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## Convergence of food consumption patterns between Eastern and Western Europe

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# **DISCUSSION PAPER**

## **Institute of Agricultural Development in Central and Eastern Europe**

### **CONVERGENCE OF FOOD CONSUMPTION PATTERNS BETWEEN EASTERN AND WESTERN EUROPE**

**KARIN ELSNER AND MONIKA HARTMANN**

**DISCUSSION PAPER NO. 13  
1998**



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### ABSTRACT

This paper is a first attempt to analyze whether convergence of food consumption between Eastern and Western Europe since the beginning of transition can be detected. The study refers to the 10 EU-associated Central and Eastern European Countries (CEECs) and the EU-15. If convergence is a fact, changes in EU food consumption could be a useful indicator for future food consumption patterns in the CEECs.

With the end of the socialist era, prices and income have become major determinants of food consumption and the total per capita calorie consumption, as well as the calorie share of animal products, have declined in most CEECs. At the same time, many products that could not be purchased in the past have become available, trade has risen significantly, and foreign direct investment in the food industry and in the distribution sector of the CEECs has become increasingly relevant. This has triggered demonstration effects that suggest convergence of food consumption.

Empirical studies on convergence focus either on cross-country comparisons of general trends in food consumption, or they seek to explicitly measure the degree of similarity of the consumption structures and convergence in the structure of food consumption. This paper analyzes convergence in the consumption levels, as well as the structure of food consumption. For this purpose, several indicators have been calculated and pooled regression analyses have been run.

The results give a first indication that convergence has occurred, although this does not hold for all CEECs or all food commodities.

### ZUSAMMENFASSUNG

In diesem Beitrag wird untersucht, ob seit Transformationsbeginn eine Konvergenz des Nahrungsmittelverbrauchs zwischen Ost- und Westeuropa zu beobachten ist. Die Analyse bezieht sich auf die 10 mit der EU assoziierten mittel- und osteuropäischen Länder (MOEL) und die EU-15. Falls Konvergenz des Nahrungsmittelverbrauchs festzustellen ist, könnte die Entwicklung des Nahrungsmittelkonsums in der EU Schlußfolgerungen bezüglich der zukünftigen Entwicklung des Nahrungsmittelkonsums in den MOEL zulassen.

Seit Transformationsbeginn haben die Nahrungsmittelpreise und das Einkommen als Bestimmungsfaktoren der Nahrungsmittelnachfrage an Bedeutung gewonnen, und die gesamte Kalorienzufuhr sowie der Anteil der aus tierischen Produkten aufgenommenen Kalorien ist durchschnittlich gesunken. Heute stehen Nahrungsgüter zur Auswahl, die früher nicht verfügbar waren. Der gestiegene Außenhandel sowie ausländische Direktinvestitionen in der Ernährungsindustrie und im Handel der MOEL bringen Demonstrationseffekte mit sich, die eine Angleichung des Nahrungsmittelkonsums zwischen Ost und West erwarten lassen.

In empirischen Studien zur internationalen Konvergenz des Nahrungsmittelkonsums werden zum einen Ländervergleiche der allgemeinen Trends des Nahrungsmittelverbrauchs durchgeführt. Zum anderen wird aber auch versucht, das Ausmaß der Ähnlichkeit des Nahrungsmittelkonsums und strukturelle Konvergenz zu messen. In diesem Beitrag wird Konvergenz des Nahrungsmittelverbrauchs sowohl produktweise für alle Länder, als auch hinsichtlich der Konsumstruktur in Ländervergleichen untersucht. Zu diesem Zweck werden verschiedene Indikatoren errechnet und Regressionen mit gepoolten Daten durchgeführt.

Die Ergebnisse lassen darauf schließen, daß Konvergenz des Nahrungsmittelverbrauchs zwischen Ost- und Westeuropa seit Transformationsbeginn zu beobachten ist, aber nicht für alle Länder oder alle betrachteten Produkte.

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**LIST OF ABBREVIATIONS**

BMWi	Federal Ministry of Economics
CEECs	Central and Eastern European Countries
EU	European Union
FDI	Foreign Direct Investments
GDP	Gross Domestic Product
IIT	Grubel and Lloyd Index
MOEL	Mittel- und osteuropäische Länder
PPP	Purchasing Power Parity
S	Similarity Index
WRD	Weighted Relative Deviation



## 1 INTRODUCTION

In the production-oriented centrally planned economies, little emphasis was given to consumer preferences, which resulted in consumer products of poor quality and little variety. This holds with respect to consumption as a whole and food consumption in particular. At the same time, consumption of food was heavily subsidized. Thus food was relatively cheap and economic factors such as prices and income did not generally restrict the individual's choice of food consumption. With the transition from a socialist system to a market economy, pronounced changes in the food sector have occurred. Consumption subsidies were immediately removed in almost all Central and Eastern European Countries (CEECs)<sup>1</sup>, real incomes have declined, food processing industries and distribution systems are being privatized, quality standards and sanitary controls are being introduced and trade has been liberalized. Although these processes were completed to a different degree in each of the ten countries, the changes in all countries have been pronounced, as has the impact on the level and structure of food demand which is expected to continue in the future.

In view of these changes, it seems difficult to say what the future development of food consumption will be. Knowing a country's market potential for food products is, however, not only an important determinant of competitiveness of the agricultural and food sectors (PORTER 1990); it is also of great interest for potential suppliers from foreign countries.

An assessment of the future development of food consumption in Eastern Europe cannot be based on time series analysis, since there are no time series data available for a sufficiently long period. However, if it can be shown that convergence of food consumption between the EU and the Central and Eastern European Countries has occurred since the beginning of the transition process, this might provide some indication of how the food demand in the CEECs will develop in the future.

The aim of this paper is to analyze whether convergence of food consumption between Eastern and Western Europe can already be detected. Currently it is not possible to empirically analyze the underlying determinants of the convergence or divergence process. This is due to a lack of reliable data, a major problem when dealing with the CEECs. Thus, this paper should be regarded as a first step in the analysis of convergence of food consumption between Eastern and Western Europe.

The paper initially discusses the main determinants of food consumption, changes in these factors and trends in food consumption since the beginning of transition. Section 3 gives a brief overview of the literature on globalization in consumer markets and discusses different ways of analyzing international convergence of food consumption used in empirical studies. The empirical part of this paper examines whether food consumption in the EU-15 and the CEECs has converged since the beginning of the transformation process with respect to different products and different countries (section 4). The final section of the paper discusses the relevance of the different results obtained for forecasting future developments in food consumption in the CEECs and identifies further areas of research.

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<sup>1</sup> In this paper we have concentrated on those countries which have association agreements with the EU. Thus the CEE countries considered are: Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia.

## 2 FOOD CONSUMPTION IN CEECS

### 2.1 Determinants of Food Consumption

Economic theory suggests that the main determinants of changes in food consumption are changes in real consumer income, in product price, and in the prices of complementary and substitute goods as well as preferences and sociodemographic factors. With a decreasing share of food in total expenditure, however, income and prices have become less significant as explanatory variables, while sociodemographic factors as well as preferences have gained in importance.

