

## **PART 5. FLOWS AND NON-EU EUROPE**

**Hungary**



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## Hungary<sup>1</sup>

### 1. Introduction

Migration of brains is a very complex issue. It is usually motivated by plenty of factors from the runaway of life-danger to obtaining world-class working conditions to the self realisation, as Hungarian history illustrates.

Until the mid-1900s Europe – since the late 19<sup>th</sup> century Central and Eastern Europe – had a considerable emigration position. The main destinations were the traditional overseas immigration countries, the USA in the first place.<sup>2</sup> Hungary similar to other Central and Eastern European countries (CEECs) was an important source of world intelligent migratory. The reasons of pushing out many intelligents were different by decades such as ethnicity, religious, dictatorship, occupation, hard economic situation including unemployment, and semi-famine situations.

Traditional migration pattern and motivation are changing all over the world at the turnaround of 21<sup>st</sup> century, including bi-century old model of CEECs. Opening the CEE borders around collapse of communist regime intensified international inward and outward migration. Brain circulation is an important element of knowledge flow and may become a crucial factor for catch up. Not only the emigration but the immigration too is influencing the knowledge capacity, absorption capabilities and innovation potential of the countries. It is very difficult to reveal the relationship between brain migration and economic social environment of the country. The mutual impacts are among the social, economic conditions, factors of innovation system and brain migration.

First section of this paper put Hungarian modern migration in historical context. Second section attempts to investigate the inflow and outflow of all higher educated (highly skilled) job performing people in the context of total migration. This section devotes special attention to the role of intergovernmental agreements. Third section is focusing on migration of S&T personnel since the beginning of transition period. Availability and reliability of the statistic are burdening factors of such analysis. But data mining brought into the light some very interesting phenomenon. They are shouting for more efforts in indirect development and policy analysis. Three annexes are completing the study.

### 2. Hungarian Migration History in Brief<sup>3</sup>

Modern Hungary was created after the compromise between Hungarian political elite and the Habsburgs in 1867. In the World War I (1914-1918) Austro –Hungarian Monarchy in the military allies of German empire suffered a serious defeat, and the Monarchy broke up. According to Trianon Peace Treaty, two-third of the several centuries old territories of Hungary were annexed to other countries, stripping Hungary of more than half of its population. The new Hungarian political elite attempted again to reorganise the economy within the

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<sup>2</sup> See: *Ewa Morawska* (1995); *Walter Nugent* (1995)

<sup>3</sup> Section 2 was extracted from “East-West migration originating in Central and Eastern Europe – 1945-1989” (IKU Working paper 2002. prepared by Ágnes Hárs), Laky Teréz, Éva Ilona Akantisz, Margit Borbás, Éva Derzsi, Katalin Szatmáry Dobiné, Eleonóra Forgács, Éva Gárdos, Nóra Nagy, András Vikmon, Mandy Fertetics and Gábor Csizmazia, Innovation Research Center (IKU), Budapest.

newly appointed borders.

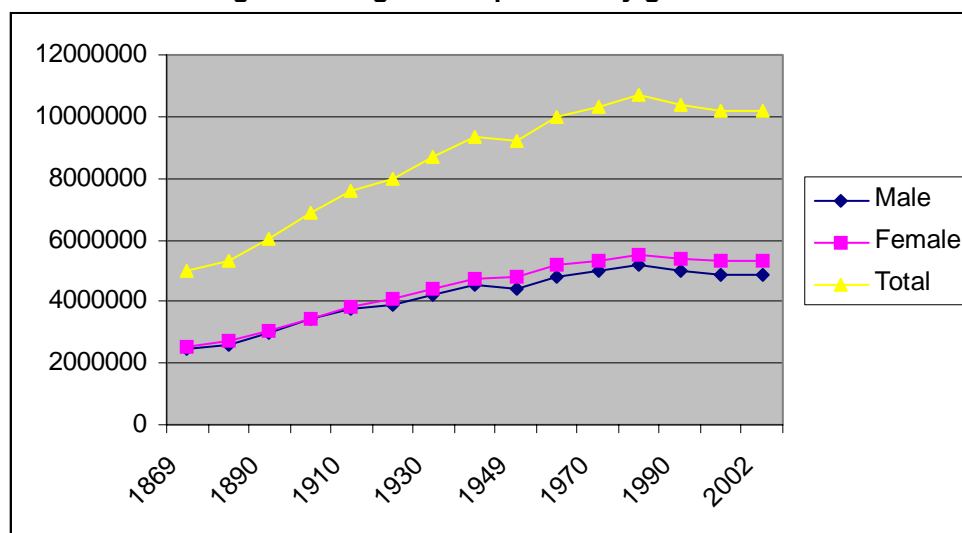
During the World War II. Hungary lost one million lives (soldiers and civilians). After World War II population of the country was 9 204 799. According to the population census data male population was 48.1% to total Hungarian population in 1949 and 47.6% in 2001. Until the 1950s there has been lively migration from East both to the West and to overseas destinations.<sup>4</sup> The members of the huge movement of the second half of the '40s were partly displaced persons, post-war military force members, forced labourers, survivors of the concentration camps, and so on. Census data cannot present the losses because of short-term territorial changes during the war and post-war migration flows.

At the end of the war Hungary fell within the occupation zone of the Soviet Union. That influence lasted more than forty years. As a consequence of Yalta and Potsdam treaties new international boundaries have been drawn, that has been followed by ethnic cleansing. For Hungarians this was second time of such type of migration influence in 20<sup>th</sup> century.

About more than 300 thousand ethnic Hungarians had to leave and move to beyond the new national borders from Southern Slovakia, Romania (Transylvania) and Serbia (Voyvodina)<sup>5</sup>. They were transferred to Hungary or forced to “exchange” by order of the governments. In Hungary there were living about 400.000 ethnic Germans, of them about 225.000 have been expelled. This expulsion was arranged by local authorities or resulted from collective measures against German minorities, who were generally suspected to be Nazi collaborators.<sup>6</sup>

Historical population trend is available since 1869. Population census data were adjusted by CSO to present territory of Hungary. Figure 1 shows the changes in total population and gender. (Figure 1).

**Figure 1 Hungarian Population by gender 1869-2002.**



Source: Demographic Yearbook 2001

Note: Adjusted census data to present territory of Hungary.

<sup>4</sup> By 1950 the out-migration as the consequence of the War has been completed to the *first destinations*. To find the *final destination* took, however, longer time, until 1952-53.

<sup>5</sup> Kosinski (1982), Dövényi – Vukovich (1994)

<sup>6</sup> Münz (1995) cited by Hárs (2002)

The decades of the communist history of Hungary has led to radical changes in the migration pattern. After the post-war situation since 1949/1950 Hungarian migration has been related to the control of emigration by the communist regimes. Borders have been controlled, people had no passport, traditional migration streams have been blocked. Following ethnic cleansing there was a very limited migration among the Central and Eastern European countries such as student exchange program, working abroad in the frame of joint programs of CMEA (Council for Mutual Economic Assistance) and family reunification. Since late 1950s Hungary has been involved in a very limited manner into inflow and outflow with several developing countries however this mobility of highly skilled workers and students means Hungary has involved into migration with several new countries.

Traditional Hungarian migration routes toward Western Europe or America have been restricted in late 1940s. This direction of migration directly linked to a political event, revolution of Hungary in 1956. In 1956, a national uprising erupted that made an important niche into the monolith system. In 1956-57, some 194.000 Hungarians left the country just before Soviet troops and the Kádár regime closed the border, re-establishing the Iron Curtain between Hungary and Austria.

The 1956 emigrants from Hungary were mostly from cities, 53% even from Budapest. The verbal and memoir evidences suppose the high share of intellectuals among them.<sup>7</sup> Although there was a high share of non-manuals, the overwhelming majority of the emigrants were manual worker, mostly industrial worker (over 52 %). There are strikingly many students among the 1956-emigrants: 40% of them students of technical universities, 22% of the agricultural universities while only 14% of the universities of sciences.<sup>8</sup>

Since early 1960s Hungarians have got permission to travel into selected neighbouring countries for few days, maximum five times a year. Latter every second or third years were allowed to stay maximum 1 month in Western Europe. Internal liberalisation process began in mid-seventies. The transition of regime started in late 1980s. During '80s the rigid control over emigration has considerably changed. The so-called "world passport" was introduced in 1988.

In May 1990, the first freely elected Hungarian government came into power and formed the conditions for parliamentary democracy and the market economy. The Russian troops marched out of Hungary.

Even if the transition has happened without bloodletting, conducted within constitutional framework and reinforced by referendum, it has been very difficult painful process. Following the radical collapse of the state socialism the control of emigration has been over, it has been replaced by the immigration control of the West in the 1990s.

Transition allowed realising past designed emigration<sup>9</sup>. At the turn around late 1980s early 1990s transition crises, open up of Hungarian economy and liberal migration policy of western economies resulted migration pick similar to other CEECs relating to historical

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<sup>7</sup> *Rhode* (1993) takes it for example for granted in the paper on East European brain drain. *Tamás* (1993) points to the fact that Central and Eastern European emigration, however putting several researcher, members of the intelligentsia etc .to the west, that streams were mostly not emigrations of the highly qualified persons. (cited by Hárs 2002.)

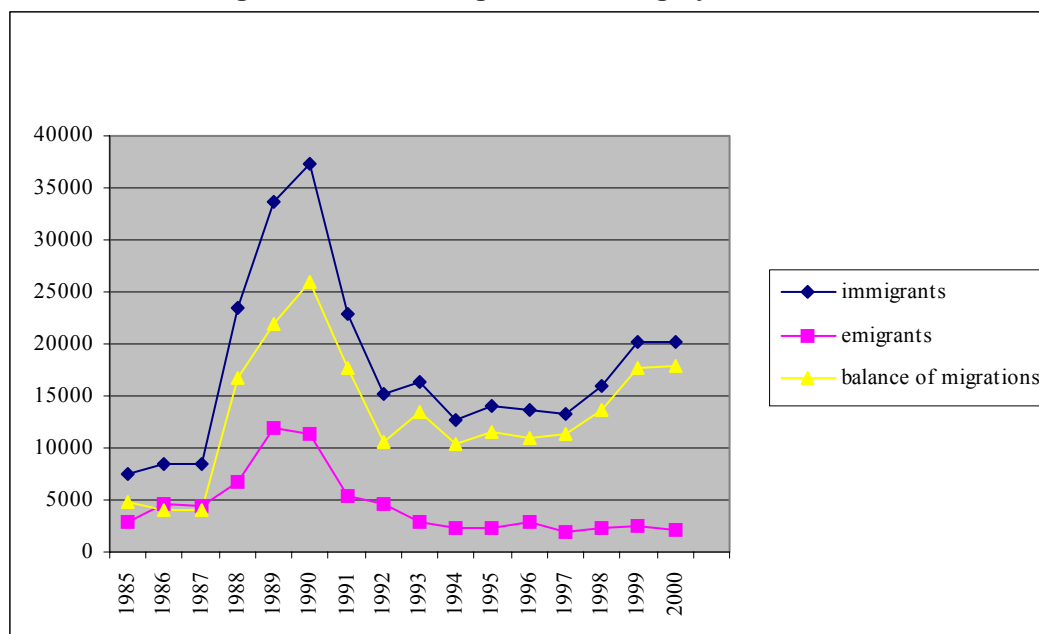
<sup>8</sup> Cp. *Puskás* (1996)

<sup>9</sup> At the same time, when the number of emigrants and immigrants went up after opening the borders in 1989, the statistical (and other official) registration lost control.

turbulence of the collapse of Soviet Block system.

