nec	31	63%, 28%	27	Manufacture Of Electrical Equipment

Machinery And Equipment, N.E.C.	29	83%	28	Manufacture Of Machinery And Equipment N.E.C.
Motor Vehicles, Trailers And Semi-Trailers	34	88%	29	Manufacture Of Motor Vehicles, Trailers And Semi-Trailers
Other Transport Equipment	35	94%	30	Manufacture Of Other Transport Equipment
Manufacturing Nec	36	89%	31	Manufacture Of Furniture
Manufacturing Nec; Medical, Precision And Optical Instruments	36, 33	47%, 44%	32	Other Manufacturing
Machinery And Equipment, N.E.C.; Electrical Machinery And Apparatus, Nec; Fabricated Metal Products, Except Machinery And Equipment	29, 31, 28	32%, 18%, 15%	33	Repair And Installation Of Machinery And Equipment
Sale, Maintenance And Repair Of Motor Vehicles; Retail Sale Of Fuel	50	97%	45	Wholesale And Retail Trade And Repair Of Motor Vehicles And Motorcycles
Wholesale, Trade & Commission Excl. Motor Vehicles	51	88%	46	Wholesale Trade, Except Of Motor Vehicles And Motorcycles
Retail Trade Excl. Motor Vehicles; Repair Of Household Goods	52	93%	47	Retail Trade, Except Of Motor Vehicles And Motorcycles
Land Transport; Transport Via Pipelines	60	97%	49	Land Transport And Transport Via Pipelines
Water Transport	61	98%	50	Water Transport
Air Transport	62	100%	51	Air Transport
Supporting And Auxiliary Transport Activities	63	88%	52	Warehousing And Support Activities For Transportation
Post And Telecommunications	64	99%	53	Postal And Courier Activities
Hotels And Restaurants	55	98%, 94%	55-56	Accommodation And Food Service Activities
Printing And Publishing	22	91%	58	Publishing Activities
	92	93%	59	Motion Picture, Video And Television Programme Production, Sound Recording And Music Publishing Activities
	92	100%	60	Programming And Broadcasting Activities
Post And Telecommunications	64	97%	61	Telecommunications
Computer And Related Activities	72	95%	62	Computer Programming, Consultancy And Related Activities
Computer And Related Activities	72	86%	63	Information Service Activities
Financial Intermediation Except Insurance And Pension Funding	65	99%	64	Financial Service Activities, Except Insurance And Pension Funding
Insurance And Pension Funding, Except Compulsory Social Security	66	100%	65	Insurance, Reinsurance And Pension Funding, Except Compulsory Social Security
Activities Related To Financial Intermediation	67	96%	66	Activities Auxiliary To Financial Services And Insurance Activities
Real Estate Activities	70	86%	68	Real Estate Activities
Other Business Activities	74	99%	69	Legal And Accounting Activities
Other Business Activities	74	87%	70	Activities Of Head Offices; Management Consultancy Activities
Other Business Activities	74	97%	71	Architectural And Engineering Activities; Technical Testing And Analysis
Research And Development	73	91%	72	Scientific Research And Development
Other Business Activities	74	94%	73	Advertising And Market Research
Other Business Activities	74	87%	74	Other Professional, Scientific And Technical Activities
	85	100%	75	Veterinary Activities
Renting Of Machinery And Equipment	71	80%	77	Rental And Leasing Activities
Other Business Activities	74	100%	78	Employment Activities
Supporting And Auxiliary Transport Activities	63	93%	79	Travel Agency, Tour Operator Reservation Service And Related Activities
Other Business Activities	74	99%	80	Security And Investigation Activities
Other Business Activities	74	93%	81	Services To Buildings And Landscape Activities
Other Business Activities	74	90%	82	Office Administrative, Office Support And Other Business Support Activities

4. An empirical application on *Community Innovation Survey* data

We test the application of the conversion matrix on the 6th wave of the *Community Innovation Survey* codified in NACE Rev.2 in order to obtain data in NACE Rev.1. We draw from the 6th wave of the *Community Innovation Survey* the following variables: R&D expenditure per employee, machinery expenditure per employee, share of firms aiming to reduce labor costs, share of firms aiming to open up new markets, share of firms indicating suppliers as source of innovation, total innovation expenditure per employee, share of firms introducing new products and share of firms introducing new processes. After converting those variables in NACE Rev.1, we compare them with data originally collected in NACE Rev.1 for the 2nd, 3rd and 4th wave of CIS, in order to verify the stability of innovation data over time and detect anomalies across sectors. Tests are carried out using three different measures of correlation, Spearman rank correlation, Kendall rank correlation and Linear correlation. For the Spearman rank correlation we apply the following standard formula:

$$\rho_s = 1 - \frac{6 \sum_i D_i^2}{N(N^2-1)} \quad (3)$$

where ρ_s is the Spearman coefficient, D_i is the difference between r_i and s_i being the rank of the first and the second measure of each observation and N is the total number of observations.

