



REPUBLIC OF CYPRUS



**STATISTICAL SERVICE
OF CYPRUS**

STUDY ON THE MONTHLY EARNINGS OF THE PRIVATE AND PUBLIC SECTOR

November 2013

I. MONTHLY EARNINGS FOR THE PRIVATE SECTOR

Exercise on matching the database of June 2012 and June 2013 of the Social Insurance

Department

1. In view of the significant changes occurring in the number of employees particularly during the last 12 months, it was evident that the method used to calculate the average monthly earnings did not truly reflect the actual changes occurring in earnings.
2. The method used was the simple average method :

$$\text{Average monthly Earnings} = \left[\sum_{i=1}^{N_m} X_{mi} \right] / N_m$$

Where X_{mi} = Monthly Earnings of i^{th} Employee in month m ,

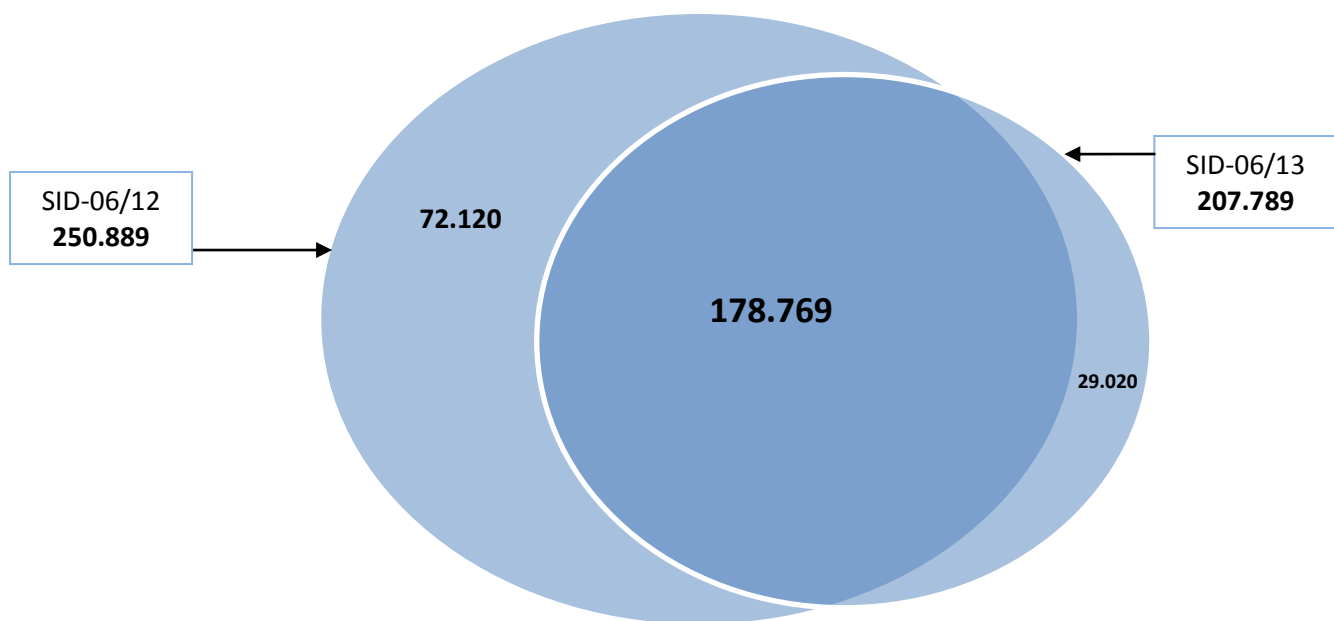
N_m = Total number of Employees in month m

3. The total number of employees N_m each month is changing, and in particular, it has changed significantly during the last year.
4. In an attempt to draw a more representative picture of the change in monthly earnings, a more refined exercise was carried out using the Social Insurance Department's latest data file, which was June 2013 (SID-06/13) and the corresponding data file of June 2012 (SID-06/12).
5. The specifications of the data files are the following:
 - a. Data included in SID-06/12 is final, whereas in SID-06/13, is still preliminary.
 - b. Self-employed are excluded from the data files.
 - c. Persons employed in households are not taken into account in the calculations. The government as well as the employees of government controlled and non-profit organizations, with employment of more than 150 persons are not taken into account in the calculations.
 - d. Employees who report gross earnings less than 50% of the minimum wage are not taken into account in the calculations.
 - e. Data refer to gross earnings. Earnings include salaries, overtime, bonuses, 13th and 14th salary and any other allowances which employers report to the Social Insurance Services. Additionally earnings include the Holiday Fund which is considered to be part of earnings.