In centrally planned countries, people's diets depended primarily on what could be produced in the socialist block. Hard currency was scarce and was therefore not easily wasted on the import of food products from market economies. Consumer preferences played little role, which was reflected in the low quality and little diversification of food products in these countries. Due to the strong subsidization of food products, prices and income were also relatively weak determinants for the level and structure of food consumption. Thus the availability of products was one of the main factors influencing food expenditure patterns (cf. HENSON and SEKULA 1994, p. 422).

With the end of the socialist era, prices and income have become major determinants of food consumption. This holds, especially given the fact that the share of food in total expenditure is still very high in the CEECs, ranging between 28 % in Slovenia and 66 % in Romania<sup>2</sup> (OECD 1996a, p. 170). At the same time, a wide range of products which could not be purchased in the past has become available. Trade with western countries has risen significantly in the 90s. In addition, foreign direct investment (FDI) from OECD countries in the food industry and in the distribution sector has become increasingly relevant (cf. e.g. CONNOR 1994; HARTMANN and WANDEL 1997; TRAILL 1997). In some CEECs such as Bulgaria and Hungary, the food industry is one of the most prominent FDI targets. Finally, the people of the CEECs can now travel freely. All these developments have triggered demonstration effects that suggest an internationalization of diet in the CEECs. Especially in view of the proximity between the EU and the CEECs, but also their common historical background, as well as the fact that most CEECs food imports come from the EU<sup>3</sup>, we can expect convergence between these regions. If convergence is a fact, and it can be assumed that sociodemographic and preference changes similar to those which occurred in the EU in the past will take place in the CEECs in the future, changes in EU food consumption could be a useful indicator for future food consumption patterns in the CEECs.<sup>4</sup>

### 2.2 Changes in Food Consumption since the Beginning of Transition

Table A.1 presents total daily per capita consumption of calories, protein and fat in 1988 and 1995 for six association countries and the EU. No data was available for Slovenia and the three Baltic Countries for 1988 so that trends in total calorie and nutrient intakes in those countries cannot be analyzed. Since the remaining countries do, however, cover more than 90 % of the population of the whole region, a good approximation for all association countries will still be achieved.

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<sup>2</sup> The Slovenian and Romanian data are from 1994 and 1995 respectively.

<sup>3</sup> Except Slovakia.

<sup>4</sup> Cf. TRAILL and HENSON (1991) for a discussion of the expected effects on Eastern European food consumption patterns due to changes in economic and non-economic demand factors.

Table A.1 reveals that in the CEECs the average total per capita consumption in 1988 was 3203 calories per day, ranging from 3167 in Romania to 3722 in Bulgaria.<sup>5</sup> The data also show that the average calorie intake amounts to 94 % of the EU-15 level; although per capita income in the CEECs measured in Purchasing Power Parity (PPP) was less than one third of the respective EU-level. Thus, the data supports the assumption that in 1988 income was no major determinant of food consumption in the CEECs.

Over the period 1988 to 1995, calorie consumption in the CEECs decreased by 8 % to reach 2959 calories per day in 1995. The pattern of declining calorie intake was especially pronounced in Bulgaria, while no change in calorie consumption occurred in Romania. The drop in real income and the relative increase in the CPI food retail price index compared to the total CPI price index are probably the driving forces behind the decline in Bulgaria. Even an increase in the share of household income devoted to food from 30 % in 1989<sup>6</sup> to 40 % in 1995 could not prevent the sharp drop in total calorie intake. In contrast to Bulgaria, real income increased in Romania in the period considered while in both countries food prices rose far more than prices for other consumer goods. The constant calorie intake for Romania observed in Table A.1 could only have been achieved by sharply increasing the proportion of income allocated to food from 48 % in 1989 to 66 % in 1995 (OECD 1996a, p. 170).

Average protein as well as fat intakes for the CEECs show trends similar to those of calorie consumption. Both daily nutrient intakes decreased by 9 % and 10 % respectively in the period 1988 to 1995. Total calorie, protein and fat intakes declined relative to the respective EU level, although relative real GDP measured in PPP remained almost constant. These results support the statement that in 1995 income influenced the level of consumption to a much higher degree than in 1988.

The data show that traditionally in the two Balkan countries a relatively low proportion of food is derived from animal sources, but that this share is exceptionally high in Hungary. The data also reveal that calorie intakes derived from animal products declined not only in absolute but also in relative terms. In 1988, daily calories consumed from animal products contributed 28 % to total calorie intake in the CEECs, while the consumption of animal products amounted to a share of just 26 % in 1995. A similar relative and thus also absolute decline can be observed for protein intakes derived from animal products. These results indicate that consumers have tried to maintain their level of nutrition by shifting consumption to plant products and thus to relatively cheaper sources of calories and proteins. Initially it seems that this result is not supported, when looking at the share of fat consumed from animal products. This share increased on average in the CEECs, although absolute fat intake declined.<sup>7</sup> However, HENSON and SEKULA (1994, p. 439) show that while, at the beginning of the 80s, the most economical source of food energy in Poland was grain, there was a switch to raw pork fat once transition had started. This could explain not only the increase in the share of fat from animal products, but also the decrease of the proportion of calorie and protein consumption from animal products.

Table A.1 generally reveals that the level and structure of consumption measured in calorie, protein or fat intake has remained very stable in the EU-15 in the period 1988 to 1995, while considerable changes have occurred in the CEECs in the same period. The fact that the

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<sup>5</sup> For problems of using FAO consumption data see section 4.1.

<sup>6</sup> No data were available for 1988.

<sup>7</sup> The latter does not hold for the Czech Republic and Romania. In these countries fat intakes from animal products increased not only in relative but also in absolute terms.

difference between the level and structure of consumption between the EU and the CEECs has increased as a result of these changes seems to contradict the convergence hypothesis. However, the data presented so far are highly aggregated. Thus a more detailed analysis seems necessary. First, however, an overview of other studies dealing with convergence and divergence of consumption will be presented.

### **3 OVERVIEW OF EMPIRICAL LITERATURE**

#### **3.1 Cross-country Comparisons of General Trends in Food Consumption**

One category of analyses of international aspects of food consumption patterns focuses on cross-country comparisons. Some of these studies simply describe long-term trends in the food consumption of different countries. They outline the development of per capita consumption of specific products, or measure total food consumption in terms of daily per capita caloric intake. Structural aspects are covered by comparing the consumption of animal versus vegetable products measured in terms of their respective share in caloric, protein or fat intake (cf. BERKOVEN 1978; WÖHLKEN ET AL. 1981; BLANDFORD 1984; WHEELOCK and FRANK 1989; GRIGG 1993; GIL ET AL. 1995).

The results of these studies show that average per capita food consumption for developed economies increased between 1960-1990, albeit at a lower growth rate during the 80s than in earlier decades. In some countries, however, even a decline in per capita food consumption has taken place in the 80s and 90s. In general there is a positive correlation between food consumption and income, but due to the high level of satiation attained, only little potential for further growth is left. Given the relatively low rate of population growth in the developed world, total food consumption in these countries is not likely to experience a great increase in the future.

