

Comparative Analysis of Socio-Economic Indicators in a European Perspective

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Abstract

This paper provides a comparison of various socio-economic indicators (including indicators of education, health, communication profile, and social-stress profile) between Eastern and Western Europe. Where the sample of Eastern European countries is sufficiently large, indicators are compared separately between Western European countries and developed Eastern European countries, and between Western European countries and less developed Eastern European countries. The comparisons are based on standard t-tests for differences in means.

JEL classification: O52, O57

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1. Introduction

This paper formally compares various socio-economic indicators between Western and Eastern Europe. Western and Eastern Europe form two entities differing in the previous historical evolution. While Western Europe's history was based on a market system, Eastern European countries were under a system of central planning in the postwar period. Today Western and Eastern Europe (at least a part of it) appear to be converging towards an integrated structure; a number of Eastern European countries are European Union candidates. It is therefore of interest to assess in which indicators Eastern Europe is comparable to Western Europe, in which indicators it

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lags behind Western Europe, and if there even are any indicators more favorable for Eastern than Western Europe.

The socio-economic indicators considered in this paper include indicators of education, health, communication profile, social stress and social change, natural resource use, and some other indicators. The principal data sources are the *Human Development Report* of the United Nations Development Programme, the *Social Indicators of Development* of the World Bank, the *Statistical Yearbook* of UNESCO, and the Barro-Lee data set. The Barro-Lee data set is available from web sites <http://www.worldbank.org/research/growth/ddbarle2.htm> and <http://web.korea.ac.kr/~jwlee/>. A description of the methodology used and the main results obtained concerning this data set can be found in Barro and Lee (1996).

Where the data sample for Eastern Europe is sufficiently large, it is also discussed how developed and less developed Eastern European countries separately differ from Western European countries. The Czech Republic, Estonia, former East Germany, Hungary, Poland, Slovakia, and Slovenia are considered to be developed Eastern European countries; the remaining Eastern European countries are considered to be less developed.¹

The comparative analysis is based on standard t-tests for differences in means.² This approach follows Duczynski (2001), who compares indicators of education between Eastern Europe and developing countries, between Eastern Europe and developed countries, and between developed and less developed countries in Eastern Europe.

2. Education

Average Years of Schooling

The Barro-Lee data set provides indicators for 16 Western European countries (Austria, Belgium, Denmark, Finland, France, West Germany, Iceland, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom)

¹ The Czech Republic, Estonia, Hungary, Poland, Slovakia, and Slovenia are classified as advanced reformers in Sachs (1996).

² In this paper, a difference is considered insignificant if the t-statistic is below the critical value at a 10% significance level in a one-tail test (asymptotically 1.28), marginally significant if it is between

and for 15 Eastern European countries (Bulgaria, Croatia, Czech Republic, Estonia, East Germany, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Slovakia, Slovenia, U.S.S.R., and Yugoslavia) for 1990. The sample mean of average years of schooling in the Western European countries is 8.48, and the standard deviation equals 1.66. The sample average in the Eastern European countries makes 8.80, and the standard deviation is equal to 1.27. The mean in the sample of the Eastern European countries is not significantly above the mean in the sample of the Western European countries (the corresponding t-statistic is 0.60). Similarly, comparing Western European countries separately with developed and less developed Eastern European countries would result in insignificant differences.

Percentage of no Schooling

The samples (taken from the Barro-Lee data set) are identical to the samples for average years of schooling. The sample mean for the Western European countries is 3.64, with the standard deviation equal to 4.01. The mean in the sample of the Eastern European countries is 4.09, and the standard deviation is 4.48. The mean in the Eastern countries is not significantly above the mean in the Western countries (the corresponding t-statistic is 0.30).

In the sample of the 7 developed Eastern countries, the mean is 1.53, and the standard deviation makes 1.54. The mean in the developed Eastern countries is only marginally significantly below the mean the in Western countries (the t-statistic is 1.34). In the 8 less developed Eastern countries, the mean is 6.33, and the standard deviation amounts to 5.08. The mean in the less developed Eastern countries is marginally significantly above the mean in the Western countries (the t-statistic is 1.42).

Adult Literacy Rates (%)

The source of the data is *Human Development Report*; the data relate to 1994. The sample of Western countries includes 17 countries (Austria, Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway,

this value and a critical value at a 2.5% level (asymptotically 1.96), and significant if it is above the critical value at a 2.5% significance level.

Portugal, Spain, Sweden, Switzerland, and United Kingdom). The sample of Eastern countries also consists of 17 countries (Albania, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia (FYR), Moldova, Poland, Romania, Russia, Slovakia, Slovenia, and Ukraine). The mean in the Western countries is 98.3, and the standard deviation is 2.3. The mean in the Eastern countries is 97.0, and the standard deviation amounts to 3.6. The mean in the Western countries is not significantly above the mean in the Eastern countries (the t-statistic equals 1.25).

In the sample of the 6 developed Eastern countries, the mean is 98.5, with the standard deviation equal to 1.2. This is obviously not significantly different from the mean in the Western countries. In the sample of the 11 less developed Eastern countries, the mean is 96.1, and the standard deviation makes 4.2. This is marginally significantly below the mean in the Western countries (the t-statistic is 1.79).

Public Expenditure on Education (as % of GNP)

The data for 1993-94 are taken from *Human Development Report*. The data samples are identical to the samples for adult literacy rates (with Croatia missing). The mean in the sample of the 17 Western countries is 6.05, with the standard deviation equal to 1.62. The mean in the sample of the 16 Eastern countries is 5.40, and the standard deviation equals 1.32. The mean in the Western countries is not significantly above the mean in the Eastern countries (the corresponding t-statistic is 1.26).

The mean in the sample of the 6 developed Eastern countries is 5.83, and the standard deviation amounts to 0.61. This is obviously not significantly below the mean in the Western countries. The mean in the sample of the 10 less developed Eastern countries makes 5.14, with the standard deviation equal to 1.58. This is marginally significantly below the mean in the Western countries (the corresponding t-statistic is 1.42).

Public Expenditure on Higher Education (as % of All Levels)

The data for 1990-94 are taken from *Human Development Report*. The sample of Western countries is identical to the previous section. The sample of Eastern countries

includes Albania, Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia (FYR), Poland, Romania, Russia, Slovakia, Slovenia, and Ukraine. The average in the sample of the 17 Western countries is 19.8, and the standard deviation equals 6.7. The average in the 15 Eastern countries is 15.2, with the standard deviation equal to 3.5. The average in the Western countries is significantly above the average in the Eastern countries (the t-statistic equals 2.39).