- f. Both SID-06/12 as well as SID-06/13 had 4 Mondays, which makes the two months comparable (most employees paid on a weekly basis are paid on Monday).
6. The procedure used in the exercise was one-to-one matching of the records contained in SID-06/12 and SID-06/13 (using SPSS software). More specifically, each record of the data files corresponded to an employee of the specific month together with information on his social insurance id (unique number), sector of economic activity and monthly earnings.
7. The SID-06/12 contained **250.889** records (employees).
The SID-06/13 contained **207.789** records (employees).
8. The matching procedure resulted in:
- 178.769** matched records (employees) – this constitutes **71%** of the total records in SID-06/12 and **86%** of the total records in SID-06/13
 - 72.120** unmatched records (employees) contained only in SID-06/12
 - 29.020** unmatched records (employees) contained only in SID-06/13. (These may be considered as newcomers in the labour force)

A graphical representation of the above matching procedure with the resulting employees is shown below:

Figure 1: Employees



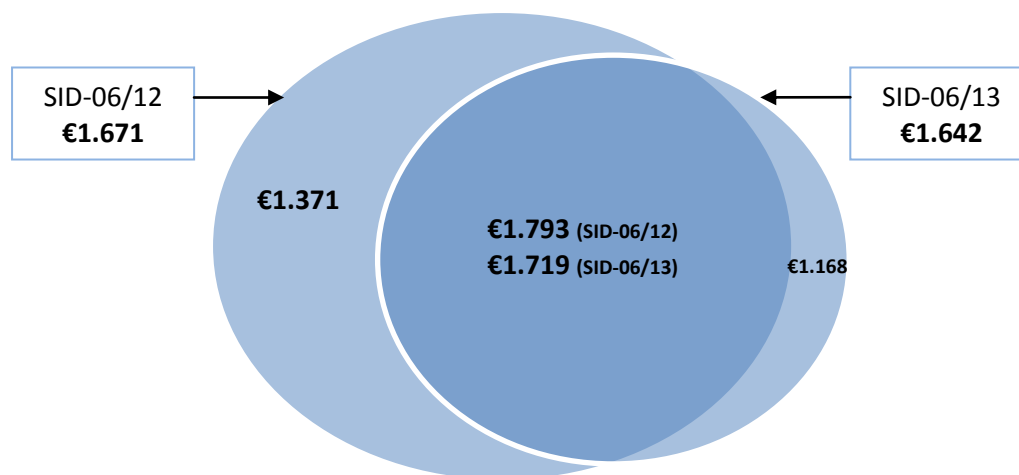
9. Before matching, the average monthly earnings of:
- The **250.889** private sector employees from the SID-06/12 were **€1.671**
 - The **207.789** private sector employees from the SID-06/13 were **€1.642**

Resulting in a decrease of **1,8%**.

10. After matching, the average monthly earnings of:
 - a. The **178.769** matched records were **€1.793** in **June 2012** and **€1.719** in **June 2013**. (A decrease of **4,1%**)
 - b. The **72.120** unmatched records contained only in SID-06/12 were **€1.371**
 - c. The **29.020** unmatched records contained only in SID-06/13 were **€1.168**

A graphical representation of the above is shown below:

Figure 2: Earnings



11. It is evident that the matched records reflect better the changes in average earnings as compared to the simple average. Apart from the total number of employees which has significantly changed, a significant number of employees (72.120) that are assumed to have left the workforce are low wage earners (much lower than the overall average). Additionally, the assumed new employees (29.020), even if arithmetically much less (therefore don't affect at the same degree the average) are significantly less well paid. As a consequence, the overall average monthly earnings are kept at a higher level than the true expected one.

12. Further analysis was carried out by sector of economic activity showing the percentage changes in monthly earnings within each sector of activity. Before the matching procedure, the simple average method of monthly earnings for each sector of economic activity is shown in Table 1.