With respect to the structure of food demand, an upward trend in the consumption of animal products and a decline in the consumption of vegetable calories was observed. This led to an increase in the share of animal calories and thus to a decline in the share of vegetable calories until 1980, a tendency which was probably due not only to income growth, but also to changes in relative prices between vegetable and animal products in favor of the latter. However, this trend has come to an end and even reversed since the beginning of the 80s and there is good reason to assume that the absolute and relative fall in meat consumption in the OECD countries will continue in the future. An increasing health consciousness has led to this development. In fact, the influence of prices and income on the demand of specific products has apparently declined, and there is little doubt that consumer attitudes are increasingly affecting food consumption patterns in the developed economies.<sup>8</sup>

#### **3.2 Degree of Similarity in the Consumption Structures and Structural Changes**

While the studies discussed so far have analyzed convergence in diets by a cross-country comparison of general trends in food consumption, other studies have formulated clear criteria for convergence or divergence. WÖHLKEN and FILIP (1988) investigated the convergence or divergence of food consumption patterns among OECD countries between 1965 and 1982 based on a modification of the Export Similarity Index introduced by FINGER and KREININ (1979). Their results show a convergence process for OECD countries with similar income

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<sup>8</sup> Cf. for example RÖDER (1996) for an analysis of the influence of knowledge about nutrition and health on food consumption and nutrition quality.

growth rates. BLANDFORD (1984) and GIL ET AL. (1995) explored the degree of similarity in the structure of major caloric components in the aggregate caloric intake across OECD and EU countries respectively by using cluster analysis. The results reveal that there is no strong evidence for convergence in total calorie intake, although, considering the share of calories derived from main food groups, convergence can be observed for most food products, indicating increasing similarity in diet across European countries. The speed of convergence, however, has decreased in the last decade and significant dietary differences still remain. The convergence in dietary structure exists despite considerable variation in the proportion of consumer expenditure devoted to food, that is to say, despite inter-country differences in the absolute level of income and in relative prices (cf. BLANDFORD 1984, pp. 56-57, 59-60). This result suggests that homogeneity in consumption patterns among countries does not require income and relative price similarity in the respective countries (cf. GIL ET AL. 1995, pp. 395-397).

Nevertheless it is possible that convergence in consumption pattern is simply revealed in many of the studies discussed so far, because income converges across countries. If one controls for income, prices and other explanatory variables, however, it would be possible to associate convergence or divergence with long-running changes in preferences or with habit formation. HERRMANN (1994) and HERRMANN and RÖDER (1995) made first steps in that direction. Applying an OLS with pooled data, the authors explained cross-country differences in per capita food consumption with standard economic determinants and with convergence or divergence of preferences. Herrmann's results show that the convergence variables explain a large share of inter-country variation in food demand. They also suggest that total nutrient consumption converges across OECD countries; with respect to specific products, convergence as well as divergence tendencies can be observed, although more food products exhibit convergence.

#### **4 EMPIRICAL ANALYSIS**

While there are many empirical studies testing the hypothesis of international convergence in food consumption among OECD countries, no study so far has applied this theory to West and East European Countries. This paper makes an attempt to fill this breach. Convergence between West and East European Countries will be analyzed, comparing similarity of food consumption for all products in one country, as well as for one product across all CEECs. This allows to study convergence on all levels, as well as the structure of food consumption. In each case, the consumption level or structure in the EU are used as reference points.

One might think that the EU-15 are not suitable as a reference region, partly because convergence among the EU member states might be in progress, and partly because of a huge variety of consumption structures within the EU-15. Thus, at first glance, it would seem to be more appropriate to take one specific European country as a reference point instead, to compare pairs of countries; hence convergence could be analyzed between Poland and Germany, Slovakia and Germany, Latvia and Sweden, Estonia and Finland and so on. These pairs of countries are geographically close and have a common historical and cultural background. Convergence between them might be much more pronounced than between the average EU-15 and the CEECs. Nevertheless, for the purpose of this analysis, the comparison of pairs of countries did not appear to have any advantage over the approach chosen, for a number of reasons. Firstly, although Western Germany would have been the appropriate

reference region for at least four of the 10 EU-associated countries<sup>9</sup>, only data for the united Germany are available for recent years. Since these include both the old and the new *länder*, a break in the development of average food consumption is noticeable which would falsify the results. Secondly, Austria, Sweden and Finland, which would have served as reference regions for Hungary, Latvia and Estonia respectively, are rather new members of the European Union.<sup>10</sup> Their consumption structures in recent years show shifts that are certainly small compared to those we can observe in Eastern Europe, but nevertheless noticeable. Thirdly, the EU-15 average consumption patterns were very stable in the time period considered, despite the convergence process observable within the community. Variations in the degree of convergence can thus be interpreted as having been caused by changes in the transition economies. Fourthly, it is more appropriate to use the same reference region for all countries to compare the convergence process across all CEECs.

Different methods used in the empirical literature will be applied to measure convergence or divergence. Table 1 gives an overview of the approaches used in the following empirical analysis.

**Table 1: Approaches Used in Empirical Analysis**

<b><u>Based on Food Consumption Data</u></b>	
<p><b>Consumption of Specific Food Commodities in All CEECs</b></p> <ul style="list-style-type: none"> <li>• Weighted Relative Deviation of Consumption between the EU-15 and the CEECs</li> <li>• -</li> <li>• Pooled Regression Analysis (Pooling Across CEEC-9)</li> </ul>	<p><b>Structure of Food Consumption in Specific CEECs</b></p> <ul style="list-style-type: none"> <li>• Weighted Relative Deviation of Consumption between the EU-15 and the CEECs</li> <li>• Consumption Similarity Index</li> <li>• Pooled Regression Analysis (Pooling Across Products)</li> </ul>
<p><b><u>Based on Bilateral Trade Data</u></b></p> <ul style="list-style-type: none"> <li>• Grubel Lloyd Index</li> </ul>	

Source: Own table.

All approaches except one rely on food consumption data. The Grubel Lloyd Index is based on bilateral trade data for each CEEC and the EU-15.

The approaches based on consumption data measure different aspects. The category on the left-hand side of the table analyzes convergence or divergence in the consumption levels of one specific food commodity for all countries. The category on the right-hand side of the table investigates convergence or divergence between the EU and each of the CEECs across all products; this means that it covers structural aspects.

#### **4.1 Data**

Data availability, reliability and comparability through time and across countries have proven to be major obstacles in analyzing convergence or divergence of food expenditure structure between the CEECs and the EU in recent years. One main difficulty in comparing the ten CEECs shortly before transition, and at the most recent point in time for which data are available, is

<sup>9</sup> The Czech Republic, Lithuania, Poland, Slovakia.

<sup>10</sup> They joined the EU in 1995.

the fact that only four of the ten CEECs existed as independent nations before 1990. Consequently, statistics of neither the FAO nor any other international organization give data for these countries for the earlier years in question, and information had to be obtained from previous regional statistics. Another specific food-related uncertainty is due to the fact that subsistence in these countries is quite considerable and we can assume that the level of subsistence has not remained constant over the period analyzed.<sup>11</sup> Another problem related to food consumption data is the waste of food commodities in the socialist era. Due to high consumption subsidies, it was often cheaper to feed pigs and poultry with bread instead of grain (cf. HENSON and SEKULA 1994, p. 424).<sup>12</sup> With the removal of food subsidies, this has changed.