In the sample of the 6 developed Eastern countries, the mean is 16.5, and the standard deviation is 2.0. The average is not significantly below the average in the Western countries (the t-statistic is 1.18). In the 9 less developed Eastern countries, the mean is 14.3, and the deviation makes 4.1. The mean is significantly below the mean in the Western countries (the t-statistic is 2.23).

Percentage of Central Government Expenditure on Education

The data for 1992-95 are taken from *Human Development Report*. The data are available for 13 Western countries (Austria, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, Netherlands, Norway, Spain, Sweden, and United Kingdom) and for 10 Eastern countries (Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Romania, and Russia). The mean in the Western countries is 8.10, with the standard deviation equal to 3.71. The mean in the Eastern countries is 8.53, and the standard deviation amounts to 4.89. The mean in the Eastern countries is not significantly above the mean in the Western countries (the t-statistic is 0.24). Due to a low number of observations for developed Eastern countries, we carry out no separate comparisons between developed Eastern countries and Western countries, nor do we compare less developed Eastern countries with Western countries.

Pupil-teacher Ratios

A pupil-teacher ratio is a plausible indicator of schooling quality. The data for the pupil-teacher ratios at the primary and secondary levels in 1990 are taken from the Barro-Lee data set. For Eastern European countries, this data set is extended by estimates from the *Statistical Yearbook* of UNESCO. For some Eastern countries,

direct estimates for 1990 are not available; for these countries, more recent estimates are used.

At the primary level, the data are available for 17 Western countries (Austria, Belgium, Denmark, Finland, France, West Germany, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom) and for 18 Eastern countries (Albania, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, East Germany, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Ukraine, and Yugoslavia). The mean in the Western countries is 14.9, and the standard deviation equals 5.9. The mean in the Eastern countries is equal to 19.1, with the standard deviation equal to 4.7. The mean in the Eastern countries is significantly above the mean in the Western countries (the t-statistic is 2.34), indicating a lower quality of schooling in the East.

In the 7 developed Eastern countries, the mean is 17.7, and the deviation equals 3.8. There is no significant difference in means between the developed Eastern countries and the Western countries (the corresponding t-statistic is 1.15). The mean in the 11 less developed Eastern countries is 20.0, with the deviation equal to 5.2. The mean in the less developed Eastern countries is significantly above the mean in the Western countries (the t-statistic is 2.34).

At the secondary level, the data are available for 13 Western countries (Austria, Belgium, Denmark, France, West Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, and United Kingdom) and for 18 Eastern countries (the same sample as for the primary level). For the Western countries, the average is 11.6, and the deviation makes 3.2. For the Eastern countries, the average is 13.4, and the deviation is equal to 3.6. The average in the Western countries is marginally significantly below the average in the Eastern countries (the t-statistic is 1.44).

For the 7 developed Eastern countries, the mean is 12.7, and the deviation makes 3.1. The mean in the 7 developed Eastern countries is not significantly above the mean in the Western countries (the t-statistic is 0.74). In the sample of the 11 less developed Eastern countries, the mean is 13.8, with the deviation equal to 4.0. This is marginally significantly above the mean in the Western countries (the t-statistic is 1.50).

Repetition Rates

Similarly to pupil-teacher ratios, repetition rates shed light on the quality of schooling. The repetition rates for 1990 are taken from the Barro-Lee data set. For Eastern countries, this data set is extended using the *Statistical Yearbook* of UNESCO for repetition rates at the primary level.

At the primary level, the data are available for 16 Western countries (the same sample as for the pupil-teacher ratios at the primary level, with Austria excluded) and for 17 Eastern countries (the same sample as for pupil-teacher ratios, with East Germany excluded). The mean in the sample of the Western countries is 3.6, and the deviation equals 4.8. The mean in the sample of the Eastern countries makes 2.4, with the deviation equal to 1.4. The mean in the Eastern countries is not significantly below the mean in the Western countries (the t-statistic is 0.99).

The mean in the 6 developed Eastern countries is 2.0, and the standard deviation is 0.9. The mean is again not significantly below the mean in the Western countries (the t-statistic is 0.77). In the sample of the 11 less developed Eastern countries, the mean is 2.6, and the deviation amounts to 1.6. This mean is clearly not significantly below the mean in the Western countries.

At the secondary level, the data are available for 13 Western countries (Belgium, Finland, France, West Germany, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom) and for 7 Eastern countries (Bulgaria, Czechoslovakia, Hungary, Poland, Romania, U.S.S.R., and Yugoslavia). The mean in the sample of the Western countries is 12.3, and the deviation is 10.7. The mean in the sample of the Eastern countries is 2.0, and the deviation is 2.1. The mean in the Eastern countries is significantly below the mean in the Western countries (the corresponding t-statistic is 2.49). Thus, as opposed to pupil-teacher ratios, the quality of schooling appears better in the East than in the West if measured by repetition rates at the secondary level.

Dropout Rates

A dropout rate is another indicator of the quality of education. The Barro-Lee data set is the relevant source of the data for 1990. The data are available only for the primary level for 14 Western countries (Austria, Belgium, Denmark, Finland, France,

West Germany, Ireland, Italy, Luxembourg, Netherlands, Norway, Spain, Sweden, and Switzerland) and for 8 Eastern countries (Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, and Yugoslavia). The mean in the sample of the Western countries is 2.7, and the standard deviation equals 5.0. The mean in the sample of the Eastern countries is 8.3, and the standard deviation is 7.3. The mean in the Western countries is significantly below the mean in the Eastern countries (the t-statistic is 2.14).

The mean in the 4 developed Eastern countries is 6.0, and the deviation makes 1.4. The given mean is not significantly above the mean in the Western countries (the t-statistic is 1.28). In the sample of the 4 less developed Eastern countries, the mean is 10.5, and the deviation amounts to 7.9. The mean in the less developed Eastern countries is significantly above the mean in the Western countries (the t-statistic is 2.43).

Tertiary Natural and Applied Science Enrolment (as % of Total Tertiary)

The data for 1992 are taken from *Human Development Report*. The data are available for 16 Western countries (Austria, Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom) and for 12 Eastern countries (Albania, Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Poland, Romania, Russia, Slovakia, and Ukraine). The mean in the sample of the Western countries is 27.6, and the standard deviation equals 6.2. The mean in the sample of the Eastern countries is 41.3, with the deviation equal to 9.6. The given mean is strongly significantly above the mean in the Western countries (the t-statistic reaches 4.58).

In the sample of the 5 developed Eastern countries, the mean is 36.4, and the standard deviation makes 8.2. The given mean is still significantly above the mean in the Western countries (the t-statistic amounts to 2.58). In the sample of the 7 less developed Eastern countries, the average is 44.7, and the deviation is 9.5. The mean in the less developed Eastern countries is strongly significantly above the mean in the Western countries (the corresponding t-statistic equals 5.17).