Table 1: Number of employees and average monthly earnings by sector of economic activity, June 2012 and June 2013

ECONOMIC ACTIVITY (NACE Rev.2)	SID-06/12		SID-06/13		Percentage change in Earnings 2013/2012
	Employees	€ Average Monthly Earnings	Employees	€ Average Monthly Earnings	
A	6.018	827	4.601	803	-3%
B	742	2.216	692	3.212	45%
C	28.219	1.497	21.667	1.481	-1%
D	113	1.803	131	1.650	-9%
E	1.297	1.820	1.213	1.741	-4%
F	24.158	1.585	13.792	1.567	-1%
G	57.666	1.414	46.775	1.369	-3%
H	12.062	2.045	11.208	2.039	0%
I	37.092	1.206	34.142	1.182	-2%
J	6.195	2.533	4.918	2.329	-8%
K	18.796	3.165	16.124	2.990	-6%
L	2.084	1.442	1.755	1.385	-4%
M	19.310	2.140	17.687	2.083	-3%
N	6.568	1.423	5.519	1.381	-3%
O	7.693	1.861	6.628	1.888	1%
P	7.349	1.840	7.947	1.861	1%
Q	5.821	1.456	5.037	1.411	-3%
R	3.325	1.422	2.636	1.362	-4%
S	6.381	1.367	5.317	1.389	2%
TOTAL	250.889	1.671	207.789	1.642	-1,8%

13. After the matching was carried out, the results are shown in Table 2. (Please note that out of the 178.769 totally matched records, only 171.798 employees that did not have a change in their economic activity were analysed.)

Table 2: Number of matched employees that are in both SID-06/12 and SID-06/13 and their corresponding average monthly earnings by sector of economic activity

ECONOMIC ACTIVITY (NACE Rev.2)	Employees	€ Average Monthly Earnings 2012	€ Average Monthly Earnings 2013	Percentage change in Earnings 2013/2012
A	3.254	911	888	-3%
B	559	2.395	2.118	-12%
C	18.778	1.603	1.528	-5%
D	87	1.855	1.825	-2%
E	1.017	1.890	1.863	-1%
F	11.627	1.791	1.633	-9%
G	40.722	1.502	1.415	-6%
H	9.025	2.188	2.196	0%
I	24.905	1.319	1.288	-2%
J	4.130	2.833	2.445	-14%
K	14.773	3.115	3.071	-1%
L	1.346	1.574	1.481	-6%
M	14.902	2.241	2.157	-4%
N	4.185	1.527	1.459	-4%
O	6.304	1.936	1.920	-1%
P	5.641	1.935	1.829	-5%
Q	4.250	1.509	1.465	-3%
R	1.844	1.540	1.483	-4%
S	4.449	1.500	1.465	-2%
TOTAL	171.798	1.803	1.729	-4,1%

14. Examining the percentage changes within sectors as shown in Tables 1 and 2, it is evident that the true changes in earnings in some sectors of the economy are better reflected after the matching procedure. A specific example of this case is the economic sector F (Construction) where in Table 2 the resulting percentage change (-9%) is in line with the deductions reported in the recent collective agreement of the sector, implemented in June 2013. Whereas, in Table 1 the change recorded was only -1%. This was evidently due to the fact that the number of employees in the sector from June 2012 to June 2013 has significantly decreased (from 24.158 to 13.792), and the monthly average earnings of those who are assumed to have left the sector are lower than the average wage earners of the sector (see Table 3).

15. The average earnings by sector of economic activity for the unmatched records in SID-06/12 and the unmatched records in SID-06/13 are shown in Table 3.

Table 3: Number of unmatched employees that were in the SID-06/12 and not in the SID-06/13, number of employees that were in the SID-06/13 and not in the SID-06/12, and their corresponding average monthly earnings by sector of economic activity.

ECONOMIC ACTIVITY (NACE Rev.2)	Employees that were in the SID-06/12 and not in the SID-06/13		Employees that were in the SID-06/13 and not in the SID-06/12	
	Employees 2012	€ Average Monthly Earnings 2012	Employees 2013	€ Average Monthly Earnings 2013
A	2.676	719	1.266	565
B	164	1.658	106	9.219
C	8.678	1.274	2.318	1.143
D	16	1.524	30	1.054
E	253	1.573	123	1.092
F	11.819	1.386	1.866	1.158
G	15.408	1.188	4.920	1.012
H	2.751	1.592	1.779	1.311
I	11.321	961	7.855	861
J	1.842	1.964	554	1.666
K*	3.780	3.357	940	2.054
L	622	1.186	274	992
M	3.747	1.760	2.111	1.537
N	2.069	1.204	985	1.057
O	1.082	1.477	216	1.182
P	1.501	1.473	1.731	2.027
Q	1.458	1.327	668	1.083
R	1.260	1.273	611	1.018
S	1.673	1.039	667	955
TOTAL	72.120	1.371	29.020	1.168

* In economic activity K employees of former Popular Bank are included in SID-06/12 but excluded from SID-06/13 (due to administrative delays by the Department of Social Insurance), but are expected to appear in the database of July 2013.