FAO food balance sheet data do not show consumption data, but the amount of food available at the retail level in a country for a given year, calculated on the basis of national agricultural production and trade statistics. Exports, foodstuffs used for industrial purposes, seed and animal feeds are deducted, as are stored quantities. Wastage in storing and processing as well as subsistence production at the household level are arbitrarily considered. The reliability of these data thus depends upon agricultural production statistics that probably overstated local production in socialist times and nowadays do not correctly include subsistence.<sup>13</sup> Further, it can be assumed that bulk correction for wastage is not sufficient for the CEECs as there is a relatively high level of wastage in storage, transport and processing.<sup>14</sup> Thus, it is not clear how accurately the FAO statistics reflect the particularities of former socialist countries and the changes since 1989. To account for these data problems, the FAO data base was revised using national as well as OECD statistics. Evidently, it would have been desirable to use consumption data from household budget surveys in the countries considered, because national averages of food consumption conceal quite important inter-country variations in consumption levels. Unfortunately, such data are either not available at all, or not for a sufficiently long time period. Moreover, household budget surveys are hardly internationally comparable. Given these data limitations, the results of the following analysis should be treated with some caution.<sup>15</sup>

For a comparison of international consumption data, quantities measured in common units such as the well-defined physical units measuring weight are required. The commodity groups considered should be the same across countries (cf. POLLAK and WALES 1987, pp. 92, 94); therefore, data from the FAOStat, which reports identical commodity groups for all countries, have been chosen whenever possible and feasible. To obtain complete data for the years and products covered in the analysis, and to correct for discrepancies with national consumption statistics, it was, however, necessary to consult the statistical yearbooks of almost all countries in question, as well as various OECD publications.

The use of caloric equivalents facilitates the aggregation of different foods and the derivation of shares of different foodstuffs, thus simplifying cross-country comparisons. Comparisons based on monetary measures such as total expenditure or expenditure shares are not feasible

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<sup>11</sup> Subsistence is particularly significant for the consumption of potatoes, fruit and vegetables, and to a lesser extent also for poultry and pork consumption.

<sup>12</sup> This point is especially relevant for the wheat consumption data.

<sup>13</sup> See footnotes 11 and 12.

<sup>14</sup> Admittedly, far less products are processed in the transition countries, and it is likely that wastage at the household level is lower in the CEECs than in developed market economies.

<sup>15</sup> See KELLY ET AL. (1991, pp. 43-47) and GRIGG (1993, p. 278) for a discussion of shortcomings of FAO data.

because of differences in price levels between countries and changes of absolute and relative prices within countries. However, the use of caloric equivalents also has its problems. Firstly, it is assumed that the caloric conversion factors are identical for all countries and all years, although they may differ through time and across countries. Secondly, changes in the consumption of foods which are high in calories per unit, such as fats and oils or cereals, change the aggregate to a greater extent than variations in the consumption of foods low in calories per unit, e.g. meat, fruit and vegetables (cf. BLANDFORD 1984, p. 44; cf. GIL ET AL. 1995, p. 386).

In this paper the physical weight of foods has been used whenever possible, allowing the measuring of aggregate quantities consumed as well as studying structural aspects. Moreover, for those methods where the derivation of shares of different foodstuffs is necessary protein and calorie intakes are taken for aggregation. Interpreting the results of both approaches avoids the second problem mentioned above. The nine product-aggregates<sup>16</sup> considered in the analysis cover about 70 % and 80 % of the total caloric and protein intakes, respectively. However, they only cover 40 % of the fat consumption. For this reason the latter means of aggregation has not been considered in the following analyses.

The different indices applied in this section have been calculated for the years 1988 to 1995, indicating the last year of the socialist era for most of the CEECs and the most recent year for which data are available respectively. For transition countries where radical changes have occurred in only a few years, this time period can be assumed to be sufficiently long for changes in preferences and allows an analysis of convergence or divergence.

The following approaches do only allow an examination of whether per capita food consumption or nutrient consumption shares have converged or diverged. They do not claim to analyze the underlying forces of this process.<sup>17</sup> A possible convergence can thus be caused by convergence of the economic variables prices or income, by convergence of preferences, or by convergence of socio-demographic variables.

However, it should be noted that a divergence of incomes between most of the CEECs and the EU took place in the period considered. At the same time, relative prices are very likely to have converged between Eastern and Western Europe, because the socialist pricing policies had been removed. Currently, any statement about changes in preference would be rather speculative.

#### **4.2 Weighted Relative Deviation of Consumption from the EU Level**

One possibility of testing convergence or divergence of food consumption is to investigate the change in the Weighted Relative Deviation (WRD) with respect to all countries for one specific product (cf. equation 1) or with respect to all products and one specific country (cf. equation 2). The WRD measures the relative difference in the levels of consumption between the EU and the CEECs and thus captures convergence in relative terms. A decrease (increase) of the WRD indicates convergence (divergence) of food consumption. The reference country group is the EU-15.

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<sup>16</sup> The product aggregates are: wheat (2511), potatoes (2531), sugar (2818), vegetables (2903), fruit (2919), beef and veal (2731), pork (2733), poultry (2734) and milk (2848). The numbers in brackets indicate the FAOStat product code. Due to a lack of data, some important product groups such as vegetable oil could not be considered in the analysis. Missing data prevent the use of more disaggregated data in the study.

<sup>17</sup> This will be the subject of further analyses.



$$(1) \quad WRD_i = \sum_{CEEC=1}^m \frac{|q_{CEEC,i}^D - q_{EU,i}^D|}{q_{EU,i}^D} s_{CEEC} 100$$

$$(2) \quad WRD_{CEEC} = \sum_{i=1}^n \frac{|q_{CEEC,i}^D - q_{EU,i}^D|}{q_{EU,i}^D} s_i 100$$

$q^D$  is the quantity demanded. In equations 1 and 2,  $i$  stands for the products considered,  $s_i$  for the shares of the daily caloric intake of the foodstuffs concerned in the total daily caloric intake of all considered food items, and  $s_{CEEC}$  for the population share of the country considered in the total population of the 9 CEECs.

A rise (fall) in the overall product-specific WRD (equation 1) may be due to a rise (fall) in the absolute value of the relative deviation between the EU-15 and the CEECs' consumption levels for the product in question, and / or to a rise (fall) in the population share in the total CEEC-9 population. The population shares of the different countries varied only marginally over the time period considered and can therefore be neglected. One has to keep in mind that the index weights the relative deviation between the consumption levels for each CEEC with its population share. Thus, the variation of the relative deviation of a country having a large share in the total population of the CEEC-9 changes the index to a larger extent than that of a country with a relatively small population.