Thus there exists a strong tendency of the Eastern countries to have a relatively high tertiary natural and applied science enrolment. It is left for future research how this tendency has changed since 1992 and how it will evolve in the future.

International Test Scores

The International Association for Evaluation of Educational Achievement (IEA) organized the Third International Mathematics and Science Study (TIMSS) in 1995. More than 40 countries participated in this study. I have examined the results in Population 1 (class 4), Population 2 (class 8), and Population 3 (last year of secondary education). The data have been taken from the web site of the Czech Institute for Information in Education (<http://www.uiv.cz>), which takes over the data from the IEA.

Eight Western countries (Austria, England, Iceland, Ireland, Netherlands, Norway, Portugal, and Scotland) and 4 Eastern countries (Czech Republic, Hungary, Latvia, and Slovenia) participated in tests in mathematics in Population 1. It should be noted that some countries did not satisfy certain requirements (e.g., satisfactory participation of schools and pupils, required age of tested pupils, and appropriate selection methods). In the sample of the Western countries, the average score was 521.3, and the deviation was equal to 38.1. In the sample of the Eastern countries, the average score was 548.3, and the deviation was 17.3. The results in Eastern Europe were not significantly above the results in Western Europe (the t-statistic was 1.33; the critical value for a 10% significance level in a one-tail test is 1.37).

The same Western and Eastern countries participated in tests in science in Population 1. Again, some countries did not satisfy certain requirements. In the sample of the Western countries, the mean result was 532.9, and the deviation equaled 28.3. In the sample of the Eastern countries, the mean score was 536.5, and the deviation was 19.2. The given mean was not significantly above the mean in Western Europe (the t-statistic was 0.23).

Sixteen Western countries [Austria, Belgium (Flemish), Belgium (French), Denmark, England, France, Germany, Iceland, Ireland, Netherlands, Norway, Portugal, Scotland, Spain, Sweden, and Switzerland] and 9 Eastern countries (Bulgaria, Czech Republic, Hungary, Latvia, Lithuania, Romania, Russia, Slovakia, and Slovenia) participated in tests in mathematics in Population 2. The mean result in the Western countries was 515.5, and the standard deviation was 27.6. The mean result in the Eastern countries was 524.0, with the standard deviation equal to 31.4. The mean in Eastern Europe was not significantly above the mean in Western Europe (the t-statistic was 0.70).

In the 4 developed Eastern countries, the mean was 547.2, and the deviation equaled 11.7. The given mean was significantly above the mean in the Western countries (the t-statistic was 2.21). In the sample of the 5 less developed Eastern countries, the mean was 505.5, and the deviation amounted to 30.0. The given mean was not significantly below the mean in the Western countries (the t-statistic was 0.69).

The same Western and Eastern countries participated in tests in science in Population 2. The average result in the Western countries was 520.5, and the deviation was equal to 29.1. The mean result in the Eastern countries made 531.4, and the deviation amounted to 38.3. There was no significant difference in means between the Eastern and the Western countries (the t-statistic was 0.80).

In the sample of the 4 developed Eastern countries, the mean was 558.0, and the deviation equaled 12.4. The given mean was significantly above the mean in the Western countries (the corresponding t-statistic was 2.48). In the sample of the 5 less developed Eastern countries, the mean was 510.0, and the deviation was 39.1. The given mean was not significantly below the mean in the Western countries (the t-statistic was 0.65).

Ten Western European countries (Austria, Denmark, France, Germany, Iceland, Italy, Netherlands, Norway, Sweden, and Switzerland) and 5 Eastern European countries (Czech Republic, Hungary, Lithuania, Russia, and Slovenia) participated in tests in mathematical and scientific literacy for Population 3. The mean in the Western countries was 524.5, and the deviation amounted to 26.4. The mean in the Eastern countries was 481.6, with the deviation equal to 18.8. The mean in the Western countries was strongly significantly above the mean in the Eastern countries (the t-statistic was 3.22).

Seven Western European countries (Austria, Denmark, France, Germany, Italy, Sweden, and Switzerland) and 4 Eastern European countries (Czech Republic, Lithuania, Russia, and Slovenia) participated in tests in mathematics for students with an extended education of mathematics in Population 3. Similarly to Population 1, some countries did not satisfy certain requirements. The mean score in the Western countries was 499.9, and the deviation equaled 42.7. The mean score in the Eastern countries amounted to 500.5, and the standard deviation was 34.6. Naturally, there was no significant difference in means between the Western and the Eastern countries (the corresponding t-statistic was 0.02).

Seven Western countries (Austria, Denmark, France, Germany, Norway, Sweden, and Switzerland) and 4 Eastern countries (Czech Republic, Latvia, Russia, and Slovenia) participated in tests in physics for students with an extended education of physics in Population 3. Again, some countries did not satisfy certain requirements. The mean score in the sample of the Western countries was 514.1, and the deviation was equal to 54.2. The mean result in the sample of the Eastern countries was 501.8, and the deviation equaled 41.2. The difference between the Western and the Eastern countries was not statistically significant (the t-statistic equaled 0.39).

3. Health

Population per Physician

Social Indicators of Development provide data for 5 Western European countries (Austria, Finland, Italy, Luxembourg, and Netherlands) and for 15 Eastern European countries [Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia (FYR), Moldova, Poland, Romania, Russia, Slovakia, Ukraine, and Yugoslavia]. The data represent most recent estimates in the 1989-94 period. The average in the sample of the Western countries is 353.4, and the standard deviation is 128.1. The average in the sample of the Eastern countries is 302.8, and the deviation makes 93.9. There is no significant difference in means between the given samples (the corresponding t-statistic is 0.96).

Population per Hospital Bed

Most recent estimates in 1989-94 are taken from *Social Indicators of Development*. The data are available for 15 Western European countries (Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom) and for 17 Eastern European countries [Albania, Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia (FYR), Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Ukraine, and Yugoslavia]. The mean in the Western countries is 145.1, and the deviation equals 46.3. The mean in the sample of the Eastern countries is 111.8, with

the deviation equal to 56.2. The mean in the Eastern countries is marginally significantly below the mean in the Western countries (the t-statistic is 1.81).

In the sample of the 6 developed Eastern countries, the mean is 113.5, and the deviation equals 60.4. In the sample of the 11 less developed Eastern countries, the mean is 110.9, and the standard deviation is 56.9. Since there are almost equal averages in developed and less developed Eastern countries, there is no need for separate tests for the developed and the less developed Eastern countries versus the Western countries.