Concluding remarks

Having matched 178.769 employees representing 71% and 86% of the SID-06/12 and SID-06/13 respectively, the overall decrease in monthly earnings was of the order of **4,1%**, as compared to a decrease of **1,8%** before matching. The corresponding percentage decreases by sector of economic activity also present significant differences. In particular:

- the manufacturing sector (C), where the corresponding decreases are **5%** (after matching) and **1%** (before matching),
- the construction sector (F), with decreases of **9%** (after matching) and **1%** (before matching), and
- the trade sector (G), with decreases of **6%** (after matching) and **3%** (before matching).



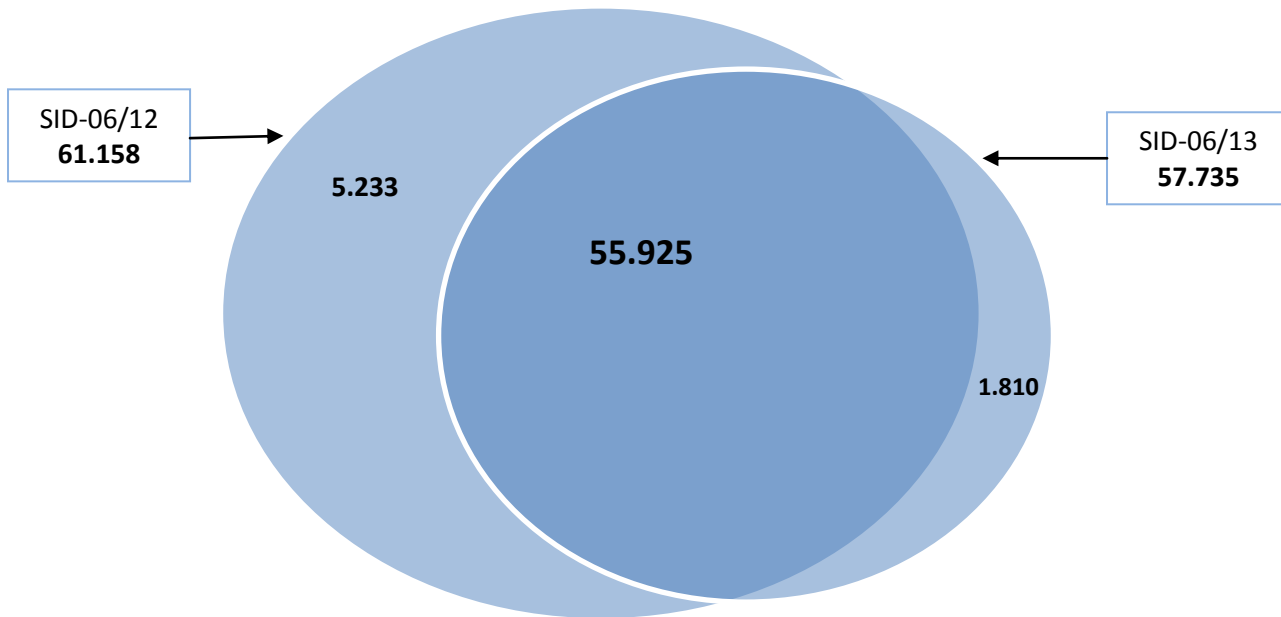
II. MONTHLY EARNINGS FOR THE GOVERNMENT EMPLOYEES AND EMPLOYEES OF GOVERNMENT CONTROLLED AND NON-PROFIT ORGANIZATIONS WITH EMPLOYMENT OF MORE THAN 150 PERSONS

Exercise on matching the database of June 2012 and June 2013 of the Social Insurance Department