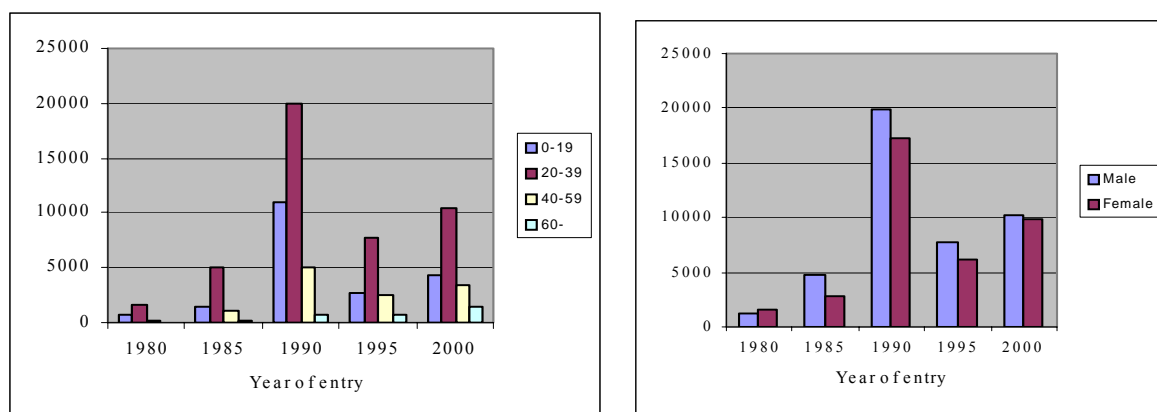
In the last two decades Hungarian balance of total migration was positive. Less Hungarian citizens emigrated than foreign citizens immigrated in the country. According to the final figure of the census, carried out on 1 February 2001, the Hungarian population numbered 10.2 million. The number of foreign citizens staying in Hungary, holding residence or immigration permit, amounted to 116,429 that is 1.1% to total population. Despite of the growth of immigrant population in the 1990's this fraction is rather small in international comparison. As figure 2 shows Hungary has become a „target country” since the late 1980's.

**Figure 2. Rates of migration in Hungary 1985-2000.**



Source: Demographic Yearbook 2001, p. 90.

As a result of the political changes immigration has increased from Central and Eastern European countries mainly from the neighbouring countries. In 2000 77% of foreign citizens residing in Hungary was Central and Eastern European, 10-10% originated from European Union and from Asia, 2% from America and 1% from Africa. While number of immigrants steadily increased from European Union (1335 in 1989 and 1627 in 1999), yearly inflow significantly decreased from CEECs (28389 in 1989, 12934 in 1999). Age and gender breakdown have also substantially changed as Figure 3 illustrates.

**Figure 3. Immigrants to Hungary by age groups and gender.**

Source: Demographic Yearbook, 2001.

While the number of total immigrants was 2.8 times higher in 1985 and 13.8 times higher in 1990 than in 1980 the female dominance turned into the opposite in the same period. Scattered available data suggests that the positive balance at least doubtful among the highly skilled migrants. However both Eastward and Westward inflows to Hungary have diminished the brain losses in 1990s. There are no (detailed) statistical data on the qualification of migrants.

### 3. Migrants on the Labour market

Studying brain circulation it is useful to include total population of highly skilled migrants, not only science and technology personnel. The rational reason is strengthened by the experiences of transition economies. Businessmen specialised managers (such as financial managers, auditors) have crucial role in improving competitiveness. Their knowledge can speed up transition process, adoption to advanced market environment.

This section attempts to investigate the inflow and outflow of all higher educated (highly skilled) job performing people in the context of total migration. Next section concentrates on migration of R&D personnel.

Distribution of foreigners by sector of employment (Table 1) suggests that majority of them is neither highly skilled nor employed in highly skilled jobs. One third of them were employed in construction, agriculture and mining. 2000 was the first year when CSO got more detailed and more precious file from Office of Immigration and Naturalization.

|                                 | <b>2000</b> | <b>2002</b> |
|---------------------------------|-------------|-------------|
| <b>Sector</b>                   | Percent     | Percent     |
| Construction                    | 25.5        | 30.8        |
| Manufacturing                   | 25.2        | 22.4        |
| Retail trade, hotel, restaurant | 21.0        | 17.0        |
| Cultural services and sport     | 11.9        | 13.6        |
| Agriculture                     | 6.3         | 5.7         |
| Health care                     | 2.3         | 2.9         |
| Education                       | 3.2         | 2.8         |
| Mining                          | 1.6         | 0.5         |
| Others                          | 3.0         | 4.3         |
| <i>Source: OMK</i>              |             |             |

The Central Statistical Office grouped the immigrants by occupation, however, these data are far from exact. Among immigrants, two third was white-collar workers until the end of the 1980's. Since 1987 the trend has changed. The political changes in late 1980s resulted in significant mass inflow of less qualified workers. The share of highly qualified immigrants is lower than share of HE people in total Hungarian employees (17%).

In December 2002 there were 42,000 valid work permit. Since 1995 the number of issued work permits by the employment offices has increased steadily (1995:26,000; 1999:34,000; 2000:40,000; 2001:47,000; 2002:50,000). The increasing number is little more than 1% of total employees. (A previous government decision limited the number of permits in a given period in 80000.) Based on the number of valid permits, December 2002, citizens of the three nations Romania, Ukraine, and Slovakia provide 80.8% of the full number. Other than that Yugoslav and Chinese citizens represent significant numbers — 7% (Laky 2003). According to preliminary information half of foreign workers with a valid work permit on 30 June 2002 had a maximum of primary school education. (This is primarily characteristic among workers of Romanian and Ukrainian citizenship). At the same time, the ratio of higher education graduates is traditionally high among those from overseas countries, and from EU member countries (70-80%). (Zsótér 2003) The share of EU citizens at the end of 2002 was 5.4% (2,298), which in a comparison with past years reflects decrease in absolute terms, and in percentage terms (Table 2).

| <i>Country (citizenship)</i>   | 1996          | 1997          | 1998          | 1999          | 2000          | 2001          | %            | 2002          | %            |
|--|---------------|---------------|---------------|---------------|---------------|---------------|--------------|---------------|--------------|
| <b>European Union</b>  | <b>n.d.</b>   | <b>2,162</b>  | <b>2,514</b>  | <b>2,674</b>  | <b>2,374</b>  | <b>2,541</b>  | <b>6.6</b>   | <b>2,298</b>  | <b>5.4</b>   |
| <i>Yugoslavia</i>  | 1,007         | 982           | 964           | 1,238         | 1,400         | 1,252         | 3.2          | 914           | 2.5          |
| <i>Poland</i>  | 956           | 1,051         | 989           | 544           | 294           | 254           | 0.7          | 255           | 0.7          |
| <i>Czech Republic</i>  | 8             | 26            | 21            | 34            | 56            | 79            | 0.2          | 124           | 0.3          |
| <i>Romania</i>   | 8,526         | 9,478         | 10,610        | 14,132        | 17,235        | 22,039        | 57.1         | 25,836        | 60.5         |
| <i>Slovakia</i>  | 428           | 425           | 469           | 972           | 2,856         | 1,788         | 4.6          | 2,759         | 6.4          |
| <i>Soviet Union</i>  | 2,200         | 3,119         | 2,833         | 4,028         | 5,157         | 6,460         | 16.7         | 6,875         | 16.1         |
| <b>Post Socialist Europe</b>   | <b>13,125</b> | <b>15,081</b> | <b>15,886</b> | <b>20,948</b> | <b>26,998</b> | <b>31,872</b> | <b>82.5</b>  | <b>36,763</b> | <b>86.1</b>  |
| <b>Asia</b>  | <b>667</b>    | <b>908</b>    | <b>1,364</b>  | <b>1,832</b>  | <b>2,780</b>  | <b>1,587</b>  | <b>4.1</b>   | <b>2,886</b>  | <b>6.8</b>   |
| Other  | 4,971         | 2,231         | 2,702         | 3,015         | 2,862         | 2,623         | 6.8          | 753           | 1.7          |
| <b>Total</b>   | <b>18,763</b> | <b>20,382</b> | <b>22,466</b> | <b>28,469</b> | <b>35,014</b> | <b>38,623</b> | <b>100.0</b> | <b>42,700</b> | <b>100.0</b> |
| <i>Source: Demographic Yearbook 2001, (1996-2001) Laky 2003 (2002)</i> |               |               |               |               |               |               |              |               |              |

From among overseas countries (582 persons, 1.4%) the US is by far the highest represented

with 385 citizens working in Hungary. The share of all other citizens, representing some 100 countries, lag far behind them. (Annex 2. Table 1.)

Similar to many European countries the professionals no need *work permit* to work legally in many cases.

Between 1991 and 2000 higher educated foreign citizens have being exempted from regular work-permission procedure of foreign employees. Since 1 of January 2000 the work-permission is compulsory for higher educated immigrants too (Table 3).

|  | 1993  | 1994  | 1995  | 1996  | 1997  | 1998  | 1999  | 2000  |
|--|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>HRST and other white collar workers</b> | 4,266 | 7,305 | 7,111 | 5,813 | 7,353 | 7,705 | 6,746 | 9,931 |
| <b>- in which higher educated</b>          | 2,523 | 3,714 | 4,213 | 4,087 | 4,622 | 4,636 | 3,771 | 5,751 |
| <i>Source: National Employment Office</i>  |       |       |       |       |       |       |       |       |

To be employed in an occupation that required higher education it has degree recognised. The Hungarian authorities do not accept several degrees as equivalent of Hungarian higher education. So roughly 60% of Ukrainian and Romanian degree holders cannot get occupations that need higher education. This group of people is becoming blue-collar skilled or unskilled workers. Statistically they do not belong to HRST in Hungary.

However work permits are still not needed if company at least partially foreign owned to the executives, to the members of the supervisory board, to posted people by foreign owners to Hungary.

Higher educated foreigners with international reputation are freed from work-permission procedure if they are invited for relevant activities by institutions of higher education, scientific research institutes, and cultural organisations.

So it is hard to follow the higher educated immigrants because large proportion of this population is still excluded from the registration<sup>10</sup>.

The main drawback of using data based on work permits is that a substantial part of immigrants is left out from the registration: students, researchers, scientists, diplomats, artists, and scholarship holders. In accordance with an agreement with European Union top managers of foreign owned companies are also out of registration because they are allowed to work without work permit. The number of foreign companies rose sharply from a few one in 1989 to 25000 in 2000. As a consequence, an important portion of immigrants with high

<sup>10</sup> Accuracy of the recorded part of higher educated immigrants has some problems: (1) Yearly data cover those who asked permission in given year and do not cover immigrants who are still working in Hungary but got the permission in previous years. (2) Because of personnel data protection rules it may not follow if somebody ask work-permission more than once a year. All permissions are counted as new immigrant work permission. (3) The data-sheets are filled inaccurately and the annexes are missing. (It may not refuse the permission if the Office identifies these mistakes. The Office just may ask the immigrants to remedy them.) So the administrative data source practically can provide much less data than empty sheet suggests. (4) There are parallel windows for applications. Immigrant may apply two or more local offices at the same time. Until 2001 the manual data processing did not allow to avoid the double counting. (5) During the period of manual data processing several employment offices could produce the data with huge time lag. So nation wide data included different time period by regions. (Yearly data meant year, when data was processed.)

| Country of origin                                   | Share  | Distribution |
|---|--|--------------|
|   | of immigrants with higher education background |              |
| Romania   | 11.8   | 53           |
| Poland  | 14.3   | 0.8          |
| China   | 7.7  | 4.1          |
| Ex-Yugoslavia                                       | 14.8   | 3.3          |
| Ex-Soviet   | 13.2   | 15.8         |
| Czech Republic                                      | 20.6   | 0.0          |
| Slovakia  | 7.2  | 6.9          |
| Vietnam   | 4.5  | 2.0          |
| Others (Mostly Austrians, Germans, British, French) | 35.9   | 13.8         |
| TOTAL   | --   | 100          |

*Source: Zsótér (2002) OECD SOPEMI REPORT*

qualification is missing from the statistics registered. There are some much aggregated fresh data on the education of immigrants by nations. (Table 4).