Infant Mortality (per 1000 Live Births)

Social Indicators of Development provide data (most recent estimates in 1989-94) for 17 Western countries (the same sample as for the adult literacy rates) and for 19 Eastern countries [Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia (FYR), Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Ukraine, and Yugoslavia]. The mean in the sample of the Western countries is 5.9, and the deviation makes 1.3. The mean in the sample of the Eastern countries is 16.3, and the deviation is 6.1. There is a strongly significant difference in means between Western and Eastern Europe (the t-statistic is 6.97).

In the sample of the 6 developed Eastern countries, the mean is 11.3, and the deviation equals 3.4. This sample's mean is also strongly significantly above the mean in Western Europe (the t-statistic is 5.76). In the 13 less developed Eastern countries, the mean is 18.6, and the deviation equals 5.7. The given mean is strongly significantly above the mean in Western Europe (the t-statistic is 9.05).

Mortality under 5 Years (per 1000 Live Births)

The samples, the time period, and the data source are identical to the previous section. The mean in the sample of the Western countries is 7.9, and the deviation equals 1.5. The mean in the sample of the Eastern countries is 21.3, and the deviation is 8.3. There is a strongly significant difference in means between the given samples (the corresponding t-statistic is 6.53).

In the sample of the 6 developed Eastern countries, the mean is 13.8, and the deviation makes 3.3. The mean in this sample is also strongly significantly different from the mean in the Western countries (the t-statistic is 6.00). In the 13 less developed countries in Eastern Europe, the mean is 24.8, and the deviation makes 7.6. The given mean is strongly significantly above the mean in Western Europe (the t-statistic is 8.91).

Life Expectancy at Birth

The data for 1994 are available from *Human Development Report*. The data samples are identical to those for adult literacy rates. In the sample of the 17 Western countries, the mean is 77.0 years, and the deviation equals 1.2 years. In the sample of the 17 Eastern countries, the mean is 69.9 years, and the standard deviation makes 1.9 years. The outcome in Eastern Europe is strongly significantly below the outcome in Western Europe (the t-statistic is 13.03).

For the 6 developed Eastern European countries, the mean is 70.9 years, and the deviation makes 1.7 years. For the 11 less developed Eastern European countries, the mean is 69.4 years, and the deviation is 1.8 years. It is clear that both the developed and the less developed Eastern countries are strongly significantly below the Western countries.

Percentage of Central Government Expenditure on Health

The data for 1992-95 are available from *Human Development Report*. The data are available for 13 Western countries (Austria, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, Netherlands, Norway, Spain, Sweden, and United Kingdom) and for 10 Eastern countries (Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Romania, and Russia). The mean in the Western countries is 11.0, and the deviation makes 6.8. Very low figures occur for Denmark (1.1) and Sweden (0.2). The mean in the Eastern countries is 8.1, and the deviation equals 5.8. The difference in the given means is insignificant (the t-statistic is 1.09).

4. Communication Profile

Radios

The 1994 data (radios per 1000 people) are available from *Human Development Report*. The data samples are identical to those for the adult literacy rates. In the sample of the 17 Western countries, the average is 795.7, and the deviation amounts to 272.2. In the sample of the 17 Eastern countries, the average makes 445.0, and the deviation is 192.0. The Eastern average is strongly significantly below the Western average (the corresponding t-statistic is 4.34).

In the sample of the 6 developed Eastern countries, the average is 518.3, and the deviation is 104.7. This sample's mean is still significantly below the mean in the Western countries (the t-statistic is 2.40). In the sample of the 11 less developed Eastern countries, the mean is 405.0, and the deviation makes 220.3. The mean in this sample is strongly significantly below the mean in the Western countries (the t-statistic is 3.98).

Televisions

The 1994 data (per 100 people) are taken from *Human Development Report*. The data sample is identical to the previous section. In the sample of the 17 Western countries, the mean is 43.7, and the deviation makes 9.2. In the sample of the 17 Eastern countries, the mean is 29.7, and the deviation is 10.7. The difference between the East and the West is strongly significant; the corresponding t-statistic is 4.10.

In the sample of the 6 developed Eastern countries, the mean is 35.7, and the standard deviation is equal to 8.9. This sample's mean is marginally significantly below the mean in the Western countries (the t-statistic is 1.84). In the sample of the 11 less developed Eastern countries, the mean is 26.4, and the deviation amounts to 10.5. The mean in this sample is strongly significantly below the mean in the Western countries (the t-statistic is 4.60).

Book Titles Published

Book titles published (per 100 000 people) in 1992-94 are available from *Human Development Report*. The data exist for 15 Western countries (the sample is identical to the previous section, with Belgium and Ireland missing) and for 16 Eastern countries (as in the previous section, with Albania missing). The mean in the sample of the Western countries is 173.7, and the standard deviation is 118.3. The mean in the sample of the Eastern countries is 61.6, and the deviation is 44.7. The mean in the Eastern countries is strongly significantly below the mean in the Western countries (the t-statistic is 3.53).

In the 6 developed Eastern countries, the mean is 97.8, and the deviation makes 48.5. The given mean is marginally significantly below the mean in the Western countries (the t-statistic is 1.50). In the 10 less developed Eastern countries, the mean is 39.9, and the deviation makes 25.0. This sample's mean is strongly significantly below the mean in the Western countries (the t-statistic is 3.50).

Newspaper Circulation

The newspaper circulation (per 1000 people) is available from *Social Indicators of Development*. The data reflect the most recent estimates in 1989-94. The data exist for 17 Western countries (the same sample as for radios) and for 10 Eastern countries (Albania, Bosnia and Herzegovina, Bulgaria, Czech Republic, Hungary, Poland, Romania, Russia, Slovakia, and Slovenia). In the Western countries, the mean is 328.8, and the standard deviation is 159.4. In the Eastern countries, the mean is 274.3, with the deviation equal to 184.2. The difference in means between the two samples is not statistically significant (the t-statistic is 0.81).

In the 5 developed Eastern countries, the mean is 298.6, and the deviation makes 174.2. The given mean is clearly not significantly different from the mean in the Western countries. In the 5 less developed Eastern countries, the mean is 250.0, and the deviation makes 211.0. Also this mean is not significantly different from the mean in the Western countries (the t-statistic is 0.91).

Printing and Writing Paper Consumed

The data for printing and writing paper consumed (metric tons per 1000 people) for 1994 are available from *Human Development Report*. The data exist for 16 Western countries (the same sample as for radios, with Luxembourg missing) and for 16 Eastern countries (the same sample as for radios, with Belarus missing). The mean in the 16 Western countries is 82.3, and the standard deviation is 36.6. The mean in the 16 Eastern countries is 10.2, and the deviation makes 8.5. The mean in the Western countries is strongly significantly above the mean in the Eastern countries (the t-statistic is 7.67).