A rise (fall) in the country-specific WRD (equation 2) may be due to a rise (fall) in the calorie share in total calorie consumption of every product considered, and / or to a rise (fall) in the absolute value of the relative deviation between the consumption levels for every product in the CEEC in question and the EU-15. One has to keep in mind, that the index is calculated by weighting the relative deviation between the consumption levels for each product in the CEEC and the EU-15 with its calorie share. Thus, the variation of the relative deviation of a product with a high share in the total daily calorie intake changes the index to a larger extent than that of a product with a low weight. In addition, the impact of a rising (falling) relative deviation, which would *ceteris paribus* lead to an increase (a reduction) in the WRD, could be partly countervailed by a falling (rising) importance in the CEECs' total calorie intake.

The results reveal that the

- Product-specific WRDs have declined especially for sugar but also for wheat, potatoes and fruits. In the CEECs those products account for 71 % of the calorie intake of all products considered in the analysis. Table A.2 reveals a sharp increase in the WRD value for beef and especially for poultry, but those two products together cover only 4 % of total caloric intake. An increase, albeit a smaller one is also shown for vegetables, pork, and milk.
- Country-specific WRDs have declined in Bulgaria, Estonia, Hungary, Latvia and Poland, hinting at a convergence in consumption structures between the EU and those countries (cf. Table A.3). Almost no change has occurred in Slovakia and the Czech Republic, while an increase in the WRD can be observed for Romania, Slovenia and especially Lithuania.

### 4.3 Consumption Similarity Index

The similarity in overall food consumption structures between two countries or regions can be analyzed with the help of the Similarity Index (cf. equation 3). Following the development of this index over a period of time gives some indication as to the convergence or divergence of

food consumption structures. Evidently, the index provides no information about the similarity of product-specific consumption.

$$(3) \quad S(CEEC, EU) = 100 \sum_i \text{Min}|s_i(CEEC), s_i(EU)|.$$

For the purpose of this paper the Similarity Index has been calculated for each of the ten CEECs. The index reveals the proportion of CEEC food consumption (measured in caloric or protein shares) that is equal to consumption in the EU. The index ranges between 0 and 100. It will take the value of 100, if the consumption structures of the CEEC and the EU are identical ( $s_i(CEEC) = s_i(EU)$  for all  $i$ ); in a case where consumption patterns are completely dissimilar (for each  $s_i(CEEC) > 0$  and  $s_i(EU) = 0$ , and vice versa), it will equal 0. The main results are summarized in Tables A.4 and A.5 (cf. annex).

The results reveal firstly that, even before transition, the Similarity Index was quite high, on average amounting to over 80 % regardless of which weighting measure was used. Thus the overall level of that index was only about 5 % lower than in the countries of the European Union. This fact is due to the high level of product aggregation and thus reveals a major limitation of the analysis.<sup>18</sup>

As the EU-15's nutrient shares have been almost constant over the time period considered the variations of the Similarity Index are due to changes in the CEECs' nutrient shares. Tables A.4 and A.5 show that the change in the Similarity Index for the periods 1988 to 1995 was positive for Bulgaria, the Czech Republic, Estonia, Latvia and Lithuania, irrespective of whether these were assessed in terms of caloric or protein intake. The results also reveal a clear convergence of food consumption structures between Slovenia and the EU, although data for Slovenia were only available for the period 1992 to 1995. For the three Baltic states and the Czech Republic this rise is essentially due to a rise in the calorie share of wheat<sup>19</sup>, and to a lesser extent also to a rise in the caloric share of fruit and vegetables which were less than half the EU share in 1988. In Bulgaria the caloric shares of milk, and of fruit and vegetables have risen. By contrast, in Slovenia we can observe a rise in the caloric shares of the animal products beef and pork, as well as of vegetables. The rise in the Similarity Index in all countries using protein can be explained by a larger protein share of wheat, vegetables, meat and milk.

With respect to Hungary and Poland, the picture is less clear. As for caloric intakes, the consumption structures of both countries have converged towards EU level. This, however, does not hold where protein is taken as a means of aggregation. The rise of the calorie index for Hungary is essentially due to a rise in the calorie shares of sugar and potatoes, whereas for Poland no product-specific explanation can be given. The fall of the protein index in Hungary is basically due to a fall in the protein shares of vegetables and milk; that in Poland to a reduction of the protein shares of beef and milk in the aggregate.

With respect to Romania and Slovakia a divergence tendency can be detected, whether aggregating over calories or proteins. The fall of the index was caused by a fall in the caloric shares of beef, pig and poultry in both countries, of vegetables in Romania, and milk in Slovakia. The lower consumption of vegetables and poultry in Romania and of beef in Slovakia contributed to a lower Similarity Index where protein was used.

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<sup>18</sup> It is well known that, other things being equal, the level of similarity increases when there is higher aggregation of the data available. A higher disaggregation would thus be desirable for future studies.

<sup>19</sup> This share was traditionally low in the Baltic states, amounting to only 25 % of total calorie intake in 1988.

Yet, while convergence of food consumption structures is clearly revealed for six of the ten association countries, only for two countries the indicator gives strong indications of the divergence of food consumption structure with respect to the different means of aggregation used.

#### 4.4 Pooled Regression Analysis

Pooling of international consumption data is most plausible for countries at similar stages of development, because it implicitly assumes that the estimated parameters are identical for the pooled countries (cf. POLLAK and WALES 1987, p. 90). This condition does not hold for the CEECs, considering that in 1995 their real per capita GDP varied between 3,271 US\$ in Latvia and 9,547 US\$ in the Czech Republic.<sup>20</sup> Giving these limitations the results of the Pooled Regression Analysis have to be treated with caution.

Cross-section analyses for specific products has been conducted across the countries. The following model was applied product by product.<sup>21</sup>

$$(4) \quad \left| q_{CEEC}^D - q_{EU}^D \right|_t = f \left( \left| q_{CEEC}^D - q_{EU}^D \right|_{t-k} \right)$$

The dependent variable captures the absolute difference between the average annual consumption levels of the product concerned in the CEECs and the EU. The larger this difference, the larger the diversity of international food consumption patterns. The lagged explanatory variable  $\left| q_{CEEC}^D - q_{EU}^D \right|_{t-k}$  captures convergence or divergence in food consumption.

Originally, the absolute value of the change in the differences between the EU and the CEECs in per capita GDP<sup>22</sup> was incorporated in equation 4 as an explanatory variable. A decreasing difference in income was expected to be one of the driving forces for convergence of food consumption patterns, but this explanatory variable proved insignificant for all products. As the deviation from the EU in terms of real per capita GDP has risen for all CEECs but Latvia and Lithuania since 1988, the convergence observed is apparently not due to income convergence, but would seem to have taken place despite growing differences in GDP.<sup>23</sup>

Apart from income differences, price variables were to be included in the regression analysis. However, price data were incomplete, and a closer examination of the information available revealed serious irregularities. Thus the functional form of the model is as follows:

$$(5) \quad \left| q_{CEEC}^D - q_{EU}^D \right|_t = b \left| q_{CEEC}^D - q_{EU}^D \right|_{t-k} + u_t$$

with a habitual disturbance term  $u$ . For the lagged variable, the parameter is expected to be positive. The difference in average food consumption will be the larger today, the larger the

<sup>20</sup> Cf. THE VIENNA INSTITUTE FOR COMPARATIVE ECONOMIC STUDIES 1996, pp. 46-69; cf. OECD 1997, pp. 122-139, 144. The data refer to real per capita GDP converted using purchasing power parities.