As table 4 shows well less than 10% of immigrants from Vietnam, China and Slovakia was highly qualified. The proportion of higher educated immigrants was much higher from Western Europe. If we take into account the figure does not include those who do not need work permit their proportion is higher.

As regards the absolute number of immigrants by main regions the largest number of highly skilled immigrants arrived from former socialist countries, among them the proportion of

| Region                    | 1995        | 1996        | 1997        | 1998        | 1999        |
|---------------------------|-------------|-------------|-------------|-------------|-------------|
| <b>EU Countries</b>       | 576         | 643         | 621         | 564         | 484         |
| <b>EFTA</b>               | 17          | 20          | 20          | 9           | 17          |
| <b>Candidates</b>         | 1362        | 1077        | 918         | 1056        | 1475        |
| <b>Other Europe</b>       | 1404        | 1079        | 848         | 1085        | 1457        |
| <b>America</b>            | 273         | 302         | 238         | 198         | 215         |
| <b>Middle-East</b>        | 138         | 140         | 94          | 47          | 30          |
| <b>Asia</b>               | 1320        | 1798        | 1648        | 1311        | 666         |
| <b>Africa</b>             | 55          | 58          | 59          | 41          | 27          |
| <b>Others and Unknown</b> | 18          | 13          | 10          | 17          | 13          |
| <b>Total</b>              | <b>5163</b> | <b>5130</b> | <b>4456</b> | <b>4328</b> | <b>4384</b> |

*Source: based on CSO migration databases*

ethnic Hungarian was remarkable but they did not form the main group. Inflow from EU and EFTA countries was between 500 and 660. (Table 5).

Around the end of mass-privatisation and beginning of economic recovery 1997/1998 the inflow of foreign experts, posted immigrants started to slow down, that explains different proportion of highly skilled migrants in 1995 to 1999. (Table 6).

| Region                    | HE immigrants to total number of immigrants in % |             |
|---------------------------|--|-------------|
|                           | 1995   | 1999        |
| <b>EU Countries</b>       | 38.5   | 29.7        |
| <b>EFTA</b>               | 10.5   | 8.1         |
| <b>Candidates</b>         | 21.3   | 18.9        |
| <b>Other Europe</b>       | 35.3   | 25.9        |
| <b>America</b>            | 45.1   | 40.2        |
| <b>Middle-East</b>        | 49.5   | 12.8        |
| <b>Asia</b>               | 65.5   | 33.7        |
| <b>Africa</b>             | 24.6   | 21.1        |
| <b>Others and unknown</b> | 32.7   | 16.9        |
| <b>Total</b>              | <b>33.9</b>                                      | <b>24.1</b> |

*Source: based on CSO migration databases*

If we look at the proportion of highly skilled immigrants to total ones their share was significantly larger in 1995 (34%) than in 1999 (24%). In both years proportion of highly skilled immigrants was above 40% from America while was almost 50% in 1995 from EU and EFTA countries and less than 40% in 1999. Slight decrease may observe in the proportion from candidate countries and strong decrease from Ukraine and Russia even the absolute number of highly-skilled immigrants was a bit higher in 1999 than in 1995 from there.

Data on highly skilled immigrants by occupation is available on 1995-1999 (Table 7). Foreign skilled workers are present in all branches of the economy (except public administration). In the first year (1995) that was latter period of the first phase of transformation largest share of highly skilled workers were employed as general managers and senior officials (class 11) it was followed by professions requiring higher education. This latter group became the major one by the early years of second phase of transition. (That time many foreign managers were replaced by Hungarians.) Occupations by regional origin see in annex

| Year        | Occupation (ISCO-88)                                    |                                      |  |   |                            |
|-------------|---|--------------------------------------|--|---|----------------------------|
|             | Legislators, Senior Officials and General Managers (11) | Service-like Professions (1314-1318) | Professions requiring Higher Education | Others requiring Higher- or Secondary Education | All Highly Skilled Workers |
| <b>1995</b> | 35.9  | 16.9                                 | 33.4                                   | 13.8  | 100                        |
| <b>1996</b> | 43.8  | 15.2                                 | 28.6                                   | 12.4  | 100                        |
| <b>1997</b> | 42.7  | 17.5                                 | 28.6                                   | 11.2  | 100                        |
| <b>1998</b> | 40.3  | 15.9                                 | 30.2                                   | 13.5  | 100                        |
| <b>1999</b> | 24.2  | 18.4                                 | 37.1                                   | 20.5  | 100                        |

*Source: based on CSO migration databases Note: total includes others and unknown*

2. Table 3.

The number of employed highly skilled female immigrants is much lower than males. (Table 8.) Their proportion was above 40% only in 1999.

| <b>Table 8. Number of Highly-skilled female immigrants by regions and occupations 1995-1999</b> |   |                                      |  |   |                            |
|---|---|--------------------------------------|--|---|----------------------------|
| Occupation (ISCO-88)  |   |                                      |  |   |                            |
| Region  | Legislators, Senior Officials and General Managers (11) | Service-like Professions (1314-1318) | Professions requiring Higher Education | Others requiring Higher- or Secondary Education | All Highly Skilled Workers |
| Lowest and highest number in any year of the period   |   |                                      |  |   |                            |
| <b>EU Countries</b>   | 14-20   | 7-11                                 | 52-96                                  | 9-27  | 103-153                    |
| <b>EFTA</b>   | 0-1   | 0-3                                  | 1-2                                    | 0-3   | 1-9                        |
| <b>Candidates</b>   | 62-97   | 157-275                              | 165-261                                | 99-215  | 498-770                    |
| <b>Other Europe</b>   | 63-101  | 45-140                               | 171-369                                | 60-159  | 339-746                    |
| <b>America</b>  | 3-16  | 1-4                                  | 53-77                                  | 2-8   | 62-87                      |
| <b>Middle East</b>  | 2-12  | 0-4                                  | 0-6                                    | 0-3   | 4-18                       |
| <b>Asia</b>   | 106-420   | 52-140                               | 55-92                                  | 17-40   | 266-581                    |
| <b>Africa</b>   | 0-2   | 0-1                                  | 0-6                                    | 0-4   | 1-7                        |
| <b>Total</b>  | <b>305-641</b>  | <b>340-441</b>                       | <b>558-799</b>                         | <b>212-434</b>                                  | <b>1629-2036</b>           |
| <i>Source: based on CSO migration databases Note: total includes others and unknown</i>         |   |                                      |  |   |                            |

Their occupation pattern has a very clear characteristic: the proportion of female highly skilled immigrants is significantly lower in each year and from each region among legislators, senior officers and general managers. (Table 9) The proportion of women in service-like professions is highest among immigrants from candidate countries in each year and from America 1995-1997. Another clear pattern is the proportion of female immigrants from “Other Europe” are employed in professions requiring HE.

| <b>Table 9. Proportion of highly-skilled female immigrants to total by occupations (%) 1995-1999</b>  |   |                                      |  |   |                            |
|---|---|--------------------------------------|--|---|----------------------------|
| Occupation (ISCO-88)  |   |                                      |  |   |                            |
| Years   | Legislators, Senior Officials and General Managers (11) | Service-like Professions (1314-1318) | Professions requiring Higher Education | Others requiring Higher- or Secondary Education | All Highly Skilled Workers |
| <b>1995</b>   | 25.2  | 50.5                                 | 44.5                                   | 50.7  | 39.4                       |
| <b>1996</b>   | 28.5  | 44.7                                 | 43.7                                   | 49.8  | 38.0                       |
| <b>1997</b>   | 25.5  | 47.9                                 | 43.8                                   | 42.4  | 36.6                       |
| <b>1998</b>   | 27.8  | 49.2                                 | 50.3                                   | 47.1  | 40.6                       |
| <b>1999</b>   | 28.7  | 55.0                                 | 49.1                                   | 48.3  | 45.1                       |
| <i>Source: based on CSO migration databases Note: total includes EFTA, Africa and Others and Unknown. The number of female HS immigrants from these regions is below 10</i> |   |                                      |  |   |                            |

Their occupation pattern has a very clear characteristic: the proportion of female highly skilled immigrants is significantly lower in each year and from each region among legislators, senior officers and general managers. (Table 9) The proportion of women in service-like professions is highest among immigrants from candidate countries in each year

and from America 1995-1997. Another clear pattern is the proportion of female immigrants from “Other Europe” are employed in professions requiring HE.

#### 4. The Role of Intergovernmental Agreements

A bulk of the migrant workers arrived to Hungary in the framework of intergovernmental conventions. These intergovernmental conventions are based on a quota system – except the seasonal convention between the German and the Hungarian employment services.

Hungary has effective, mutual conventions/agreements concerning employment, guest workers, and/or apprenticeship with 10 countries: Germany (1990), Austria (1998), Switzerland (1996), Luxembourg (1996), France (2002), Ireland (1992), The Netherlands (1998), Slovakia (1999), Romania (2002) and the Czech Republic (2000). The year in bracket shows the year of agreement that is still valid in 2003.

If somebody wants to get a work-permission in any other country, in the frame of bilateral agreements has to contact official authorities in the destination country, these applications are not registered by Hungarian officials except foreign agencies ask their contribution.

3 of 10 countries’ agreements are not effective because of different reasons, such as lack of language skills, age limit, qualification, missing interest (The Republic of Ireland, The Netherlands and The Czech Republic). Even though the agreements with Austria, Switzerland, France and Luxembourg work on a mutual basis not a single applicant has arrived from these countries in the framework of these programmes. Even majority of agreements are on mutual basis there are usually one-way mainstreams.

*Inflow and stock of migrant workers go far beyond the frame of intergovernmental conventions. The overwhelming majority of guest workers come from neighbouring countries, primarily from Romania, Ukraine and Slovakia. The number of permits issued by Labour centres has been continuously rising since 1997. The database stores some details of citizenship of workers except on those who got permission on the base of the Act LXII of 2001 on Hungarians Living in Neighbouring Countries.*

However, the everyday experience suggests that most workers from neighbouring countries are Hungarians, or at least speak Hungarian, a circumstance greatly facilitating their employment.

As previous details emphasized Hungary is an important receiving country from neighbouring and far-distance post-socialist countries but she is not an active sending country to those directions.

As regards the inflow of foreign workers the agreement with neighbouring Slovakia is the most successful. The quota (1 600 for year’s work and 200 with seasonal employment) is fully filled from Slovakia, while there is little interest from Hungary. Mainly Győr-Moson-Sopron (Philips) and Komárom – Esztergom counties (Hungarian Suzuki, Hungaryrolen) are receiving manual workers from Slovakia mostly ethnic Hungarians.