In the sample of the 6 developed Eastern countries, the mean is 17.8, and the deviation makes 7.7. In the sample of the 10 less developed Eastern countries, the mean is 5.7, and the deviation is equal to 5.1. The means in both these samples are clearly strongly significantly below the mean in the Western countries.

Main Telephone Lines

The data for main telephone lines (per 100 people) in 1994 are available from *Human Development Report*. The data exist for 17 Western countries and for 17 Eastern countries (the same samples as for radios). The mean in the Western countries is 50.2, and the deviation makes 9.3. The mean in the Eastern countries makes 18.9, and the deviation is equal to 7.2. The mean in Western Europe is strongly significantly above the mean in Eastern Europe (the t-statistic is 11.03).

In the sample of the 6 developed Eastern countries, the mean is 20.6, and the deviation makes 5.7. In the sample of the 11 less developed Eastern countries, the mean is 17.9, and the deviation is 8.0. The means in both of these samples are clearly strongly significantly below the mean in the Western countries.

International Telephone Calls

The data for 1994 (minutes per person) are taken from *Human Development Report*. The data are available for 17 Western countries (the same sample as for radios) and for 15 Eastern countries (the same sample as for radios, with Belarus and Ukraine missing). The mean in the Western countries is 107.2, and the deviation

equals 119.6. The mean in the Eastern countries is 17.8, and the deviation is 13.3. There is a significant difference in means between the Western and the Eastern countries (the t-statistic is 2.87).

In the sample of the 6 developed Eastern countries, the mean is 22.6, and the deviation makes 14.5. This sample's mean is marginally significantly below the mean in the Western countries (the t-statistic is 1.70). In the sample of the 9 less developed Eastern countries, the mean is 14.7, and the deviation equals 12.2. The mean in this sample is significantly below the mean in the Western countries.

Fax Machines

The data for 1994 (per 100 people) are taken from *Human Development Report*. The data are available for 8 Western countries (Austria, Denmark, Finland, France, Germany, Netherlands, Switzerland, and United Kingdom) and for 12 Eastern countries [Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Lithuania, Macedonia (FYR), Poland, Romania, Slovakia, and Slovenia]. The mean in the sample of the Western countries is 2.75, with the standard deviation equal to 0.63. The mean in the sample of the Eastern countries is 0.38, with the deviation equal to 0.29. The mean in the Western countries is strongly significantly above the mean in the Eastern countries (the t-statistic is 11.45).

In the sample of the 6 developed Eastern countries, the mean is 0.53, and the deviation makes 0.24. In the sample of the 6 less developed Eastern countries, the mean is 0.18, and the deviation is 0.20. The means in both of these samples are clearly strongly significantly below the mean in the Western countries.³

Mobile Telephones

The data for mobile cellular telephone subscribers (per 100 people) for 1992 are taken from *Human Development Report*. The data exist for 17 Western countries (the same sample as for radios) and for 10 Eastern countries (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia). The

³ It is important to realize that some communication profile variables are changing rapidly in Eastern Europe. Future research can focus on the speed of convergence for such variables between Western and Eastern Europe.

average in the sample of the Western countries is 5.61, and the deviation makes 4.72. The average in the sample of the Eastern countries is 0.47, and the deviation is 0.45. The average in the sample of the Western countries is strongly significantly above the average in the Eastern countries (the t-statistic is 3.41).

In the sample of the 6 developed Eastern countries, the mean is 0.62, and the deviation makes 0.53. This sample's average is significantly below the average in the Western countries (the t-statistic is 2.55). In the sample of the 4 less developed Eastern countries, the mean is 0.25, and the deviation makes 0.19. The mean in this sample is significantly below the mean in the Western countries (the t-statistic is 2.23).

Internet Users

The 1994 data for internet users (per 100 000 people) are available from *Human Development Report*. The data exist for 17 Western countries (the same sample as for radios) and for 13 Eastern countries (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia, and Ukraine). The average in the Western countries is 289.1, and the deviation amounts to 280.8. The average in the Eastern countries is 20.8, and the deviation is 22.6. There is a strongly significant difference in means between the Western and the Eastern countries (the t-statistic is 3.42).

In the sample of the 6 developed Eastern countries, the mean is 39.8, and the deviation makes 19.6. This sample's mean is significantly below the mean in the Western countries (the t-statistic is 2.14). In the sample of the 7 less developed Eastern countries, the mean is 4.5, and the deviation makes 5.9. The mean in this sample is significantly below the mean in the sample of the Western countries (the t-statistic is 2.65).

Personal Computers

The 1994 data (personal computers per 100 people) are available from *Human Development Report*. The data exist for 15 Western countries (the same sample as for radios, with Iceland and Luxembourg missing) and for 5 Eastern countries (Czech Republic, Hungary, Poland, Russia, and Ukraine). The mean in the Western countries

is 14.9, and the deviation makes 5.9. The mean in the Eastern countries is 1.9, with the deviation equal to 1.3. There is a strongly significant statistical difference in means between the given samples (the t-statistic is 4.77).

5. Social Stress and Social Change

Prisoners

The 1993 data for prisoners (per 100 000 people) are taken from *Human Development Report*. The data are available for 17 Western countries (the same sample as for adult literacy rates) and for 6 Eastern countries (Bulgaria, Czech Republic, Hungary, Poland, Slovakia, and Slovenia). The mean in the Western countries is 78.5, and the deviation makes 21.4. The mean in the Eastern countries is 148.7, and the deviation is 34.5. The difference in means between the given samples is strongly statistically significant (the t-statistic is 5.88).

Intentional Homicides by Men

The data for 1985-90 (per 100 000 people) are taken from *Human Development Report*. The data exist for 17 Western countries (the same sample as for adult literacy rates) and for 5 Eastern European countries (Bulgaria, Czech Republic, Hungary, Poland, and Russia). The mean in the Western countries is 1.70, and the deviation makes 0.78. It is of interest to note that the record in the United States (12.4) is substantively above the Western European average. The mean in the Eastern countries is 4.06, and the deviation makes 2.94. There are large differences across the Eastern European countries: the minimum is achieved in the Czech Republic (1.3), while the maximum occurs in Russia (9.0). The mean in the Eastern European countries is significantly above the mean in the Western European countries (the t-statistic is 3.12).