For the Kendall's Tau correlation, we rely on the following formula:

$$\tau = \frac{(\text{number of concordant pairs} - \text{number of discordant pairs})}{\frac{1}{2}n(n-1)} \quad (4)$$

Any pair of observations (x_i, y_i) and (x_j, y_j) are said to be concordant if the ranks for both elements is $x_i > x_j$ and $y_i > y_j$ or if both $x_i < x_j$ and $y_i < y_j$. They are said to be discordant, if $x_i > x_j$ and $y_i < y_j$ or if $x_i < x_j$ and $y_i > y_j$. If $x_i = x_j$ or $y_i = y_j$, the pair is neither concordant nor discordant.

The results of the three tests comparing CIS6 separately with CIS2, CIS3 and CIS4 confirm the stability of the distributions. Correlations are all significant and positive (>0.60); however, when we compute correlations between waves some innovation variables appear more stable than others, as a result of the changes in innovative efforts themselves. Overall, CIS6 is highly correlated with the previous ones underlying an absence of structural breaks by sectors over time. The conversion procedure therefore performs well.

5. Conclusion

After briefly discussing the main methodological questions relevant for reclassifying industry data, we have developed a conversion matrix at the 2 digit level that can be used to reclassify Nace Rev.2. economic variables of recent surveys to the previous NACE Rev.1 classification for which long time series are available. The matrix is based on microdata on sectoral employment in Italy for a reference year (2008). Under specific assumptions, it is possible to extend its application to other variables and countries. A test on CIS innovation variables confirms the stability of the results. The methodology presented here has been adopted for the construction of the Sectoral Innovation Database of the University of Urbino, with a coherent time series based on the NACE Rev.1 classification.

References

Buiten G., Kampen J., Vergouw S. (2009), “Producing historical time series for STS-Statistics IN nace Rev.2.

Theory with an application in industrial turnover index in the Netherlands (1995-2008)”, *Statistics Netherlands*.

Fortier, S. (2005), “The conversion of historical time series according to a revised classification in the wholesale and retail sale monthly survey”. Luxembourg: *Eurostat*.

Pianta, M., Cirillo, V., Guarascio, D., Lucchese, M., Nascia, L., Supino, S. (2015) The Sectoral Innovation Database. Sources, Methodology, Data. *Working Papers Series in Economics, Mathematics and Statistics, University of Urbino*.