1. In line with the analysis carried out for the private sector employees, a matching exercise was carried out for the government employees and employees of government controlled and non-profit organizations with employment more than 150 persons. A matching exercise was carried out using the Social Insurance Department's data files of June 2013 (SID-06/13) and the corresponding data file of June 2012 (SID-06/12).
2. The specifications of the data files are the following:
 - a. Data included in SID-06/12 is final, whereas in SID-06/13, is still preliminary.
 - b. Employees who report gross earnings less than 50% of the minimum wage are not taken into account in the calculations.
 - c. Data refer to **gross earnings (before deductions)**. It is important to point out that the salary deductions imposed by the government were not subtracted from the gross earnings, as the contributions of the employees to social insurance continue to be estimated on the basis of gross earnings (before deductions).
 - d. Both SID-06/12 as well as SID-06/13 had 4 Mondays, which makes the two months comparable (most employees paid on a weekly basis are paid on Monday).
3. The procedure used in the exercise was one-to-one matching of the records contained in SID-06/12 and SID-06/13. More specifically, each record of the data files corresponded to an employee of the specific month together with information on his social insurance id (unique number), sector of economic activity and monthly earnings.
4. The SID-06/12 contained **61.158** records (employees).
The SID-06/13 contained **57.735** records (employees).
5. The matching procedure resulted in:
 - a. **55.925** matched records (employees) – this constitutes **91%** of the total records in SID-06/12 and **97%** of the total records in SID-06/13
 - b. **5.233** unmatched records (employees) contained only in SID-06/12
 - c. **1.810** unmatched records (employees) contained only in SID-06/13.

A graphical representation of the above matching procedure with the resulting employees is shown below:

Figure 1: Employees

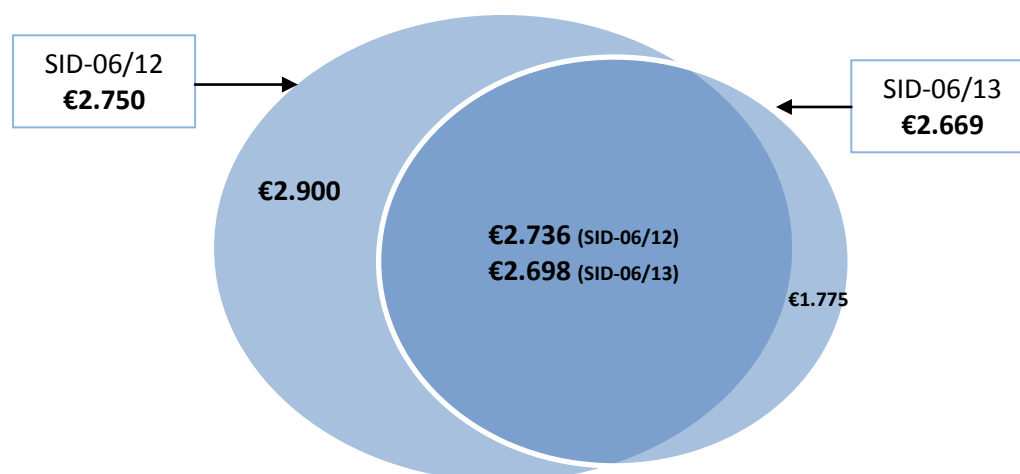


6. Before matching, the average monthly earnings of:
 - a. The **61.158** employees from the SID-06/12 were **€2.750**
 - b. The **57.735** employees from the SID-06/13 were **€2.669**Resulting in a decrease of **2,9%**.

7. After matching, the average monthly earnings of:
 - a. The **55.925** matched records were **€2.736** in **June 2012** and **€2.698** in **June 2013**.
(A decrease of **1,4%**)
 - b. The **5.233** unmatched records contained only in SID-06/12 were **€2.900**
 - c. The **1.810** unmatched records contained only in SID-06/13 were **€1.775**

A graphical representation of the above is shown below:

Figure 2: Earnings



8. It is evident that high wage earners have left mainly through normal or early retirement, thus their average gross monthly earnings are higher than the overall average monthly earnings of June 2012. The newcomers are low wage earners, with average gross monthly earnings significantly lower than the overall average gross monthly earnings in June 2013.

9. Further analysis was carried out by sector of economic activity showing the percentage changes in monthly earnings within each sector of economic activity. Before the matching procedure, the simple average method of monthly earnings for each sector of economic activity is shown in Table 1.

Table 1: Number of employees and average monthly earnings by sector of economic activity, June 2012 and June 2013

ECONOMIC ACTIVITY (NACE Rev.2)	SID-06/12		SID-06/13		Percentage change in Earnings 2013/2012
	Employees	€ Average Monthly Earnings	Employees	€ Average Monthly Earnings	
D	2.364	2.767	2.272	2.628	-5%
F	159	2.427	156	2.359	-3%
H	1.163	2.735	1.079	2.967	8%
J	3.240	2.937	3.124	2.892	-2%
K	330	4.505	313	4.347	-4%
O	51.584	2.721	48.528	2.632	-3%
P	1.912	2.912	1.857	2.883	-1%
Q	185	3.713	184	3.528	-5%
S	221	2.051	222	2.041	-1%
TOTAL	61.158	2.750	57.735	2.669	-2,9%

10. After the matching was carried out, the results are shown in Table 2. (Please note that out of the 55.925 totally matched records, only 55.879 employees that did not have a change in their economic activity were analysed.)