Injuries and Deaths from Road Accidents

The 1990-93 data (per 100 000 people) are taken from *Human Development Report*. The data exist for 17 Western countries (the same sample as for adult literacy

rates) and for 11 Eastern countries (Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Moldova, Poland, Russia, and Ukraine). The mean in the Western countries is 352.6, and the deviation equals 261.7. The mean in the Eastern countries is 118.6, and the deviation makes 56.0. The mean in the Western countries is significantly above the mean in the Eastern countries (the t-statistic is 2.91).

The mean in the 4 developed Eastern countries is 162.0, and the deviation makes 69.9. This mean is marginally significantly below the mean in the Western countries (the t-statistic is 1.42). The mean in the 7 less developed Eastern countries is 93.7, and the deviation makes 28.5. The mean in the less developed Eastern countries is significantly below the mean in the Western countries (the t-statistic is 2.58).

Suicides

The 1989-93 data for suicides (per 100 000 people) are taken from *Human Development Report*. The data are available separately for male and female suicides. For male suicides, the data exist for 13 Western countries (the same sample as for adult literacy rates, with Belgium, Iceland, Luxembourg, and United Kingdom missing) and for 11 Eastern countries (Albania, Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Russia, and Ukraine). The mean in the Western countries is 22.9, and the deviation equals 10.0. The mean in the Eastern countries is 45.3, and the deviation is 23.4. The mean in the Eastern countries is strongly significantly above the mean in the Western countries (the t-statistic is 3.13).

In the 4 developed Eastern countries, the mean is 43.0, and the deviation makes 19.4. The given mean is significantly above the mean in the Western countries (the t-statistic is 2.81). In the 7 less developed Eastern countries, the mean is 46.6, and the deviation amounts to 26.8. This sample's mean is also significantly above the mean in the Western countries (the t-statistic is 2.88).

The samples for female suicides are identical to those for male suicides. In the sample of the 13 Western countries, the mean is 8.4, and the standard deviation is 3.8. In the sample of the 11 Eastern countries, the mean is 11.1, and the deviation makes 5.1. The difference in means between the given samples is marginally significant (the t-statistic is 1.49).

In the sample of the 4 developed Eastern countries, the mean is 12.0, and the deviation is equal to 5.7. This sample's mean is marginally significantly above the

mean in Western Europe (the t-statistic is 1.48). In the sample of the 7 less developed Eastern countries, the mean is 10.6, and the deviation equals 5.1. The mean in this sample is not significantly different from the mean in the Western countries (the t-statistic is 1.09).

Divorces

The 1987-91 data for divorces (per 1000 couples) are available from *Human Development Report*. The data exist for 16 Western countries (the same sample as for adult literacy rates, with Ireland missing) and for 13 Eastern countries (Albania, Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russia, and Ukraine). The average in the Western countries is 33.4, and the deviation makes 14.4. The average in the Eastern countries is 31.8, and the deviation equals 11.7. There is no significant difference in means between the Western and the Eastern countries (the t-statistic is 0.34).

In the sample of the 4 developed Eastern countries, the mean is 33.3, and the deviation makes 12.5. In the sample of the 9 less developed Eastern countries, the mean is 31.1, and the deviation makes 12.0. The means in the given samples are clearly not significantly different from the means in the Western countries.

Live Births per 1000 Women Aged 15-19

The data for 1989-93 are available from *Human Development Report*. The data exist for 16 Western countries (the same sample as for adult literacy rates, with Belgium missing) and for 16 Eastern countries [Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia (FYR), Moldova, Poland, Romania, Russia, Slovakia, Slovenia, and Ukraine]. The mean in the sample of the Western countries is 14.4, and the standard deviation makes 7.1. The mean in the Eastern countries is 44.8, and the deviation makes 13.0. The mean in the Eastern countries is strongly significantly above the mean in the Western countries (the t-statistic is 8.17).

In the sample of the 6 developed Eastern countries, the mean is 37.2, and the deviation equals 10.6. In the sample of the 10 less developed Eastern countries, the

mean is 49.3, and the deviation is 12.6. The means in these samples are clearly strongly significantly above the mean in the Western countries.

One-person Households Headed by Women Aged 65 and Above

The 1992 data (as % of all households) are available from *Human Development Report*. The data exist for 14 Western countries (Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Norway, Sweden, Switzerland, and United Kingdom) and for 9 Eastern countries (Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Poland, Romania, and Slovakia). The mean in the sample of the Western countries is 10.6, and the deviation makes 3.3. The mean in the sample of the Eastern countries is 8.4, and the deviation equals 2.1. The mean in the Western countries is marginally significantly above the mean in the Eastern countries (the t-statistic is 1.79).

In the sample of the 5 developed Eastern countries, the mean is 9.2, and the deviation is 2.3. This sample's mean is not significantly different from the mean in the Western countries (the t-statistic is 0.90). In the sample of the 4 less developed Eastern countries, the mean is 7.5, and the deviation makes 1.7. The mean in this sample is marginally significantly below the mean in the Western countries (the t-statistic is 1.82).

6. Natural Resource Use

Forest and Woodland

The 1993 data (as % of land area) are taken from *Human Development Report*. The data are available for 15 Western countries (the same sample as for adult literacy rates, with Belgium and Luxembourg missing) and for 14 Eastern countries (Albania, Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, and Ukraine). The mean in the Western countries is 27.2, and the deviation equals 19.4. The mean in the Eastern countries is 32.1, and the standard deviation makes 10.4. There is no significant difference in means between the Western and the Eastern countries (the corresponding t-statistic is 0.83).

In the sample of the 5 developed Eastern countries, the mean is 33.2, and the deviation makes 10.2. In the sample of the 9 less developed Eastern countries, the mean is 31.5, and the deviation equals 11.1. The means in both of these samples are clearly not significantly different from the mean in the Western countries.

Arable Land

The 1993 data (as % of land area) are taken from *Human Development Report*. The data samples are identical to the previous section. The mean in the sample of the 15 Western countries is 21.0, and the deviation makes 15.4. The mean in the sample of the 14 Eastern countries is 35.2, and the deviation equals 13.3. The mean in the Eastern countries is significantly above the mean in the Western countries (the t-statistic is 2.65).

In the sample of the 5 developed Eastern countries, the mean is 38.4, and the deviation is 10.7. This sample's mean is significantly above the mean in the Western countries (the t-statistic is 2.33). In the sample of the 9 less developed Eastern countries, the mean is 33.4, and the deviation makes 14.9. The mean in this sample is marginally significantly above the mean in the Western countries (the t-statistic is 1.94; the critical value for a 2.5% significance level in a one-tail test is 2.07).