NACE REV. 2

NACE	64	65	66	68	69	70	71	72	73	74	75	77	78	79	80	81	82	85	86	87	88	90	91	92	93	95	96	
1																3.178%												
10																												
11																												
13																												
14	0.000%			0.023%	0.000%	0.017%	0.001%			0.002%		0.039%				0.006%	0.01%							0.002%			0.002%	
15	0.000%		0.003%	0.226%	0.001%	0.050%	0.009%	0.012%	0.004%	0.033%		0.032%				0.001%	0.332%	0.002%	0.003%		0.001%			0.005%	0.002%		0.037%	
16																												
17	0.000%		0.001%	0.170%		0.12%	0.028%		0.006%	0.052%	0.007%	0.031%				0.007%	0.067%					0.008%				0.248%	0.137%	
18			0.004%	0.116%	0.000%	0.057%	0.017%		0.009%	0.160%		0.135%		0.022%	0.002%	0.002%	0.058%	0.009%		0.017%		0.019%	0.073%		0.006%	3.103%	0.083%	
19				0.116%	0.002%	0.040%			0.003%	0.058%		0.016%				0.001%	0.055%	0.003%				0.002%	0.011%	0.008%		0.123%	0.021%	
20			0.001%	0.157%	0.001%	0.058%	0.002%		0.214%	0.031%		0.067%				0.012%	0.100%			0.099%		0.181%	0.032%	0.004%	0.500%	0.104%		
21				0.037%	0.001%	0.061%		0.024%	0.010%	0.014%		0.002%				0.051%					0.008%		0.003%		0.003%		0.007%	
22	0.001%		0.004%	0.110%	0.017%	0.334%	0.010%	0.024%	1.148%	0.940%		0.11%	0.001%	0.028%	0.030%	0.349%	0.075%	0.004%		0.040%		0.488%	0.032%	0.014%	0.045%	0.045%		
23				0.001%		0.021%				0.001%						0.018%												
24				0.043%	0.001%	0.068%	0.005%	0.413%		0.01%		0.004%			0.002%	0.11%								0.017%	0.01%	0.01%		
25	0.001%		0.001%	0.104%	0.001%	0.050%	0.004%	0.012%	0.001%	0.015%		0.018%			0.002%	0.170%		0.003%	0.004%	0.019%			0.002%	0.018%	0.020%			
26	0.001%		0.001%	0.116%	0.000%	0.359%	0.005%	0.061%	0.034%	0.028%		0.077%			0.001%	0.050%	0.002%					0.150%			0.005%	0.022%		
27	0.000%			0.035%		0.070%	0.003%			0.006%							0.001%										0.001%	
28	0.001%		0.001%	0.578%	0.006%	0.353%	0.110%	0.071%	0.191%	0.302%		0.703%		0.009%	0.035%	0.286%	0.013%	0.001%		0.018%	0.031%		0.005%	0.030%	0.588%	0.064%		
29	0.002%		0.001%	0.216%	0.001%	0.229%	0.094%	0.212%	0.006%	0.248%		0.581%		0.001%	0.019%	0.078%	0.076%	0.003%					0.004%	0.004%	1.645%	0.027%		
30				0.000%		0.052%	0.009%	0.070%		0.029%		0.018%				0.015%	0.002%						0.009%	0.002%	0.347%	0.001%		
31	0.001%		0.001%	0.068%	0.002%	0.034%	0.044%	0.321%	0.169%	0.087%		0.232%		0.002%		0.006%	0.132%	0.001%	0.000%		0.012%	0.048%	0.164%	0.012%	0.963%	0.014%		
32	0.000%			0.015%		0.032%	0.009%	0.087%	0.001%	0.017%		0.165%				0.021%	0.012%					0.002%	0.033%	0.019%	11.081%	0.002%		
33	0.001%			0.033%	0.001%	0.054%	0.057%	0.268%		0.083%		0.048%		0.013%	0.004%	0.040%	0.006%	0.204%		0.006%	0.002%				0.304%	0.005%		
34				0.011%		0.011%	0.008%	0.004%		0.008%		0.004%				0.001%	0.001%							0.003%	0.007%	0.002%		
35				0.016%		0.021%	0.004%		0.001%	0.063%		0.043%			0.003%	0.057%					0.021%	0.002%		0.025%	0.058%	0.003%		
36	0.001%		0.001%	0.135%	0.002%	0.086%	0.007%		0.201%	0.194%		0.257%		0.010%	0.007%	0.153%	0.008%	0.002%	0.017%	0.017%	0.377%	0.011%	0.630%	0.240%	12.220%	0.073%		
37			0.001%	0.014%	0.001%	0.007%	0.017%	0.004%		0.006%		0.031%			0.007%	0.009%											0.002%	
40	0.000%			0.008%		0.086%	0.002%	0.009%		0.061%						0.021%									0.001%		0.003%	
41				0.002%			0.002%			0.006%							0.005%		0.001%	0.001%							0.001%	
45	0.010%			0.008%	2.907%	0.015%	0.790%	0.491%	0.158%	0.453%		0.766%		4.487%	0.007%	0.011%	0.337%	0.655%	0.039%	0.025%	0.045%	0.049%	1553%	0.01%	0.019%	0.130%	3.103%	0.209%