<sup>21</sup> This is a modification of the model developed by HERRMANN and RÖDER 1995, pp. 404-405.

<sup>22</sup> In section 2 it was shown that the share of food in all household expenditure has considerably changed in some CEECs. Thus total real food expenditure seems to determine the level and structure of food consumption more than real GDP. For this reason the absolute value of the change in the difference in real food expenditure between the EU and the CEEC was included in equation 4 and not the absolute value of the change in the difference in real GDP. However, this variable also proved to be insignificant.

<sup>23</sup> One major reason for the insignificance of the explanatory variables 'absolute value of the change in real GDP or food expenditure' might be that in the CEECs income was not a main determinant for the level and structure of food consumption in 1988, while it has increasingly become so since the beginning of the transition process.

deviation was in the past ( $b > 0$ ).  $b < 1$  ( $b > 1$ ) hints at convergence (divergence). The application of the t-test allows to test whether coefficient  $b$  is significantly different from unity, that is to say whether food consumption has significantly converged or diverged across countries. In this linear model,  $b \neq 1$  can be interpreted as absolute convergence (divergence). This indicates that absolute differences in per capita consumption of food decreased (increased) over time.

As we did not include explanatory variables other than the lagged absolute difference in per capita consumption levels, this model does not give any explanation as to the causes of convergence or divergence. The regression equation is not to be seen as a theoretical model, but as a method of testing whether statistically significant convergence of food consumption has taken place. For this purpose, no intercept has been included in the model. A positive (negative) intercept might imply a slope smaller (larger) than unity, indicating convergence (divergence), although the data point to the opposite.

Cases of neither convergence nor divergence may firstly reflect no significant variation in the absolute difference in consumption levels over recent years. That may be due to the fact that the consumption structures as measured by the Similarity Index were already similar. It does not necessarily imply that absolute differences were low, only that they did not change notably over the time period considered. Secondly, it is also possible that divergence for some countries outweighs convergence for others. This is generally also shown in a low  $R^2_{unc.}$  and a lower level of significance of the estimated coefficient.

A time lag of 6 years has been assumed. The data were pooled across all CEECs except Slovenia over the years 1994 and 1995; consequently the absolute consumption differences in 1988 and 1989 have been used to explain the absolute consumption differences in 1994 and 1995.<sup>24</sup> The results are presented in Table A.6 (cf. annex).

For all products, the coefficient  $b$  appears to be significantly different from zero, implying that high differences in consumption between the EU and the CEEC countries in 1988 are associated with high differences in consumption in these countries today. For all products but poultry and vegetables the estimated coefficients are smaller than unity. For poultry the coefficient is greater than 1 at a level of significance of 10 %, indicating that divergence has taken place for this product. For vegetables the coefficient is not significantly different from 1. The same holds for fruits. Thus neither convergence nor divergence can be detected for these products. For all other products the results reveal a statistically significant absolute convergence in food consumption.

To explore convergence or divergence of food consumption structures between the EU and each of the CEECs, a second regression model was estimated which is specified in the following equation.

$$(6) \quad \left| s_i^{CEEC} - s_i^{EU} \right|_t = b \left| s_i^{CEEC} - s_i^{EU} \right|_{t-k} + u_t$$

As in the Similarity Index, not absolute quantities enter equation 6, but the share of each product in the consumption of all considered products. The regression results which are presented in Table A.7 show that the coefficient  $b$  appears to be significantly different from zero for all countries if calories are taken as a means of aggregation. Aggregating the consumption shares over protein reduces the level of significance for Hungary considerably. For all countries but Slovakia and Romania, the estimated coefficients are smaller than unity

<sup>24</sup> A dummy variable was introduced to control for intertemporal deviations, but proved to be highly insignificant for any model specification estimated.

irrespective of whether aggregation is effectuated over calories or protein. In the cases of Bulgaria, the Czech Republic, Estonia, Latvia and Lithuania, the model indicates statistically significant absolute convergence in the structure of food demand where either calories or protein are used as an aggregation means. For these countries the absolute difference in the nutrient shares has decreased over time for most of the considered products.<sup>25</sup> In the cases of Hungary and Poland, significant convergence is only revealed where the shares are calculated over protein. This can be explained by the fact that the change in the absolute difference of nutrient shares is not very large, possibly because similarity, as measured by the Consumption Similarity Index, was already high between Poland and the EU, as well as between Hungary and the EU, in 1988. For Romania and Slovakia the coefficient is not significantly different from 1. In these countries the absolute difference of nutrient shares either decreased or showed no clear tendency for most products. Neither convergence nor divergence can therefore be detected for those two countries.

In the analysis so far, per capita food consumption data have served as an indicator for convergence. In the next section, we will consider intra-industry trade as one indicator for consumption convergence.

#### 4.5 Intra-industry Trade Flows

Intra-Industry trade (IIT) is the simultaneous import and export of products which are close substitutes for each other in terms of factor input and consumption (THARAKAN 1985).<sup>26</sup> Such trade flows will only occur if similarity in food consumption exist between the considered countries. Thus an increase in the share of IIT in total trade indicates a convergence of food consumption.

To analyze IIT, the Grubel and Lloyd index has been used (GRUBEL and LLOYD 1975). The index is defined as follows:

$$(7) \quad IIT_{i,j} = 100 - \frac{|X_{ij} - M_{ij}|}{X_{ij} + M_{ij}} 100$$

with  $X_{ij}$  being the export of a given product or product group from country  $i$  to country  $j$  and  $M_{ij}$  being the import of this product or product group of country  $i$  from country  $j$ .  $IIT_{ij}$  is equal to 100, if trade is exclusively intra-industry ( $X_{ij} = M_{ij}$ ), while the Grubel and Lloyd index equals zero if the whole trade is inter-industry ( $X_{ij} = 0$  or  $M_{ij}=0$ , cf. equation 7).<sup>27</sup>

Table A.8 presents estimates of the Grubel and Lloyd Index for Poland, Hungary, Romania and Bulgaria for the year 1988 and the changes in the period 1988 to 1995. The index was

<sup>25</sup> With the exception of the animal products beef, pork and poultry.

<sup>26</sup> Empirical studies have shown that IIT increases with the existence of economies of scale in the production of a specific commodity, product differentiation, a country's per capita GDP, the similarity of GDPs between countries engaging in IIT, membership in either a customs union or a free trade area, the existence of a common border or geographical proximity in a more general sense. In addition it is argued that more concentrated retail structures contribute to IIT by reinforcing final consumers' taste for variety and by reducing the transaction costs in international trade. Thus pairs of countries characterized by more similar and concentrated retail industries should have a stronger intra-industry component in their mutual trade.