Irrigated Land

The 1993 data (as % of arable land area) are taken from *Human Development Report*. The data exist for 13 Western countries (the same sample as for adult literacy rates, with Belgium, Iceland, Ireland, and Luxembourg missing) and for 11 Eastern countries (Albania, Belarus, Bulgaria, Czech Republic, Hungary, Moldova, Poland, Romania, Russia, Slovakia, and Ukraine). The mean in the sample of the Western countries is 15.1, and the deviation is 17.2. The mean in the sample of the Eastern countries is 14.9, and the deviation is 18.7. There is clearly no statistically significant difference in means between the given samples (the t-statistic is just 0.03).

In the sample of the 4 developed Eastern countries, the mean is 2.8, and the deviation amounts to 2.4. This sample's mean is marginally significantly below the mean in the Western countries (the t-statistic is 1.40). In the sample of the 7 less developed Eastern countries, the mean is 21.9, and the deviation equals 20.7. The

mean in this sample is not significantly above the mean in the Western countries (the t-statistic is 0.78).

Internal Renewable Water Resources per Capita

The 1995 data (1000 m³ per year) are taken from *Human Development Report*. Iceland is an outlier with the record of 624.5. With the exclusion of Iceland, the data are available for 15 Western countries (the same sample as for adult literacy rates, with Iceland and Luxembourg missing) and for 14 Eastern countries (Albania, Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, and Ukraine). The mean in the Western countries is 13.0, and the deviation equals 22.5. The mean in the Eastern countries is 10.0, and the deviation amounts to 8.1. There is no significant difference in means between the given samples (the t-statistic is 0.46).

In the sample of the 5 developed Eastern countries, the mean is 7.3, and the deviation equals 4.4. This sample's mean is also not significantly different from the mean in the Western countries (the t-statistic is 0.55). In the sample of the 9 less developed Eastern countries, the mean is 11.6, and the deviation makes 9.4. The mean in this sample is clearly not statistically different from the mean in the Western countries (the t-statistic is 0.18).

Density (Population per Sq. km)

The data (most recent estimates in 1989-94) are taken from *Social Indicators of Development*. The data are available for 16 Western countries (the same sample as for adult literacy rates, with Luxembourg missing) and for 19 Eastern countries (the same sample as for infant mortality). The mean in the Western countries is 135.5, and the deviation equals 118.5. The mean in the Eastern countries is 84.8, and the deviation makes 33.8. The mean in the Eastern countries is marginally significantly below the mean in the Western countries (the t-statistic is 1.78).

In the sample of the 6 developed Eastern countries, the mean is 100.7, and the deviation makes 34.9. This sample's mean is not significantly below the mean in the Western countries (the t-statistic is 0.70). In the sample of the 13 less developed Eastern countries, the mean is 77.5, and the deviation makes 31.9. The mean in this

sample is marginally significantly below the mean in the Western countries (the t-statistic is 1.71).

7. Other Indicators

Social Security Benefits Expenditure (% GDP)

The 1993 data are available from *Human Development Report*. The data exist for 9 Western countries (Austria, Denmark, Finland, Germany, Ireland, Norway, Portugal, Sweden, and Switzerland) and for 8 Eastern countries (Belarus, Bulgaria, Czech Republic, Hungary, Latvia, Poland, Romania, and Slovenia). The mean in the Western countries is 23.3, and the standard deviation equals 8.9. The mean in the Eastern countries is 14.6, and the standard deviation makes 3.7. The mean in the Western countries is significantly above the mean in the Eastern countries (the t-statistic is 2.56).

In the sample of the 4 developed Eastern countries, the mean is 14.7, and the deviation equals 3.0. In the sample of the 4 less developed Eastern countries, the mean is 14.5, and the deviation makes 4.8. Since there are almost equal averages in the developed and the less developed Eastern countries, no separate tests for the developed and the less developed Eastern countries are carried out.

Percentage of Central Government Expenditure on Social Security and Welfare

The 1992-95 data are taken from *Human Development Report*. The data exist for 12 Western countries (Austria, Denmark, Finland, France, Iceland, Ireland, Luxembourg, Netherlands, Norway, Spain, Sweden, and United Kingdom) and for 9 Eastern countries (Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Romania, and Russia). The mean in the sample of the Western countries is 39.4, and the deviation makes 8.4. The mean in the sample of the Eastern countries is 31.4, and the deviation equals 4.2. The difference in means between the given samples is significant (the t-statistic is 2.62).

Percentage of Central Government Expenditure on Housing and Community Amenities

The 1992-95 data are available from *Human Development Report*. The data are available for 13 Western countries (the sample in the previous section plus Germany). The sample of Eastern countries includes 5 countries (Belarus, Bulgaria, Czech Republic, Estonia, and Romania). The mean in the Western countries is 2.28, and the deviation is 1.42. The mean in the Eastern countries is 1.82, and the deviation makes 1.22. There is no statistically significant difference in the given means (the t-statistic is 0.64).

Defence Expenditure (% GDP)

The 1995 data are taken from *Human Development Report*. The data are available for 16 Western countries (the same sample as for adult literacy rates, with Iceland missing) and for 16 Eastern countries [the same sample as for adult literacy rates, with Macedonia (FYR) missing]. The mean in the sample of the Western countries is 2.04, and the deviation amounts to 0.72. The mean in the sample of the Eastern countries is 3.82, and the deviation makes 2.74. The mean in the Eastern countries is significantly above the mean in the Western countries (the t-statistic is 2.51).

In the sample of the 6 developed Eastern countries, the mean is 2.72, and the deviation amounts to 1.41. The given mean is marginally significantly above the mean in the Western countries (the t-statistic is 1.51). In the sample of the 10 less developed Eastern countries, the mean is 4.48, and the deviation is 3.18. The given mean is significantly above the mean in the Western countries (the t-statistic is 2.98).

Total Fertility Rate (Births per Woman)

The data (most recent estimates in 1989-94) are available from *Social Indicators of Development*. The data samples are identical to those for infant mortality. In the sample of the 17 Western European countries, the mean is 1.65, and the deviation makes 0.27. In the sample of the 19 Eastern countries, the mean is 1.67, and the deviation is 0.36. There is no significant difference in means between the Western and the Eastern countries (the t-statistic is just 0.19).

In the sample of the 6 developed Eastern countries, the mean is 1.55, and the deviation makes 0.19. The given mean is not significantly below the mean in the Western countries (the t-statistic is 0.83). In the sample of the 13 less developed countries, the mean is 1.73, and the deviation makes 0.41. The given sample's mean is not significantly above the mean in the Western countries (the t-statistic is 0.65).