The apprentice and seasonal agreement with *Romania* (valid from 1 January 2002) has not reached the same effect as Slovakian one. This agreement entitles Hungary to send 8,000 seasonal workers to Romania each year for a maximum period of 6 months, and Hungary receives the same number of Romanian seasonal workers at identical conditions. In the framework of the apprentice agreement 700 persons/year may enter employment in the other

country for a maximum of one year. These inflows are hardly relating to highly skilled workers.

*Outflow* from Hungary is also influenced by the intergovernmental conventions.

The statistic – even its well-known limits - suggest that pre-war pattern of migration flow is rising again from Eastward to Westward. Table 10 presents some data on Hungarian citizens residing in several European countries and first column of the table signs all countries that have intergovernmental agreement with Hungary.

| <b>Table 10. Hungarian citizens residing in Europe by selected countries.</b> |                |             |             |             |             |             |             |             |             |             |             |
|---|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|   | <b>Country</b> | <b>1991</b> | <b>1992</b> | <b>1993</b> | <b>1994</b> | <b>1995</b> | <b>1996</b> | <b>1997</b> | <b>1998</b> | <b>1999</b> | <b>2000</b> |
| IG  | Germany        | 31<br>627   | 56<br>401   | 61<br>436   | 62<br>195   | 57<br>996   | 56<br>748   | 55<br>706   | 52<br>029   | 51<br>905   | 53<br>152   |
| IG  | Austria        | 10<br>556   | ..          | ..          | ..          | ..          | ..          | ..          | ..          | ..          | ..          |
| -   | Great Britain  | 2 000       | 2 000       | 3 000       | 3 000       | 3 200       | 2 000       | 3 000       | 7 000       | 6 000       | ..          |
| IG  | Switzerland    | 4 722       | 4 708       | 4 526       | 4 407       | 4 184       | 3 957       | 3 694       | 3 645       | 3 570       | 3 613       |
| -   | Sweden         | 3 155       | ..          | ..          | ..          | 3 221       | 3 046       | 2 945       | 2 925       | 2 954       | 2 992       |
| -   | Italy          | 1 151       | 1 457       | 1 348       | 1 973       | 1 988       | 2 153       | 2 374       | 2 639       | 2 832       | ..          |
| IG  | Netherlands    | 1 037       | ..          | 1 184       | 1 243       | 1 135       | 1 133       | 1 164       | 1 272       | 1 404       | 1 385       |
| IG  | Luxembourg     |             |             |             |             |             |             |             |             |             |             |
| -   | Belgium        | 753         | ..          | 720         | 735         | ..          | 895         | 947         | 966         | 1 020       | 1 089       |
| -   | Denmark        | 294         | ..          | 287         | 297         | 332         | 335         | 396         | 366         | 377         | 406         |
| -   | Finland        | 308         | 373         | 385         | 385         | 403         | 419         | 411         | 454         | 508         | 597         |
| IG  | France         | ..          | ..          | ..          | ..          | ..          | ..          | ..          | ..          | ..          | ..          |
| -   | Greece         | 291         | 920         | 954         | 567         | 538         | 545         | 581         | 609         | ..          | ..          |
| -   | Iceland        | 17          | 18          | 27          | 35          | 32          | ..          | 40          | 40          | 45          | 52          |
| -   | Liechtenstein  | 9           | 6           | 7           | 9           | ..          | ..          | 9           | 8           | 8           | ..          |
| -   | Norway         | 233         | 223         | 217         | 214         | 203         | 207         | 219         | 226         | 236         | 254         |
| -   | Portugal       | 52          | ..          | ..          | 72          | 84          | 82          | 83          | 91          | 97          | 112         |
| IG  | Romania        | ..          | ..          | 51          | 36          | 38          | 31          | 19          | 26          | 25          | 25          |
| -   | Spain          | 188         | 280         | 214         | ..          | 208         | 221         | 230         | 298         | 360         | 424         |
| -   | Slovenia       | 53          | 56          | ..          | ..          | ..          | 32          | 39          | 41          | 41          | 51          |
| IG  | Ireland        |             |             |             |             |             |             |             |             |             |             |
| IG  | Slovakia       |             |             |             |             |             |             |             |             |             |             |
| IG  | Czech Rep.     |             |             |             |             |             |             |             |             |             |             |

Source: *Demographic Yearbook 2001 p.105*  
Note: IG= Intergovernmental agreement with Hungary

Shortcomings of such type of emigrant statistics are well known. If we are taking into account these figures as rough estimation they illustrate clearly the major host country for Hungarians is Germany. Even the latest figures are not available on emigrants. Austria is the second largest host country.

Both countries have intergovernmental agreement with Hungary. Their primacy strongly relates to intergovernmental conventions on employment of Hungarians.

The Agreement with *Germany* concentrates only on the inflow of Hungarians. This framework includes *Guest worker convention* (since 1990) The current quota equals 2000 persons/year. Work permits are issued for one year, which may be extended another half year. Out of the 1500-1600 annual pool of applicants 1200-1300 are granted the work permit, 50-60% of them are employed in the catering industry. *The employment based on a service contract* (since October 2001) regulates how many employees of a Hungarian firm may

legally work in Germany in a month. The quota equals 7,060 persons/month; The well-known German so called green-card program regulates *the employment of Hungarian IT experts* (since August 2000); According to Hungarian non-official statistics 5-6,000 Hungarian IT experts have so far been granted the permit. (Zsótér 2002); *The home nurses program* (since 2002) wishes to receive qualified or unqualified nurses from EU accession countries including Hungary – for 3-5 years. Hungarian employees are not yet fully familiar with the program, and so not many applications have been submitted so far. Summing up the types of agreement, Germany is an important host country of highly skilled workers.

The second largest host country of Hungarians is *Austria* has apprenticeship agreement and trans-border commuter agreement. *Apprenticeship agreement* (since 1998) set up the quota was 300 people in 1999, 400 in 2000, 600 in 2001, and 900 in 2002. The program has been increasingly popular. There are primarily butchers and young catering experts taking advantage of this one-year opportunity; *Trans-border commuters agreement* (since 1998) effects three participants on the counties on Hungarian side (Vas, Győr-Moson-Sopron and Zala), while on the Austrian side Burgenland (and, from 2001 also the Bruck/Leitha district). The quota was 1300 person in 2002. 50-60% of commuters are employed in agriculture and in catering.

*Great Britain* is the next largest host country.

In the rank of the receiving countries *Switzerland* is the fourth where Hungarian citizens reside. Hungary concluded agreement with Switzerland on employment of Hungarians in 1996 for a quota of 100 people/year. Most of the successful applicants are catering experts. There has been some over-application in recent years.

The fifth in the rank is *Sweden* that has not had intergovernmental agreement with Hungary. The smooth immigration policy made a popular target country among Hungarians.

*Italy* is the sixth in the rank.

*The Netherlands* is the next in the rank of receiving countries however the intergovernmental agreement (since 1998) is not effective.

Data is not available from *France*. The apprenticeship exchange agreement with France (since January 2002) set up 300 persons/year quota.

The agreement with *Luxembourg* (since 1996) primarily serves the purpose of strengthening relationships. The quota is 20 persons/year. The program has limited popularity, 2-3 persons have taken advantage of it so far, all in the catering industry.

*Belgium* is also among the important receiving countries.

The other selected countries have not reached 1000 residing citizens in any year of the last decade.

Very few agreements are relating to HRST. The Employment Office has not processed data on work permissions given to higher educated personnel. The computerisation of the Office was solved in 2000-2001. It will broaden and speed up data processing. The potential sending countries are involving in such agreements if they have unemployment or they are threatened by un/under employment in one or another HRST profession. (for example Hungarian and Norwegian Agreement on medical doctors.)<sup>11</sup> This group of people is mixture by the

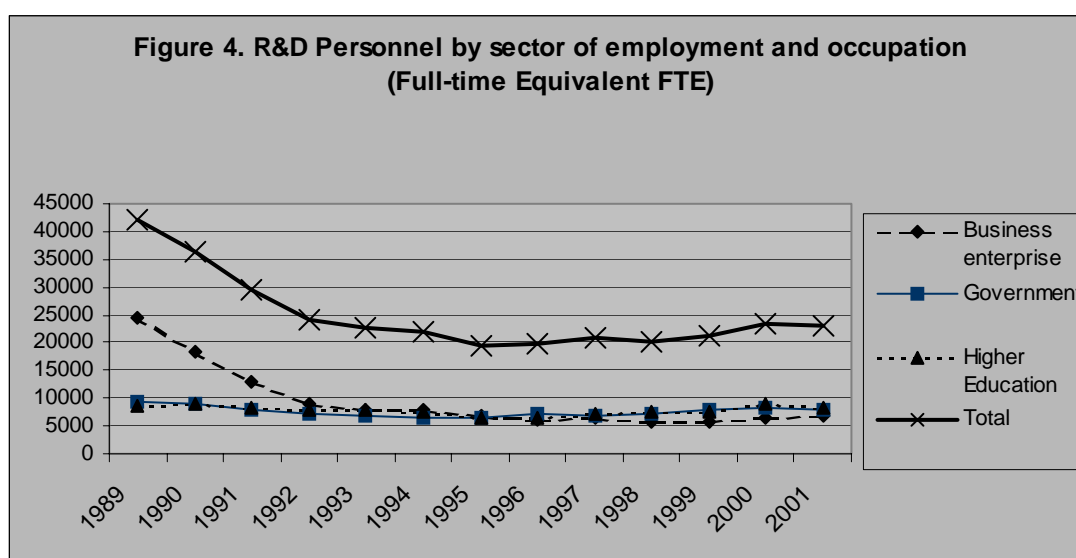
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<sup>11</sup> It may mention here transitional agreements. Several countries have offered short term (two-three month)

relationship of Hungarian employers before leaving. The databank does not contain any information if they left their previous job or remained member of the staff.

## 5. Impact of Transition on Labour Market for S&T Personnel

The distinguished group of highly skilled migrant workers is the R&D personnel. Transformation of economic and scientific system resulted dramatic decrease in R&D jobs in Hungary during initial years of transition. Slight turning in declining trend may observe since 1998. As Figure 4 shows there has been a large share reduction in demand for science places and R&D departments. Aging generation has not been replaced by young generation because fresh graduates have not chosen researcher or engineering career due to poor job prospects. So average age of science researchers in universities and research institutions is increasing, and the time that Hungary will need to replace scientists, there will be a worldwide shortage.



Source: CSO Research and Development 2001 p.50, 1999 p. 51, 1998 p. 58, 1997 p. 46, 1993 p.33.

Dramatic decline in R&D personnel due to lack of funding had very strong pushing out effect. Lot of people left this field because democratisation and marketization offered many new possibilities with better prospects either inside or outside the country. A part of the R&D job losers tried to find jobs in the internal market either or not using their accumulated skills. Another part of R&D job-losers became candidates for emigration. Those qualified people have been usually successful candidates for emigration (a) who have been holders of such qualification in which foreign demand was very high; (b) who have accumulated knowledge devaluated in the country (collapse of industry) but it has not devaluated worldwide.