<sup>27</sup> The Grubel and Lloyd index is influenced by the size of the overall trade imbalance between the countries. The greater the imbalance in overall trade, the higher the share of net trade and thus the lower the IIT calculated (GRUBEL and LLOYD 1975). Any kind of adjustment, however, seems quite arbitrary and very likely to lead to less plausible values than would be obtained using the uncorrected IIT index (cf. also PIERI ET AL. 1997).

measured on a 3 digit level using Eurostat External Trade data and then aggregated to the 1 digit level. Thus the calculation of the trade index is probably based on the most reliable data used in this empirical analysis. The index was calculated on the basis of quantity and value.

The results can be summarized as follows:

The aggregate level of IIT was very low in 1988. In general less than 5 % of total food trade with the EU were of an intra-industry nature, while 95 % were of an inter-industry nature.<sup>28</sup> This low level can easily be explained with the self-sufficiency orientation in socialist times due to political reasons and scarce foreign exchange reserves. In addition, the two countries / regions belonged to different trading blocs in 1988.

On average intra-industry trade increased in all countries concerned, but not for all products and not in all of the aggregate product groups summarized in Table A.8.<sup>29</sup>

Taking into account the low level of IIT in 1988, the change calculated for a period of only seven years is considerable. This holds for all countries concerned. Irrespective of whether an analysis of the IIT change is based on value or quantity, the index quadruples for most countries.

The results reveal that trade between the EU on the one hand and Poland, Hungary, Romania and Bulgaria on the other hand is becoming increasingly similar. Thus one can conclude that similarity in terms of food consumption is also increasing, otherwise such trade would not take place. The results therefore clearly support the thesis that convergence of food consumption between the EU and the CEECs is taking place. This holds despite the fact that real income differences between the EU and the CEECs concerned in the period considered have even increased. Thus convergence has also been strongly influenced by other factors, such as the Europe Agreements, adjustments of price relations and, very likely, also the considerable changes that have taken place in the retail industries of the four CEECs considered.

The analysis could only be carried out for those four CEECs that already existed in 1989. Since the countries considered in the analysis are, however, quite heterogeneous, covering both one of the richest (e.g. Hungary) and one of the poorest (e.g. Romania) nations of this group, the results might also hold for the other countries.

#### **4.6 Discussion of the Different Results Obtained**

In the previous sections, different methods have been applied to measure convergence or divergence of food consumption between Eastern and Western Europe since the beginning of the transition period. The Tables A.9 and A.10 give an overview over the results obtained by the different approaches. For a comparison and an interpretation of the results, the different methods have to be grouped according to what exactly they measure.

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<sup>28</sup> For comparison: in the EU-12 the 1992 weighted average level of IIT in the food, drink and tobacco industrie as measured by the Grubel-Lloyd index was about 45 % which is already more than two times larger than the 1995 IIT between the EU-15 and the CEECs considered (TRAILL 1997).

<sup>29</sup> At this point it needs to be mentioned that data were only available for the first ten months of 1995. The IIT index has, however, been calculated for all years between 1988 and 1995. The results reveal a generally strong upward trend. Thus the rise in the IIT index is on average only marginally smaller, if 1994 and not 1995 data are compared with 1988.

The analysis of convergence or divergence in **consumption of specific food commodities** was based on the

- calculation of the Weighted Relative Deviation of food consumption between the EU and 9 CEECs;
- estimation of the change in absolute difference between consumption in the EU and 9 CEECs, using a pooled regression model.

The two approaches analyze the similarity in food consumption between the EU-15 and the CEECs for different products, the first in relative and the second in absolute terms. The results indicate that differences in the absolute and relative levels of consumption between the EU and the CEECs have on average decreased for wheat, potatoes and especially sugar, while they have considerably increased for poultry and apparently also for vegetables, although the latter is not statistically significant. For all other products the WRD and Pooled Regression Analysis indicate that relative and absolute convergence do not necessarily move in the same direction. The reason for this is to be found in the different approaches. As already mentioned, the *absolute values of the differences in per capita consumption* enter the regression equation with the same weight, whereas the absolute values of the *relative* differences in per capita consumption that enter the WRD are *weighted*.

Convergence in the **structures** of food consumption between the EU and each of the CEECs has been investigated using two approaches: the Similarity Index (section 4.3) and Pooled Regression Analysis (section 4.4). The results from both approaches clearly confirm the convergence hypothesis for Bulgaria, the Czech Republic, Estonia, Latvia and Lithuania, irrespective of whether calories or proteins are used as an aggregation means (see Tables A.4 and A.5). In no case could statistically significant divergence be detected. However, the results of the Similarity Index indicate that divergence in the structures of food consumption has occurred between the EU on the one hand and Slovakia and Romania on the other hand. Into the Similarity Index only the part of the nutrient share that is *the same* in both countries considered is entering. In the Pooled Regression Analysis the nutrient share *differences* enter the regression equation. Moreover, the Similarity Index does implicitly weight the different products, since consumption similarity in an important product as measured by its nutrient share increases the index to a larger extent than the similarity of a less important product. There is no weighting in the Pooled Regression Analysis.

In contrast to the Similarity Index and Pooled Regression Analysis, which are both based on shares of consumption, the Weighted Relative Deviation Index does not measure the convergence or divergence in the structures of food consumption between the EU and each CEEC. Instead it measures convergence or divergence in the weighted **relative difference in the level** of consumption of each food item. The results clearly reveal that for Bulgaria, Estonia, and Latvia (Slovakia) convergence (divergence) has taken place since the beginning of the transition period not only in the structures of food consumption, but also in the absolute level of food consumption relative to the EU.

Finally the Intra-Industry Trade Index was calculated. It seems reasonable to assume that if consumption between two countries becomes more similar, this index will increase. For all four countries considered in the analysis the Intra-Industry Trade Index has shown a tremendous increase, thus supporting the convergence hypothesis.

## 5 CONCLUSION

Food consumption patterns in the Central and Eastern European countries are in a state of flux. The transition from a socialist system to a market economy has led to pronounced and sudden changes in the economic determinants prices and income, and to adjustments in sociodemographic factors. In addition, it can be assumed that by exposing consumers in these countries to habits and preferences of the international community, changes in preferences will take place as well. This is very likely to lead to a convergence of food consumption patterns between the CEECs and its neighbors to the west.

This paper is a first attempt to analyze whether a convergence of food consumption has already taken place. Convergence was measured with respect to the structure of consumption between the EU and each of the CEECs, as well as with respect to levels of consumption for each product across all CEECs. For this analysis different methods were applied. The results give a first indication that such convergence has occurred, although this does not hold for all CEECs or all food commodities.

The results of the different approaches seem to show discrepancies for some products and some countries. Those differences can be partly explained by the different approaches, such as measuring absolute versus relative divergence/convergence or measuring the convergence in the structure or the relative level of food consumption. The results also show that detailed country- and product-specific studies should be carried out, since the development of food consumption has apparently not been as similar among countries or for different products as one might have expected. For this purpose better and more reliable data about the CEECs' economies would have to be obtained. Two improvements seem particularly important for future studies in this respect: firstly, to make the data base more complete by adding important product aggregates such as vegetable oil which were not previously included in the analysis and secondly, to achieve a higher disaggregation of the data used. In addition, the economic variables prices and income, as well as non-economic variables such as household size or share of population in urban / rural households should be included in future analyses, in order to examine more closely the factors which have influenced the convergence processes observed.<sup>30</sup>

Despite the limitations of the study, the analysis presented seems to generally confirm the convergence thesis. Evidently, culture is an important determinant of food consumption and consumption differences are therefore likely to persist in the future (cf. TRAILL 1997). Nevertheless, if this first evidence of convergence can be strengthened in further studies, this might serve as an useful indicator for future food consumption patterns in the CEECs.