Table 2: Number of matched employees that are in both SID-06/12 and SID-06/13 and their corresponding average monthly earnings by sector of economic activity

ECONOMIC ACTIVITY (NACE Rev.2)	Employees	€ Average Monthly Earnings 2012	€ Average Monthly Earnings 2013	Percentage change in Earnings 2013/2012
D	2.262	2.704	2.626	-3%
F	156	2.438	2.359	-3%
H	1.071	2.653	2.976	12%
J	3.066	2.941	2.921	-1%
K	302	4.415	4.397	0%
O	47.029	2.703	2.659	-2%
P	1.599	3.103	3.048	-2%
Q	175	3.732	3.521	-6%
S	219	2.042	2.040	0%
TOTAL	55.879	2.736	2.698	-1,4%

11. The average earnings by sector of economic activity for the unmatched records in SID-06/12 and the unmatched records in SID-06/13 are shown in Table 3.

Table 3: Number of unmatched employees that were in the SID-06/12 and not in the SID-06/13, number of employees that were in the SID-06/13 and not in the SID-06/12, and their corresponding average monthly earnings by sector of economic activity.

ECONOMIC ACTIVITY (NACE Rev.2)	Employees that were in the SID-06/12 and not in the SID-06/13		Employees that were in the SID-06/13 and not in the SID-06/12	
	Employees 2012	€ Average Monthly Earnings 2012	Employees 2013	€ Average Monthly Earnings 2013
D	100	4.182	10	2.993
F	3	1.850		
H	91	3.697	7	1.525
J	173	2.868	56	1.346
K	28	5.481	9	2.823
O	4.541	2.909	1.469	1.759
P	286	1.820	249	1.817
Q	9	3.315	7	3.986
S	2	3.126	3	2.129
TOTAL	5.233	2.900	1.810	1.775

Concluding remarks

The picture is stable for the average **gross** monthly earnings of government employees and employees of government controlled and non-profit organizations with employment more than 150 persons. Having matched 55.925 employees representing 91% and 97% of the SID-06/12 and SID-06/13 respectively, the overall decrease in monthly earnings was of the order of **1,4%**, as compared to a decrease of **2,9%** before matching.

The results do not truly reflect the actual changes occurring in the monthly earnings of the government employees.

The whole exercise would have been more pragmatic if the salary deductions imposed to government employees were taken into consideration during the analysis process. However, this was not possible in view of the fact that the social insurance data files do not include information with regard to the respective salary deductions.

The actual changes occurring in the public sector are reflected by the Labour Cost Index, where the salary deductions imposed to government employees were taken into account. Indeed, in Eurostat's news release of 16th September 2013, it is shown that the nominal hourly labour costs for the mainly non-business economy (which includes the public sector) for the second quarter of 2013 (preliminary data) as compared with the same quarter of the previous year have decreased by 8,0%.

Annex: Statistical codes of economic activity

A – AGRICULTURE, FORESTRY AND FISHING

B – MINING AND QUARRYING

C – MANUFACTURING

D – ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY

E – WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES

F – CONSTRUCTION

G – WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND
MOTORCYCLES

H – TRANSPORTATION AND STORAGE

I – ACCOMMODATION AND FOOD SERVICE ACTIVITIES

J – INFORMATION AND COMMUNICATION

K – FINANCIAL AND INSURANCE ACTIVITIES

L – REAL ESTATE ACTIVITIES

M – PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES

N – ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES

O – PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY

P – EDUCATION

Q – HUMAN HEALTH AND SOCIAL WORK ACTIVITIES

R – ARTS, ENTERTAINMENT AND RECREATION

S – OTHER SERVICE ACTIVITIES

T – ACTIVITIES OF HOUSEHOLDS AS EMPLOYERS; UNDIFFERENTIATED GOODS- AND
SERVICES-PRODUCING ACTIVITIES OF HOUSEHOLDS FOR OWN USE

U – ACTIVITIES OF EXTRATERRITORIAL ORGANISATIONS AND BODIES