Besides pushing out effect of transition crises, devaluation of traditional R&D system and transformation have opened new avenues for international mobility of R&D personnel. Open up of these economies had several impacts on emigration/ immigration. First of all Hungarian scientists, faculty members and students could be involved into the scientific, student mobility programmes of European Union and its member states. Special grant schemes were set up

employment possibilities for CEEs to complete their income. The mutual advantages were taken into account. Help to survive the transition period for individuals and countries, decrease the immigration pressure, to gain workforce for pick periods or holiday seasons.

to speed up “networking” such as “Go East” and “Go West” schemes of EU, NATO programs such as “Science for Peace”, OECD initiatives such as “Partners in transition”. Western Countries encouraged CEE R&D personnel to be involved in internationalisation. Beside international organisations and governments private foundations also encouraged scientific mobility.

Another important factor of mobility is that foreign economic relationships have been broadening. Business contacts with foreign entities became part of the everyday life. Foreign direct investment has increased two-direction mobility of qualified people (including R&D personnel) inside the MNCs.

However migrant statistic usually has much better records on the inflow than outflow. In the case of R&D personnel opposite to this general tendency Hungarian statistic can provide much longer time-series on outflow than inflow. Hungarian R&D surveys have contained questions on staying abroad for decades. The question has revised several times but one of its constant elements is employing 6 months or more as borderline between short-term and long-term emigrants. All data covers the emigrants staying abroad more than 6 months. Either working or leave on fellowship abroad.

The number of long-term emigrants by their status is published yearly in R&D publication of CSO. Reporting organisations are those from where the person went abroad: public R&D institutes (including museums, libraries), R&D units of higher education and business R&D organisations.

This data collection has several shortages: (a) Year by year data count person residing abroad. If somebody left country in 1995 and has not returned till 2003, for example, he or she is counted each year as an emigrant. (b) The survey covers only those people who are keeping their job at their previous organisations and are coming back or declared they would like to come back to the institute in a given period. (c) This multiple counting is different by type of organisations. The Secretariat of Hungarian Academy of Sciences (HAS) is enforcing its institutes to clean the data from those who are staying abroad for years and might not return. This irregular data cleaning action is connected to state support and based on the evaluation of institutes.

The meaning of such statistic is limited. This data set cannot tell us the changes in emigration by years. It may not distinguish between the fresh and older emigrants

The availability of such statistic has been deeply rooted in command economic system that over-controlled citizens. Apart from the price that whole scientific community had paid for democratic deficit the availability of such data gives some food for analysis.

| <b>R&amp;D personnel</b> | <b>1991</b> | <b>1992</b> | <b>1993</b> | <b>1994</b> | <b>1995</b> | <b>1996</b> | <b>1997</b> | <b>1998</b> | <b>1999</b> | <b>2000</b> | <b>2001</b> |
|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| All abroad               | 4.6         | 4.4         | 3.8         | 3.2         | 2.8         | 3.7         | 2.9         | 2.3         | 2.0         | 1.9         | 2.0         |
| Of which                 |             |             |             |             |             |             |             |             |             |             |             |
| -Employee                | 2.4         | 2.5         | 2.0         | 1.8         | 1.6         | 2.3         | 1.8         | 1.3         | 1.2         | 1.3         | 1.2         |
| -Fellowship              | 2.2         | 1.9         | 1.8         | 1.4         | 1.2         | 1.4         | 1.1         | 1.0         | 0.8         | 0.7         | 0.8         |
| <b>Total</b>             | 100         | 100         | 100         | 100         | 100         | 100         | 100         | 100         | 100         | 100         | 100         |

*Source: own calculation based on Research and Development, CSO 2000, 1999 and 1995, Budapest*

At the beginning of period 4-5% of Hungarian R&D personnel has done research abroad either as employees or as fellowship researcher. (Table 11.) The proportion decreased by 2%. (Total number of personnel see in Annex 2. Table 2.) The reasons of that decreasing proportion are different: postponed migration or escaping from transition difficulties at the beginning of the 1990s, much easier mobility out and in Hungary, fresh graduates can get scholarships for PhD studies without joining any organisations as employees. Beside previously mentioned methodological shortcoming another reason of declining figure in the period of increasing mobility is the misinterpretation of freedom and liberalisation by organisations: refuse to report on migrations.

It is worth paying attention to the changing proportion of people working abroad for salary or on fellowship. The proportion of employees increased and S&E with fellowship decreased. It may take the risk to state that this change illustrates that Hungarian S&E have been involved in different foreign networks they can find jobs by their knowledge. The senior researchers do not need to use fellowships as entrance card to international networks.<sup>12</sup>

More detailed information on absent R&D personnel is available for 5 years. While distribution of R&D personnel by type of organisation was more than 70% at public R&D institutes and higher education, almost 30% at business R&D organisations. The latter group has only 10% absent R&D personnel. (Table 12.) Fellowship is almost negligible from business R&D organisations.

| <b>Table 12. Number of absent R&amp;D Personnel by type of organisation and status of personnel</b> |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Type of organisation  | 1995       |            |            | 1996       |            |            | 1997       |            |            | 1998       |            |            | 1999       |            |            |
|   | E          | F          | All        | E          | F          | All        | E          | F          | All        | E          | F          | All        | E          | F          | All        |
| Public R&D Institutes and others  | 161        | 73         | 234        | 237        | 99         | 336        | 215        | 93         | 308        | 164        | 55         | 219        | 108        | 40         | 148        |
| R&D units of Higher Education   | 135        | 177        | 312        | 216        | 198        | 414        | 176        | 168        | 344        | 141        | 186        | 327        | 174        | 154        | 328        |
| R&D Units of Firms and Profit oriented Institutes   | 32         | 11         | 43         | 6          |            | 6          | 2          |            | 2          | 7          | 3          | 10         | 32         | 3          | 35         |
| <b>Total</b>  | <b>328</b> | <b>261</b> | <b>589</b> | <b>459</b> | <b>297</b> | <b>756</b> | <b>393</b> | <b>261</b> | <b>654</b> | <b>312</b> | <b>244</b> | <b>556</b> | <b>314</b> | <b>197</b> | <b>511</b> |
| Note: E= Employee, F= Fellowship  |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
| Source: based on CSO R&D survey compiled for IKU  |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |

Assuming that type of organisation relates to type of research it would be useful to investigate further the reasons of differences in the proportion of absent personnel from total. (Table 13).

<sup>12</sup>The transformation of doctorate system also results some decline in measurable numbers. However the real situation is the opposite in the case of Hungarian doctorate students. In newly introduced PhD system the students have much more options for mobility than doctorate students in Soviet type “candidate” system used to have. The mobility of PhD students is counted as student and not as R&D personnel mobility. The mobile people in the process of candidature were counted as R&D personnel.

| <b>Table 13. Number of absent R&amp;D Personnel from Hungarian Organisation by sector and status (staying abroad more than 6 months)</b> |             |             |             |             |             |
|--|-------------|-------------|-------------|-------------|-------------|
| <b>Sector</b>  | <b>1995</b> | <b>1996</b> | <b>1997</b> | <b>1998</b> | <b>1999</b> |
| <b>Public R&amp;D Institutes and others</b>  |             |             |             |             |             |
| 7310 R&D on natural sc.  | 177         | 203         | 176         | 192         | 123         |
| 7320 R&D on social sc.   | 43          | 36          | 34          | 23          | 22          |
| 7510 Public, economic and social policy  |             | 32          | 39          |             |             |
| 8511 Hospital activities   |             |             | 2           | 4           | 3           |
| 8514 Other health act.   | 12          | 4           | 4           |             |             |
| 9252 Museums and historical sites  |             | 54          | 53          |             |             |
| <b>Total number</b>  | <b>234</b>  | <b>336</b>  | <b>308</b>  | <b>219</b>  | <b>148</b>  |
| <b>R&amp;D units of Higher Education</b>   |             |             |             |             |             |
| 7310 R&D on natural sc.  |             |             |             | 1           | 1           |
| 8030 Higher education  | 250         | 234         | 188         | 320         | 325         |
| 8511 Hospital activities   | 62          | 180         | 156         |             |             |
| <b>Total number</b>  | <b>312</b>  | <b>414</b>  | <b>344</b>  | <b>327</b>  | <b>328</b>  |
| <b>R&amp;D Units of Firms and Profit oriented Institutes</b>   |             |             |             |             |             |
| 2320 M. refined petroleum products   | 10          |             | 1           |             |             |
| 3220 M. TV and radio transmitters  |             |             |             |             | 19          |
| 7310 R&D on natural sc.  | 21          | 3           |             | 1           | 7           |
| 7320 R&D on social sc.   | 2           |             |             |             |             |
| From other sectors with less than 10 absent pers.  | 12          | 10          | 1           | 16          | 11          |
| <b>Total number</b>  | <b>43</b>   | <b>6</b>    | <b>2</b>    | <b>10</b>   | <b>35</b>   |
| <b>All organisations</b>   |             |             |             |             |             |
| 2320 M. refined petroleum products   | 10          |             | 1           |             |             |
| 3220 M. TV and radio transmitters  |             |             |             |             | 19          |
| 7310 R&D on natural sc.  | 198         | 206         | 176         | 194         | 131         |
| 7320 R&D on social sc.   | 45          | 36          | 34          | 23          | 22          |
| 7510 Public, economic and social policy  |             | 32          | 39          |             |             |
| 8030 Higher education  | 250         | 234         | 188         | 320         | 325         |
| 8511 Hospital activities   | 62          | 180         | 158         | 4           | 3           |
| 8514 Other human health act.   | 12          | 4           | 4           |             |             |
| 9252 Museums and historical sites  |             | 54          | 53          |             |             |
| From other sectors with less than 10 absent pers.  | 12          | 10          | 1           | 15          | 11          |
| <b>Total number of persons</b>   | <b>589</b>  | <b>756</b>  | <b>654</b>  | <b>556</b>  | <b>511</b>  |
| <i>Source: based on CSO R&amp;D survey compiled for IKU</i>  |             |             |             |             |             |

By the sector of employment higher education leads the rank of absent R&D personnel. This sectoral class does not support the analysis. The other classes give more information on type of activity of emigrants. The second sector in the rank is R&D on natural science. Followed by hospital activities. The number of absent researchers is much lower but still remarkable from the sector of R&D on social science and museums and historical sites.

Only two manufacturing sectors may find in the table: refined petroleum products and TV and radio transmitters. The absent R&D personnel were reported from these sectors occasionally.

This structural pattern of outflow may occur because of co-effect of pushing out (underpaid jobs, poor research facilities), relatively easy transferable capabilities and good receptiveness of immigrants in these fields.