50	0.001%		0.022%	0.542%	0.001%	0.177%	0.532%	0.004%	0.019%	0.091%	0.007%	0.631%		0.007%		0.034%	0.181%	0.002%	0.002%	0.001%	0.038%	0.007%		0.053%	0.137%	0.408%	0.115%	
51	0.043%		0.490%	1.182%	0.023%	0.984%	0.116%	0.263%	0.917%	0.819%	0.119%	2.056%	0.002%	0.184%	0.031%	0.054%	0.824%	0.144%	0.031%		0.007%	0.116%	0.172%	0.337%	0.139%	0.684%	0.166%	
52	0.002%		0.116%	12.12%	0.016%	0.261%	0.060%	0.028%	0.303%	0.952%	0.162%	1.566%	0.004%	0.139%	0.001%	0.109%	0.445%	0.092%	0.022%	0.055%	0.028%	0.811%	0.326%	2.429%	0.428%	48.032%	0.496%	
55	0.003%		0.206%	16.10%	0.008%	0.540%	0.037%	0.024%	0.049%	0.185%	0.007%	0.377%	0.001%	0.283%	0.019%	0.083%	0.220%	0.037%	0.009%	0.503%	0.131%	0.132%	1.377%	1.593%	3.918%	0.009%	0.186%	
60	0.001%		0.014%	0.112%	0.001%	0.131%	0.009%		0.036%	0.060%		1.536%		0.437%	0.091%	0.068%	0.248%	0.008%	0.017%	0.082%	0.085%		0.009%		0.109%	0.071%	0.047%	
61	0.001%		0.019%	0.004%	0.001%	0.012%	0.001%			0.001%		0.419%		0.012%		0.000%	0.001%	0.002%	0.004%			0.007%			0.002%		0.002%	
62												0.011%		0.037%							0.017%							
63	0.002%		0.392%	0.135%	0.021%	0.494%	0.016%	0.004%	0.223%	0.166%		0.554%	0.001%	92.831%	0.004%	0.172%	0.979%	0.050%	0.001%		0.011%	0.033%	0.976%	0.005%	0.432%	0.064%	0.076%	
64	0.003%		0.011%	0.006%		0.014%	0.001%	0.010%	0.023%	0.008%		0.002%		0.008%		0.009%	0.073%						0.152%		0.007%		0.018%	
65	98.602%		0.528%	0.177%	0.003%	2.074%	0.003%	0.004%	0.067%	0.038%		0.035%		0.002%			0.048%								0.002%		0.003%	
66			100%																									
67	0.848%		95.831%	0.286%	0.055%	0.535%	0.036%		0.067%	0.406%		0.109%	0.001%	0.030%	0.014%	0.004%	0.316%	0.072%	0.002%		0.008%	0.037%		0.079%	0.009%	0.010%	0.032%	
70	0.066%		0.152%	86.073%	0.062%	1.395%	0.047%	0.113%	0.192%	0.878%		0.543%		0.137%		1.831%	0.737%	0.030%	0.025%	0.004%		0.024%	0.079%	0.050%	0.260%	0.007%	0.162%	
71	0.013%		0.004%	0.095%	0.002%	0.150%	0.003%	0.024%	0.125%	0.125%		79.657%		0.049%	0.010%	0.023%	0.239%	0.014%	0.022%			0.397%		4.855%	0.762%	0.033%	0.062%	
72	0.019%		0.088%	0.295%	0.619%	1.313%	0.220%	0.923%	0.589%	3.063%		0.379%	0.035%	0.221%	0.014%	0.019%	0.980%	1.385%	0.015%	0.029%	0.031%	0.080%	1.081%	0.357%	0.080%	14.927%	0.106%	
73	0.001%		0.010%	0.017%	0.003%	0.095%	1.139%	90.512%	0.039%	0.347%	0.007%	0.004%		0.000%	0.004%	0.000%	0.081%	0.053%	0.069%		0.032%	0.010%	0.023%	0.033%	0.002%		0.019%	
74	0.353%		2.024%	2.320%	99.066%	87.349%	96.675%	5.342%	94.226%	87.471%	0.129%	2.909%	99.899%	4.097%	99.477%	92.963%	89.758%	2.937%	0.316%	0.295%		3.204%	6.496%	0.762%	1.222%	0.754%	1.352%	
80			0.010%	0.021%	0.018%	0.115%	0.019%	0.171%	0.013%	0.279%		0.032%	0.006%	0.047%	0.003%	0.016%	0.397%	87.328%	0.015%	0.084%	0.816%	0.074%	0.131%		0.142%	0.004%	0.046%	
85	0.000%		0.008%	0.129%	0.022%	0.084%	0.075%	0.585%	0.009%	0.553%	99.520%	0.142%	0.008%	0.038%		0.070%	0.627%	1.223%	98.903%	98.437%	96.334%	0.036%	0.640%		0.443%		0.326%	
90				0.005%	0.001%	0.079%	0.012%	0.032%	0.006%	0.109%		0.022%		0.012%		0.451%	0.142%		0.006%	0.011%	0.037%			0.143%		0.003%	0.024%	
92	0.001%		0.009%	0.244%	0.013%	0.490%	0.018%	0.045%	0.363%	0.782%		0.827%	0.022%	0.984%	0.014%	0.042%	0.320%	6.036%	0.049%	0.124%	0.673%		91.763%	87.315%	88.309%	90.519%	0.460%	0.316%
93	0.018%		0.037%	0.278%	0.013%	0.655%	0.048%	0.162%	0.283%	0.448%	0.040%	1.087%	0.020%	0.381%	0.287%	0.396%	0.536%	0.317%	0.247%	0.309%	0.702%	0.389%	1.105%	0.086%	0.868%	0.158%	95.549%	
All	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

NACE REV. 1