Population Growth Rate (%)

The data (most recent estimates in 1989-94) are taken from *Social Indicators of Development*. The data are available for 17 Western and 19 Eastern countries (the same samples as for the fertility rate). The mean in the sample of the Western countries is 0.51, and the deviation makes 0.32. The mean in the sample of the Eastern countries is 0.02, and the deviation amounts to 0.72. The mean in the Eastern countries is significantly lower than the mean in the Western countries (the t-statistic is 2.58).

In the 6 developed Eastern countries, the mean is 0.05, and the deviation is 0.73. In the 13 less developed Eastern countries, the mean is 0.01, and the deviation makes 0.74. Since there are almost equal means in the developed and the less developed Eastern countries, no separate tests for the developed and the less developed Eastern countries are carried out.

Urban Population (% of Population)

The data (most recent estimates in 1989-94) are taken from *Social Indicators of Development*. The data are available for 17 Western and 19 Eastern countries (the same samples as for infant mortality). The mean in the Western countries is 74.7, and

the deviation amounts to 16.5. The mean in the Eastern countries equals 62.4, and the deviation is 9.7. The difference in means between the Western and the Eastern countries is significant (the t-statistic is 2.77).

In the sample of the 6 developed Eastern countries, the mean is 64.6, and the deviation makes 4.7. This sample's mean is marginally significantly below the mean in the Western countries (the t-statistic is 1.46). In the sample of the 13 less developed Eastern countries, the mean is 61.3, and the deviation equals 11.3. The mean in this sample is significantly below the mean in the Western countries (the t-statistic is 2.50).

Share of Agriculture in GDP (%)

Social Indicators of Development provide data (most recent estimates in 1989-94) for 17 Western countries (the same sample as for adult literacy rates) and for 16 Eastern countries (Albania, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, and Ukraine). The mean in the Western countries is 3.4, and the standard deviation equals 2.2. The mean in the Eastern countries is 17.4, and the deviation is 15.2. The mean in the Eastern countries is strongly significantly above the mean in the Western countries (the t-statistic is 3.76).

In the sample of the 6 developed Eastern countries, the mean is 6.6, and the deviation makes 1.8. This sample's mean is also strongly significantly above the mean in the Western countries (the t-statistic is 3.26). In the sample of the 10 less developed Eastern countries, the mean is 23.8, and the deviation amounts to 16.1. The mean in this sample is also strongly significantly above the mean in the Western countries (the t-statistic is 5.22).

Energy Consumption per Capita (kg of Oil Equivalent)

The data (most recent estimates in 1989-94) are available from *Social Indicators of Development*. The data exist for 17 Western countries (the same sample as for adult literacy rates) and for 15 Eastern countries (Albania, Belarus, Bulgaria, Croatia, Estonia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovenia, Ukraine, and Yugoslavia). The mean in the sample of the Western countries is 4512,

and the deviation makes 1969. The mean in the sample of the Eastern countries is 2218, and the deviation is 1002. There is a strongly significant difference in means between the given samples (the t-statistic is 4.07).

In the sample of the 4 developed Eastern countries, the mean is 2519, and the deviation makes 837. There is a marginally significant difference in means between the developed Eastern countries and the Western countries (the t-statistic is 1.95; the critical value at a 2.5% level in a one-tail test is 2.09). In the sample of the 11 less developed Eastern countries, the mean is 2109, and the deviation equals 1071. The mean in the less developed Eastern countries is strongly significantly below the mean in the Western countries (the t-statistic is 3.69).

Human Development Index

The human development index for 1994 is available from the *Human Development Report*. The human development index is an average of the life expectancy index, the educational attainment index, and the adjusted real GDP per capita index. The data are available for 17 Western and 17 Eastern countries (the same samples as for adult literacy rates). The mean in the sample of the Western countries is 0.929, and the deviation equals 0.015. The mean in the sample of the Eastern countries is 0.775, and the deviation is 0.079. There is a strongly significant difference in means between the Western and the Eastern countries (the t-statistic is 7.90).

In the sample of the 6 developed Eastern countries, the mean is 0.851, and the deviation equals 0.042. This sample's mean is also strongly significantly below the mean in the Western countries (the t-statistic is 6.75). In the sample of the 11 less developed Eastern countries, the mean is 0.733, and the deviation is 0.060. The mean in this sample is clearly strongly significantly below the mean in the Western countries (the t-statistic is 12.98).

8. Conclusion

This paper compares various socio-economic indicators between Western and Eastern Europe. Attention is paid to indicators of education, health, communication profile, social-stress profile, natural resource use, and some other indicators.

Most indicators of education [average years of schooling, percentage of no schooling, adult literacy rates, public expenditure on education (% GNP), percentage of central government expenditure on education, repetition rates at the primary level, and most international test scores] are comparable between Eastern and Western Europe. Some indicators of schooling (public expenditure on higher education, international test scores in Population 3 in mathematical and scientific literacy, pupil-teacher ratios at the primary level, and dropout rates) are significantly more favorable in Western Europe. Pupil-teacher ratios at the secondary level are marginally more favorable in Western Europe. However, repetition rates at the secondary level are significantly lower in Eastern Europe. The tertiary natural and applied science enrolment is significantly higher in Eastern Europe.

Some indicators of health (population per physician, percentage of central government expenditure on health) are comparable between Western and Eastern Europe. Some health indicators (life expectancy at birth, infant mortality, and mortality under 5 years) are strongly significantly more favorable in Western Europe. The population per hospital bed is marginally more favorable in Eastern Europe.

Most communication profile variables (radios, televisions, book titles published, printing and writing paper consumed, main telephone lines, international telephone calls, fax machines, mobile telephones, internet users, and personal computers) were strongly significantly less favorable in Eastern Europe in the first half of the 1990s. The newspaper circulation was comparable between Western and Eastern Europe. Some of these variables (such as mobile telephones and internet users) are rapidly changing over time. Future research can focus on the speed of convergence between Western and Eastern Europe for these variables.

Most social stress variables (prisoners, intentional homicides, suicides, life births of very young women) are significantly higher in Eastern Europe. For divorces, there is no statistical difference between Eastern and Western Europe. Injuries and deaths from road accidents are significantly higher in Western Europe.

Eastern European countries are significantly more abundant in arable land. The population density is marginally significantly lower in Eastern Europe than in Western Europe. Social security expenditures (% GDP) are significantly lower in Eastern Europe. Defence expenditures (% GDP) are significantly higher in Eastern Europe. The population growth rate is significantly lower in Eastern Europe. The share of urban population is significantly higher in Western Europe. The share of

agriculture in GDP is significantly higher in Eastern Europe. The per capita energy consumption is strongly significantly lower in Eastern Europe. The human development index is strongly significantly higher in Western Europe.

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