Analysing the data by field of sciences strengthens the previous pattern. Most of the absent R&D personnel belonged to natural sciences, followed by medical sciences behind them

social sciences. Absence of engineering R&D personnel was the most important at business R&D units, scattered number was observable in medical sciences. (Table 14).

| Table 14. Number of absent R&D Personnel by field of Science and status |                                  |      |      |      |      |                               |      |      |      |      |   |      |      |      |      |                   |      |      |      |      |    |
|---|----------------------------------|------|------|------|------|-------------------------------|------|------|------|------|---|------|------|------|------|-------------------|------|------|------|------|----|
| Field of science  | Public R&D Institutes and others |      |      |      |      | R&D units of Higher Education |      |      |      |      | R&D units of Firms and Profit oriented Institutes |      |      |      |      | All organisations |      |      |      |      |    |
|   | 1995                             | 1996 | 1997 | 1998 | 1999 | 1995                          | 1996 | 1997 | 1998 | 1999 | 1995  | 1996 | 1997 | 1998 | 1999 | 1995              | 1996 | 1997 | 1998 | 1999 |    |
| <b>Employee status</b>  |                                  |      |      |      |      |                               |      |      |      |      |   |      |      |      |      |                   |      |      |      |      |    |
| Natural sciences  | 87                               | 91   | 79   | 88   | 49   | 47                            | 47   | 40   | 45   | 45   | -   | -    | -    | -    | -    | 134               | 138  | 119  | 133  | 94   |    |
| Engineering sciences  | 31                               | 28   | 21   | 15   | 14   | 13                            | 13   | 14   | 15   | 19   | 31  | 6    | 2    | 7    | 27   | 65                | 47   | 37   | 37   | 60   |    |
| Agricultural sciences   | 4                                | 7    | 4    | 8    | 2    | 6                             | 10   | 17   | 4    | 5    | -   | -    | -    | -    | -    | 10                | 17   | 21   | 12   | 7    |    |
| Medical sciences  | 15                               | 14   | 15   | 16   | 13   | 27                            | 94   | 70   | 48   | 57   | -   | -    | -    | -    | 5    | 42                | 108  | 85   | 64   | 75   |    |
| Social sciences   | 34                               | 89   | 82   | 22   | 20   | 42                            | 52   | 32   | 28   | 48   | 1   | -    | -    | -    | -    | 77                | 141  | 114  | 50   | 68   |    |
| Unknown   | -                                | 8    | 14   | 15   | 10   | -                             | -    | 3    | 1    | -    | -   | -    | -    | -    | -    | -                 | 8    | 17   | 16   | 10   |    |
| <b>Fellowship status</b>  |                                  |      |      |      |      |                               |      |      |      |      |   |      |      |      |      |                   |      |      |      |      |    |
| Natural sciences  | 51                               | 49   | 48   | 30   | 16   | 41                            | 40   | 33   | 37   | 40   | -   | -    | -    | -    | -    | 92                | 89   | 81   | 67   | 56   |    |
| Engineering sciences  | 4                                | 9    | 3    | 2    | 2    | 20                            | 27   | 11   | 14   | 12   | 10  | -    | -    | -    | 2    | 1                 | 34   | 36   | 14   | 18   | 15 |
| Agricultural sciences   | 3                                | 6    | 7    | -    | -    | 12                            | 4    | 3    | 4    | 5    | -   | -    | -    | 1    | 1    | 15                | 10   | 10   | 5    | 6    |    |
| Medical sciences  | 6                                | 5    | 4    | 4    | 3    | 62                            | 78   | 76   | 88   | 59   | -   | -    | -    | -    | 1    | 68                | 83   | 80   | 92   | 63   |    |
| Social sciences   | 9                                | 6    | 6    | 1    | 2    | 42                            | 49   | 45   | 37   | 36   | 1   | -    | -    | -    | -    | 52                | 55   | 51   | 38   | 38   |    |
| Unknown   | -                                | 24   | 25   | 18   | 17   | -                             | -    | -    | 6    | 2    | -   | -    | -    | -    | -    | -                 | 24   | 25   | 24   | 19   |    |
| <b>Together</b>   |                                  |      |      |      |      |                               |      |      |      |      |   |      |      |      |      |                   |      |      |      |      |    |
| Natural sciences  | 138                              | 140  | 127  | 118  | 65   | 88                            | 87   | 73   | 82   | 85   | -   | -    | -    | -    | -    | 226               | 227  | 200  | 200  | 150  |    |
| Engineering sciences  | 25                               | 37   | 24   | 17   | 16   | 33                            | 40   | 25   | 29   | 31   | 41  | 6    | 2    | 9    | 28   | 99                | 83   | 51   | 55   | 75   |    |
| Agricultural sciences   | 7                                | 13   | 11   | 8    | 2    | 18                            | 14   | 20   | 8    | 10   | -   | -    | -    | 1    | 1    | 25                | 27   | 31   | 17   | 13   |    |
| Medical sciences  | 21                               | 19   | 19   | 20   | 16   | 89                            | 172  | 146  | 136  | 116  | -   | -    | -    | -    | 6    | 110               | 191  | 165  | 156  | 138  |    |
| Social sciences   | 45                               | 95   | 88   | 23   | 22   | 84                            | 101  | 77   | 63   | 84   | 2   | -    | -    | -    | -    | 129               | 196  | 165  | 88   | 106  |    |
| Unknown   | -                                | 32   | 39   | 33   | 27   | -                             | -    | 3    | 7    | 2    | -   | -    | -    | -    | -    | -                 | 32   | 42   | 40   | 29   |    |

Source: based on CSO R&D survey compiled for IKU

The migrations of R&D personnel are included as an influencing factor of the available input at the organisations and as a measure of internationalisation. Hungary is a host country of R&D personnel too. Until mid-1990s there was no attention paid to inflow of R&D personnel. The revision of R&D questionnaire in 1998 was a real breakthrough in the conceptual background of data collection. (Hüttl-Inzelt-Varga, 1997)

Since 1998 the Hungarian Central Statistical Office has collect data on inflow of Hungarian R&D personnel regularly by R&D survey. R&D survey does not ask information on the length of time staying in Hungary. The main aim of these surveys is to collect data on R&D inputs and outputs from organisations that are involved in R&D activities. (Details on the questionnaire see in Hungarian country folder.)

The Hungarian Central Statistical Office has not published data on R&D immigrants yet. The reason of non-publication is the low response rate especially on these questions. Since low response rate to this question data were not included into the regular data processing, publications. Because of the lack of sources CSO has not investigated yet the reasons of missing responses.

This project has proceeded the collected data that gives some food for analysis even if the quality of this data is far from excellent.

According to two-year data all type of organisations hosted R&D personnel. Vast majority of inflow occurred at the universities in both employee and fellowship categories. (Table 15).

| Sector of employment  | 1998       |            |            | 1999       |            |            |
|---|------------|------------|------------|------------|------------|------------|
|   | E          | F          | T          | E          | F          | T          |
| Public R&D Institutes and others  | 9          | 47         | 56         | 12         | 57         | 69         |
| R&D Unit of Higher Education  | 235        | 213        | 448        | 225        | 242        | 467        |
| R&D Units of Firms and Profit oriented Institutes   | 10         | 2          | 12         | 31         | 11         | 42         |
| <b>All organisations</b>  | <b>254</b> | <b>262</b> | <b>516</b> | <b>268</b> | <b>310</b> | <b>578</b> |
| Note: E=Employee, F= Fellowship, T=Together, M=Manufacture of, Act. =Activities, sc.=science(s), org.= organisation(s), equip. =equipment (Full name of sectors see in Abbreviations)<br>Source: based on CSO R&D survey compiled for IKU |            |            |            |            |            |            |

By field of science social sciences hosted the majority of immigrants. Fewer but still remarkable inflow was observable in natural science that was followed by engineering science. Medical science is far behind them as host. Even agriculture science outmatched (Table 16).

| Table 16. Inflow of R&D Personnel into Hungary by host organisations and fields of science (Employee status) |                       |      |                              |      |   |      |                   |      |
|--|-----------------------|------|------------------------------|------|---|------|-------------------|------|
| Field of science   | Public R&D Institutes |      | R&D Unit of Higher Education |      | R&D Units of Firms and Profit oriented Institutes |      | All organisations |      |
|  | 1998                  | 1999 | 1998                         | 1999 | 1998  | 1999 | 1998              | 1999 |
| <b>Employee status</b>   |                       |      |                              |      |   |      |                   |      |
| Natural science  | 4                     | 3    | 11                           | 21   | -   | -    | 15                | 24   |
| Engineering science  | 5                     | 9    | 19                           | 9    | 2   | 28   | 26                | 46   |
| Medical science  | -                     | -    | 8                            | 11   | -   | -    | 8                 | 11   |
| Agricultural science   | -                     | -    | 9                            | 12   | -   | 3    | 9                 | 12   |
| Social science   | -                     | -    | 173                          | 172  | -   | -    | 173               | 172  |
| Unknown  | -                     | -    | 15                           | 225  | -   | -    | 15                | 225  |
| <b>Fellowship status</b>   |                       |      |                              |      |   |      |                   |      |
| Natural science  | 34                    | 43   | 78                           | 72   | -   | -    | 112               | 115  |
| Engineering science  | 9                     | 8    | 43                           | 46   | 10  | 11   | 62                | 65   |
| Medical science  | -                     | -    | 16                           | 19   | -   | -    | 16                | 19   |
| Agricultural science   | 4                     | 6    | 31                           | 23   | -   | -    | 35                | 29   |
| Social science   | -                     | -    | 44                           | 82   | -   | -    | 44                | 82   |
| Unknown  | -                     | -    | 1                            | -    | -   | -    | 1                 | -    |
| <b>Together</b>  |                       |      |                              |      |   |      |                   |      |
| Natural science  | 38                    | 46   | 89                           | 93   | -   | -    | 127               | 139  |
| Engineering science  | 14                    | 17   | 62                           | 55   | 12  | 39   | 88                | 111  |
| Medical science  | -                     | -    | 24                           | 30   | -   | -    | 24                | 30   |
| Agricultural science   | 4                     | 6    | 40                           | 35   | -   | 3    | 44                | 44   |
| Social science   | -                     | -    | 217                          | 254  | -   | -    | 217               | 254  |
| Unknown  | -                     | -    | 16                           | -    | -   | -    | 16                | -    |

Source: based on CSO R&D survey compiled for IKU

Looking the number of organisations from where R&D personnel are absent and where are hosting foreigners at first glance is clearly observable only 10% of organisations are effected by brain circulation. (Table 17).

| <b>Table 17. Balance of Migration Effected Organisations (Number of R&amp;D Organisations)</b>   |             |             |
|--|-------------|-------------|
| <b>Type of organisation and category of migration</b>  | <b>1998</b> | <b>1999</b> |
| <b>Public R&amp;D Institutes and other organisations total</b>   | <b>132</b>  | <b>130</b>  |
| from where people -working abroad  | 26          | 21          |
| -fellowship abroad   | 10          | 10          |
| where -foreigners working  | 5           | 6           |
| -foreigners on fellowship  | 6           | 11          |
| balance  | -21         | -15         |
|  | -4          | 1           |
| <b>R&amp;D Units of Higher Education total</b>   | <b>1335</b> | <b>1363</b> |
| from where people -working abroad  | 94          | 130         |
| -fellowship abroad   | 120         | 113         |
| where -foreigners working  | 110         | 120         |
| -foreigners on fellowship  | 130         | 172         |
| balance  | 16          | -10         |
|  | 10          | 59          |
| <b>R&amp;D Units of Firms total</b>  | <b>258</b>  | <b>394</b>  |
| from where people -working abroad  | 4           | 6           |
| -fellowship abroad   | 3           | 3           |
| where -foreigners working  | 8           | 12          |
| -foreigners on fellowship  | 2           | 4           |
| balance  | 4           | 6           |
|  | -1          | 1           |
| <b>All R&amp;D Organisations</b>   | <b>1725</b> | <b>1887</b> |
| from where people -working abroad  | 124         | 157         |
| -fellowship abroad   | 133         | 126         |
| where -foreigners working  | 123         | 138         |
| -foreigners on fellowship  | 138         | 182         |
| <b>Balance</b>   | <b>-1</b>   | <b>-19</b>  |
|  | <b>5</b>    | <b>56</b>   |
| <p><i>Note: In 1995 R&amp;D Units of Higher Education may not count because universities reported only on university level. Length of staying in Hungary is not known from the questionnaire. The question asks only the appearance of foreigners<br/>F= Fellowship, W=Working<br/>Source: CSO Research and Development 1995 p.47, 1996 p.45, 1997 p.59, 1998 p.69, 1999 p.65, 2000 p.67 and CSO Questionnaire data processed for IKU to the project</i></p> |             |             |

As regards the reporting organisation significantly large number of public R&D institutes was effected by outflow than inflow. The case is opposite at the universities and business R&D units.

Because of the limited reliability of data, different counting of inflow as outflow it may not analyse data in more details. It would be risky to state any strong analytical statement. However this first glance on collected data is shouting for further investigation.

## **6. Acknowledgement**

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## 7. List of References

Demographic Yearbooks, Hungary CSO, Budapest

DÖVÉNYI- VUKOVICH (1994) Hungary and International migration in Fassmann- Münz (1994) pp. 187-206

HÁRS, Ágnes (1997): The Labour Market and Migration in Hungary. In: From Improvisation toward Awareness? Contemporary Migration Politics in Hungary. Institute of Political Science of the Hungarian Academy of Sciences. Budapest

HÁRS, Ágnes (2002) East-West migration originating in Central and Eastern Europe – 1945-1989 IKU Working paper

ILLÉS, Sándor – FARKAS, Éva (2002): Migration and statistics. CSO – Demographic Research Institute, Budapest

ILLÉS, Sándor (2002): Domestic migration in the last decades in the 20. century. CSO Demographic Research Institute. Budapest

INZELT, Annamária (2002): Country Folders of Newly Associated Central and Eastern European Countries, Hungary, IKU, Working paper

JUHÁSZ, Judit (1997): The Statistical Characteristics of Migration. In: From Improvisation toward Awareness? Contemporary Migration Politics in Hungary. Institute of Political Science of the Hungarian Academy of Sciences. Budapest

KOSINSKY (1982) International migration of Yugoslavia During and Immediately After World War II. East European Quarterly (1982) No. 2. pp 183-199

MELEGH, Attila (2001): Migration Between Hungary and Germany in the 1990s. In: Migráció és statisztika (Migration and statistics). eds.: Illés, Sándor – Lukács, Éva. Research Institute of Demography of SCO. Budapest

MÜNZ (1995) Where did the all come from? Typology and Geography of European mass migration in the twentieth century. Paper presented on the European Population Conference, Milan 4-8 Sept. 1995.

Migration Policies and EU Enlargement. OECD, Paris 2001

MORAWSKA (1995) East Europeans on the move, in Robert Cohen pp 97-102

NUGENT (1995) Migration from the German and Austro- Hungarian empires to North America in Robert Cohen (1995) pp 103-108

Trends in International Migration. SOPEMI 2000. OECD, Paris

PUSKÁS (1996) Hungarian Refugees, emigrants- “DPs” and “56-ers” Ateas, No. 2-3.

RHODE (1993) Brain drain, brain-waste: reflections on the emigration of highly educated and scientific personnel from Eastern Europe in King (1994) pp 228-245

SÁROSI Annamária and HÁRS Ágnes, 2003. CSO

TAMÁS (1993) The new wave of East- European brain drain: the chances of out-migration of academics, in Tamás and Inotai (New Exodus) MTA, Budapest, pp 60-92

VISZT, Erzsébet (2002) Data for international migration in Hungary, paper to *the Madrid Workshop of the ENMOB Network*

ZSÓTÉR, László (2002) Developments in International Migration to Hungary devoted to OECD SOPEMI Report 2002

## 8. Annexes

### Annex 1. Immigration related regulations

#### Citizenship and Hungarians

**1993. Law LV. on Hungarian Citizenship** was enacted by the Parliament in the process of democratisation.

**Act XXXII of 2001 on Hungarian Citizenship:** the amended Act entered effect on 1 July 2001. The amendment enables the Parliament to ratify the European Convention on Citizenship signed in 1997, and created under the Council of Europe.

#### Entry and stay

**Act LXXXVI of 1993** (the Ministry of Internal Affairs) on the Entry, Stay in Hungary and Immigration of Foreigners and on the Execution of Act 64/1994. (IV. 30.)

**Act XXXIX of 2001 on the Entry and Stay of Foreign Nationals** and the most provisions of the Act entered into effect on 1 January 2002, while some provisions will only enter effect upon the entry into effect of the legislation announcing our accession to the European Union.

The Act has introduced a new visa system in Hungary by taking over all of the regulations of the Schengen Enforcement Agreement. The regulation provides 4 types of visa depending on the purpose of the entry and the stay: ('A') airport transit visa, ('B') transit visa, ('C') short-stay entry visa and ('D') residence visa.

The transformation of the visa system also transformed the system of residence permits. Hungary used to have two types of resident permits: temporary and long term (permanent). Those, who come and want to stay more than 3 months in Hungary, had to apply for one of them. The temporary resident permit was issued for one year, the long term was issued above one year. The temporary and the long-term residence permits have ceased to exist, and have been replaced by a new and uniform residence permit that may be granted for up to two years (or for 4 years in exceptional cases), and may be further extended by 2 years.

The Act introduces the settlement permit to replace the immigration permit. The settlement permit allows residence in Hungary of an unlimited duration along with entitlements more restricted than those that come with the immigration permit.

The Act likewise harmonises the rules of data management, and creates the conditions of uniform data filing of alien control. Simultaneously to the Act entering into effect, the organisational system of alien control and refugee affairs also transformed. The Act revoked the jurisdiction of the Police and the Public Administration Agencies in alien control, and granted the Border Guard the jurisdiction necessary to handle cases related to crossing the border. The primary agencies to handle issues of alien control are the regional agencies of the Immigration and Citizenship Agency of the Ministry of the Interior.

#### **Act CXXXIX of 1997 on Asylum entered into effect on 1 March 1998.**

The full regulation required the amendment of the Government Decrees on the enforcement of the Act. (Government Decree 24/1998. (II.18) The amendment of the Asy uses the terminology accepted in the EU, and terms that have identical content. This is how the definition of *asylum seekers* (person enjoying temporary asylum), or *minor aged person without a guardian*, or *safe third country* was further clarified, or inserted.

By joining the European Union, by signing the accession treaty, Hungary will also commit herself to enforce the provisions of the Dublin Agreement. Enforcement of the Agreement requires that Hungary should regulate the transfer and the taking over of asylum application procedures to/from foreign authorities. Only the rudiments of these procedural issues and the framework of their enforcement must be provided by the law, and detailed provisions should be given in Governmental Decrees as from the date of accession.

A new element in the already passed legislation is that the applicant staying illegally in Hungary, and whose request for recognition as refugee or asylum seeker has been refused, will be expelled by the refugee authority instead of the alien control procedures. Prior to the expulsion to be ordered, the refugee authority will ensure that the expulsion does not conflict with the provisions of the European Human Rights Convention. This greatly shortens the process in cases where the foreigner based his/her lawful stay in Hungary on an asylum request, but it was not possible to recognise him/her as refugee applying the Geneva Convention.

Provisions of the Asylum and Alien Control Act are interlinked. The accepted amendment meant the elimination of those provisions from the Asy that should form part of the alien control legislation.

The Asy and the rules introduced through the Government Decrees (effective since 1 January 2002) together ensure that the assessment of asylum requests should take place in a regular and effective fashion.

### ***Act LXII of 2001 on Hungarians Living in Neighbouring Countries***

The Hungarian Parliament adopted the Act LXII of 2001 on Hungarians living in neighbouring Countries, which entered into force on 1 January 2002.

This Act shall apply to persons declaring themselves to be of Hungarian nationality, who are not Hungarian citizens and who have their residence in the Republic of Croatia, the Federal Republic of Yugoslavia, Romania, the Republic of Slovenia, the Slovak Republic or the Ukraine, and

- a) have lost their Hungarian citizenship for reasons other than voluntary renunciation, and
- b) are not in possession of a permit for permanent stay in Hungary.

A main characteristic of the employment assistance is that the work permits shall be issued under the general provisions on the authorisation of employment of foreign nationals in Hungary, with the exception that the work permit can be issued for a maximum of three months per calendar year without the prior assessment of the situation in the labour market.

## **Employment**

### ***Legislation on employing foreign nationals***

Act IV/ 1991 on the Promotion of employment and benefits provided to the unemployed (EA) foreigners may only enter employment in Hungary, except for statutorily specified cases. The Decree provides the activities that are subject to permission.

No permit is necessary for private entrepreneurs, holders of certificates issued to farmers selling their own produce, and to services rendered on a mission abroad.

The activities requiring no permission are provided jointly by the EA and the decree. The list includes work performed by refugees, asylum seekers, and holders of either immigration or settlement permits.

No permission is to be obtained for the following highly skilled workers:

There are several other type of jobs that do not require work permission.

- work performed by the senior official or a supervisory board member of foreign part-owned economic association,
- work performed as head of branch and/or representative office of foreign headquartered economic association if so specified by a relevant international contract,
- application for post-doctoral employment, and for work performed by a foreigner awarded the János Bolyai Research Grant,
- teaching by a foreigner in a primary, secondary, or higher education institution provided in a foreign language in the framework of an international educational program,
- educational, scientific, or artistic work performed by foreigners for no longer than five days

per calendar year,

- work performed by foreign researchers in Hungary, provided that the researcher performs an activity that is subject to an interstate agreement.

The burden of proof concerning the existence of conditions justifying exemption is on the employer.

Any activities beyond those exempted are subject to permission. There are three types of permissions: (a) individual permission (b) collective blanket permission (c) individual permission based on a collective blanket permission.

8/1999. (XI. 10.) Decree (of Ministry of Social and Family Affairs) on the Employment of Non-residents in Hungary - Permitting foreigners to enter employment in Hungary.

### **Rights of immigrants under the social security system**<sup>13</sup>

2/1980. (III. 6.) Act of Ministry of Health on Health, Treatment and Fees of Foreign Citizens Staying in Hungary regulated first these rights.

Act LXXX of 1997 on persons entitled to social security benefits.

By that Act a *foreign national* coming to Hungary for labour reasons, if employed in Hungary, will be compulsory insured both the employer and the employee pays contribution, the employee is entitled to benefits of the health insurance in kind and cash during the employment relationship.

If the legal insurance relation of a foreigner employed in Hungary is not determined by a bilateral agreement on the basis of the *lex loci laboris* principle, and a company with foreign participation employs this foreign worker, it might be possible, that the person concerned doesn't enter "automatically" into the Hungarian Social Security system. A foreign worker *posted* to Hungary, if the person remains exclusively under the power of his foreign employer during his posting, will also not enter into a Hungarian Social Security scheme.

Bilateral treaties are regulating social security of frontier workers in relation to Austria and Slovakia. According to the relevant provisions of treaties based on the *Act CXXXIII* of 2000 and Statute 41 of 1959 people who are working in Hungary but living in the territory of the other Contracting Party are entitled to benefits in kind in both countries, yet they can claim for cash benefits only in Hungary.

Act CLIV of 1997 on health determines general rules of the entire health care system. The principle of the Act is Equal treatment granted to migrants in health care and pension system. Every natural individual staying in the territory of the Republic of Hungary has to have the right of equity in accessibility to health care services. The Act separates life saving emergency care and services preventing severe or irreversible incapability – to which every individual staying in Hungary has a right from those services which are provided on an insurance basis, or being to subject to payment. This principle refers also to refugees staying in Hungary.

After the accession to the *European Union*, both *Council Regulations (EEC) No 1408/71* on the application of social security schemes to employed persons, to self-employed persons and to members of their families moving within the Community and *No 574/72* laying down the procedure for implementing Regulation 1408/71 will be directly binding legal sources in Hungary. As part of the process of preparing for accession to the European Union, Hungary signed two bilateral social security agreements, following the pattern of Council Regulations 1408/71 and 574/72: Social security agreement between the Republic of Hungary and Germany enacted by the Act XXX of 2000, and Social security agreement between the Republic of Hungary

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<sup>13</sup> *Main source of this chapter: Ministry of Health Social and Family Affairs*

and Austria enacted by the Act CXXIII of 2000. Thus in respect of migrant workers the Hungarian legal system has already included pieces of legislation, being in line with and compatible to EU regulations.

## Annex 2. Tables

Distribution of highly-skilled immigrants to Hungary by regions and occupations  
1995-1999

| Country (citizenship)        | Year of entry |               |               |               |               |               |               |               |
|------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                              | 1990          | 1991          | 1995          | 1996          | 1997          | 1998          | 1999          | 2000          |
| <b>European Union</b>        | <b>1 343</b>  | <b>1 397</b>  | <b>1 415</b>  | <b>1 664</b>  | <b>1 722</b>  | <b>1 639</b>  | <b>1 886</b>  | <b>1 842</b>  |
| Croatia                      | –             | –             | 219           | 155           | 173           | 311           | 189           | 168           |
| Yugoslavia                   | 426           | 4 030         | 1 301         | 870           | 836           | 1 490         | 2 490         | 1 777         |
| Poland                       | 760           | 191           | 307           | 221           | 199           | 152           | 62            | 75            |
| Russia                       | –             | –             | 525           | 517           | 371           | 504           | 431           | 311           |
| Rumania                      | 29 617        | 10 940        | 5 101         | 4 161         | 3 979         | 5 504         | 7 845         | 8 894         |
| Slovakia                     | –             | –             | 233           | 277           | 268           | 403           | 594           | 1 034         |
| Ukraine                      | –             | –             | 1 324         | 1 426         | 1 390         | 1 766         | 2 420         | 2 427         |
| <b>Post socialist Europe</b> | <b>30 803</b> | <b>15 161</b> | <b>9 010</b>  | <b>7 627</b>  | <b>7 216</b>  | <b>10 130</b> | <b>14 031</b> | <b>14 686</b> |
| <b>Asia</b>                  | <b>1 690</b>  | <b>2 976</b>  | <b>2 201</b>  | <b>3 009</b>  | <b>3 055</b>  | <b>2 931</b>  | <b>2 627</b>  | <b>2 217</b>  |
| <b>America</b>               | <b>639</b>    | <b>584</b>    | <b>584</b>    | <b>651</b>    | <b>506</b>    | <b>559</b>    | <b>587</b>    | <b>484</b>    |
| <b>Africa</b>                | <b>506</b>    | <b>296</b>    | <b>217</b>    | <b>230</b>    | <b>196</b>    | <b>155</b>    | <b>165</b>    | <b>157</b>    |
| Other and unknown            | 117           | 113           | 51            | 32            | 36            | 62            | 83            | 65            |
| <b>Total</b>                 | <b>37 242</b> | <b>22 974</b> | <b>14 008</b> | <b>13 734</b> | <b>13 283</b> | <b>16 052</b> | <b>20 151</b> | <b>20 185</b> |

| R&D Personnel | 1991          | 1992          | 1993          | 1994          | 1995          | 1996          | 1997          | 1998          | 1999          | 2000          | 2001 |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|------|
| All abroad    | 1 249         | 1 079         | 894           | 720           | 589           | 756           | 654           | 556           | 511           | 557           |      |
| Of which      |               |               |               |               |               |               |               |               |               |               |      |
| -Employee     | 637           | 612           | 473           | 395           | 328           | 459           | 393           | 312           | 314           | 351           |      |
| -Fellowship   | 612           | 467           | 421           | 325           | 261           | 297           | 261           | 244           | 197           | 206           |      |
| <b>Total</b>  | <b>26 763</b> | <b>24 110</b> | <b>23 012</b> | <b>22 401</b> | <b>20 859</b> | <b>20 485</b> | <b>21 999</b> | <b>23 547</b> | <b>24 609</b> | <b>27 876</b> |      |

Source: Research and Development, CSO 2000 p. 23, 1999 and 1995, Budapest

| <b>Table 3. Distribution of highly-skilled immigrants to Hungary by regions and occupations 1995-1999</b> |   |                                      |  |   |                            |
|---|---|--------------------------------------|--|---|----------------------------|
| Occupation (ISCO-88)  |   |                                      |  |   |                            |
| Region  | Legislators, Senior Officials and General Managers (11) | Service-like Professions (1314-1318) | Professions requiring Higher Education | Others requiring Higher- or Secondary Education | All Highly Skilled Workers |
| <b>EU Countries</b>   |   |                                      |  |   |                            |
| 1995  | 204   | 43                                   | 263                                    | 66  | 576                        |
| 1996  | 229   | 40                                   | 288                                    | 86  | 643                        |
| 1997  | 223   | 35                                   | 265                                    | 98  | 621                        |
| 1998  | 224   | 30                                   | 222                                    | 88  | 564                        |
| 1999  | 161   | 23                                   | 179                                    | 121   | 484                        |
| <b>EFTA</b>   |   |                                      |  |   |                            |
| 1995  | 11  | 1                                    | 5                                      | 0   | 17                         |
| 1996  | 11  | 3                                    | 1                                      | 5   | 20                         |
| 1997  | 5   | 2                                    | 9                                      | 4   | 20                         |
| 1998  | 2   | 4                                    | 3                                      | 0   | 9                          |
| 1999  | 4   | 3                                    | 5                                      | 5   | 17                         |
| <b>Candidates</b>   |   |                                      |  |   |                            |
| 1995  | 239   | 378                                  | 423                                    | 322   | 1362                       |
| 1996  | 227   | 262                                  | 344                                    | 244   | 1077                       |
| 1997  | 203   | 257                                  | 290                                    | 168   | 918                        |
| 1998  | 235   | 249                                  | 333                                    | 239   | 1056                       |
| 1999  | 268   | 305                                  | 537                                    | 365   | 1475                       |
| <b>Other Europe</b>   |   |                                      |  |   |                            |
| 1995  | 351   | 192                                  | 619                                    | 242   | 1404                       |
| 1996  | 372   | 122                                  | 406                                    | 179   | 1079                       |
| 1997  | 280   | 113                                  | 327                                    | 128   | 848                        |
| 1998  | 324   | 151                                  | 464                                    | 146   | 1085                       |
| 1999  | 292   | 227                                  | 635                                    | 303   | 1457                       |
| <b>America</b>  |   |                                      |  |   |                            |
| 1995  | 40  | 5                                    | 220                                    | 8   | 273                        |
| 1996  | 59  | 9                                    | 206                                    | 28  | 302                        |
| 1997  | 43  | 4                                    | 172                                    | 19  | 238                        |
| 1998  | 35  | 4                                    | 142                                    | 17  | 198                        |
| 1999  | 26  | 1                                    | 164                                    | 24  | 215                        |
| <b>Middle-East</b>  |   |                                      |  |   |                            |
| 1995  | 70  | 42                                   | 20                                     | 6   | 138                        |
| 1996  | 85  | 36                                   | 15                                     | 4   | 140                        |
| 1997  | 65  | 15                                   | 10                                     | 4   | 94                         |
| 1998  | 34  | 5                                    | 5                                      | 3   | 47                         |
| 1999  | 13  | 4                                    | 6                                      | 7   | 30                         |
| <b>Asia</b>   |   |                                      |  |   |                            |
| 1995  | 915   | 208                                  | 150                                    | 47  | 1320                       |
| 1996  | 1236  | 301                                  | 181                                    | 80  | 1798                       |
| 1997  | 1057  | 352                                  | 172                                    | 67  | 1648                       |
| 1998  | 867   | 241                                  | 120                                    | 83  | 1311                       |
| 1999  | 290   | 227                                  | 86                                     | 63  | 666                        |
| <b>Africa</b>   |   |                                      |  |   |                            |
| 1995  | 18  | 5                                    | 20                                     | 12  | 55                         |
| 1996  | 25  | 6                                    | 20                                     | 7   | 58                         |
| 1997  | 22  | 1                                    | 26                                     | 10  | 59                         |
| 1998  | 19  | 7                                    | 8                                      | 7   | 41                         |
| 1999  | 6   | 4                                    | 9                                      | 8   | 27                         |
| <b>Total</b>  |   |                                      |  |   |                            |
| 1995  | 1855  | 874                                  | 1724                                   | 710   | 5163                       |
| 1996  | 2248  | 779                                  | 1466                                   | 637   | 5130                       |
| 1997  | 1904  | 779                                  | 1273                                   | 500   | 4456                       |
| 1998  | 1746  | 691                                  | 1305                                   | 586   | 4328                       |
| 1999  | 1061  | 797                                  | 1627                                   | 899   | 4384                       |

Source: based on CSO migration databases Note: total includes others and unknown

### Annex 3. Definitions

| Full name of Economic Sectors  |
|--|
| 0111 Growing of cereals and other corps  |
| 1512 Production and preserving of poultry-meat   |
| 2320 Manufacture of refined petroleum products   |
| 2470 Manufacture of man-made fibres  |
| 2921 Manufacture of furnaces and furnace burners                                       |
| 2932 Manufacture of other agricultural and forestry machinery                          |
| 3161 Manufacture of electrical equipment for engines and vehicles                      |
| 3220 Manufacture of television and radio transmitters and apparatus for line telephony |
| 7220 Software consultancy and supply   |
| 7310 R&D on natural sciences and engineering   |
| 7320 R&D on social sciences and humanities   |
| 7430 Technical testing and analysis  |
| 7510 Public, economic and social policy  |
| 8021 General secondary education   |
| 8030 Higher education  |
| 8511 Hospital activities   |
| 8514 Other human health activities   |
| 9252 Museums and historical sites  |

The international migration statistics contain data on foreigners entering (immigrating), leaving (emigrating) the country and on those who were naturalised.

**Foreign citizen immigrating to Hungary:** the foreigner having a residence permit for a longer stay or an immigration permit who after entering spent at least one year in Hungary or got a residence permit for more than one year.

**Foreign citizen emigrating from Hungary:** the foreigner having a residence permit for a longer stay or an immigration permit who spent at least one year in Hungary before the departure or got a residence permit for more than one year.

**Foreign citizen staying in Hungary:** the foreigner having a residence permit for a longer stay or an immigration permit who spent at least one year in Hungary or got a residence permit for longer than one year and stayed in Hungary on 31 December 2000.

**Naturalised foreign citizen:** a person who was born as foreign citizen and became Hungarian citizen by naturalisation.

**Re-emigrating Hungarian citizen:** Hungarian living abroad returning the country for settling down.

**Hungarian citizen born abroad:** person born abroad as Hungarian citizens.

**Emigrating Hungarian citizen:** person leaving Hungary with the intention to settle abroad,

reporting it to the Ministry of Interior.

Definition of R&D personnel is distinguished by occupation in three groups:

(1) **Researchers** are scientist and engineers engaged in the conception or creation of new knowledge, products, processes, methods and systems.

(2) **Technicians** participate in R&D project by performing scientific and technical tasks, normally under the supervision of researchers.

(3) Others cover the **supporting staff**. Group 1 and 2 are in accordance with Frascati recommendations. Other personnel include persons who are providing indirect service, such as canteen and security staff, which according to Frascati manual should be excluded. Data on R&D personnel is available by both head count and FTE.