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<sup>30</sup> In this respect, a study of the convergence of food consumption patterns between consumers from comparable market segments in Western and Eastern Europe may be rather more indicative than the analysis of average food consumption patterns. Market segments are groups of consumers expected to have similar purchasing responses. International marketing literature tries to identify similar market segments in different countries in order to pursue standardized international marketing strategies (cf. for example KRAUSE ET AL. 1995).



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## ANNEX

**Table A.1: Per Capita Nutrient Intakes and Real GDP in Selected CEECs, 1988 and 1995**

Country		Calories per capita (units/day)	Calories from animal prod., % of total	Protein per capita (gr/day)	Protein from animal prod., % of total	Fat per capita (gr/day)	Fat from animal prod., % of total	Real GDP per capita in PPP US\$ <sup>2)</sup>
<b>Bulgaria</b>	1988	3722	0.24	111	0.46	122	0.57	4861
	1995	2907	0.22	86	0.44	97	0.51	4653
<b>Czech Republic<sup>1)</sup></b>	1988	3687	0.34	111	0.60	142	0.69	9420
	1995	3175	0.34	96	0.68	122	0.96	9547
<b>Hungary</b>	1988	3653	0.42	105	0.56	152	0.83	5912
	1995	3302	0.37	88	0.47	136	0.90	6639
<b>Poland</b>	1988	3468	0.32	105	0.54	118	0.78	4678
	1995	3307	0.28	97	0.49	111	0.67	5522
<b>Romania</b>	1988	3167	0.22	98	0.43	88	0.56	4194
	1995	3166	0.22	96	0.41	83	0.61	4352
<b>Slovakia<sup>1)</sup></b>	1988	3525	0.31	100	0.53	127	0.71	6563
	1995	2892	0.28	76	0.58	97	0.94	7486
<b>CEEC-6<sup>4)</sup></b>	1988	3203	0.28	96	0.48	109	0.65	4925
	1995	2959	0.26	87	0.45	98	0.66	5389
<b>EU-15</b>	1988	3417	0.32	104	0.61	145	0.60	18337
	1995	3365	0.32	103	0.62	146	0.57	20346
<b>CEEC-6 in % of EU-15</b>	1988	0.94	0.86	0.93	0.78	0.75	1.08	0.27
	1995	0.88	0.80	0.84	0.74	0.67	1.14	0.26

Notes: 1) The 1988s calorie intakes for the Czech Republic and Slovakia were calculated using data from the former Czechoslovakia, and the 1995 share of Slovak calorie intake in the Czech caloric intake. The other 1988 values for SR and CR were calculated in the same way. 2) 1989 instead of 1988. 3) For Bulgaria and Hungary 1994 instead of 1995. 4) Weighted with the share of each country in the total population of all considered CEECs.

Source: Own calculations based on FAOStat, OECD (1996a), OECD (1997), THE VIENNA INSTITUTE FOR COMPARATIVE ECONOMIC STUDIES (1996).

**Table A.2: Weighted Relative Deviation of Consumption - Analysis of Convergence or Divergence of Food Consumption between the EU-15 and the CEEC-9<sup>1)</sup>, 1988-1995**

Product	1988	1993	1994	1995	Abs. Change 1988/95
Wheat	38.78	32.56	34.94	34.04	-4.75
Potatoes	45.73	44.65	39.96	40.92	-4.81
Sugar	30.25	22.45	18.81	17.39	-12.86
Vegetables	16.97	18.23	15.74	18.34	1.38
Fruits	52.50	49.34	54.45	50.13	-2.37
Beef and veal	36.54	38.55	43.55	46.38	9.85
Pork	21.76	28.57	25.66	25.65	3.89
Poultry	27.21	42.50	43.64	41.22	14.01
Milk and products	23.71	22.99	25.67	25.35	1.65

Note: 1) The Slovenian data were incomplete.

Source: Own calculations based on FAOStat, OECD publications and national statistics, see Tables A.11 to A.21.

**Table A.3: Weighted Relative Deviation of Consumption - Analysis of Convergence or Divergence in the Structure of Food Consumption between the EU-15 and the CEEC-10, 1988-1995**

Country	1988	1989	1990	1991	1992	1993	1994	1995	Abs. Change 1988/95
Bulgaria	71.95	64.12	71.11	66.05	48.89	46.95	51.35	50.71	-21.24
Czech Republic	15.53	15.40	22.56	13.42	13.43	13.62	14.40	16.65	1.12
Estonia	45.75	46.72	52.75	27.72 <sup>1)</sup>	27.19	22.41	25.46	22.54	-23.21
Hungary	39.74	43.43	43.49	33.08	36.74	29.93	24.54	24.03	-15.71
Latvia	45.46	41.69	48.33	38.23	25.74	30.54	31.43	28.89	-16.57
Lithuania	50.18	46.67	55.34	39.39	42.82	38.02	39.48	69.87 <sup>2)</sup>	19.69
Poland	31.69	31.54	25.49	22.77	25.43	30.12	26.99	25.77	-5.92
Romania	39.97	46.00	42.06	39.07	39.79	44.89	46.26	43.63	3.66
Slovakia	15.69	14.42	20.59	15.29	12.79	17.23	31.73 <sup>2)</sup>	14.59	-1.10
Slovenia	-	-	-	-	18.11	17.79	20.07	24.55	6.45

Notes: 1) The sharp fall is mainly due to a rise in Estonian per capita wheat consumption which traditionally has been very low. 2) The rise of the WRD is due to a large increase in the countries' per capita wheat consumption entering into the WRD with a high weight.

Source: Own calculations based on FAOStat, OECD publications and national statistics, see Tables A.11 to A.21.

**Table A.4: Consumption Similarity Index Aggregating over Calories - Convergence in the Structure of Food Consumption between the EU-15 and the CEEC-10**

Country	1988	1989	1990	1991	1992	1993	1994	1995	Abs. Change 1988/95
Bulgaria	76.42	77.83	75.90	74.77	79.74	79.87	77.96	78.68	2.26
Czech Republic	91.59	93.52	91.31	92.11	91.89	94.03	93.12	93.53	1.94
Estonia	79.46	78.68	77.16	87.76	80.41	80.51	84.55	85.52	6.06
Hungary	87.38	88.50	87.78	89.14	88.76	87.15	90.05	89.04	1.66
Latvia	83.84	84.60	82.64	82.80	83.20	86.36	84.70	85.72	1.88
Lithuania	81.05	80.89	78.74	85.33	86.06	84.93	80.92	81.46	0.41
Poland	89.65	89.94	90.20	90.89	89.41	90.77	89.05	90.48	0.83
Romania	79.57	79.94	80.56	80.57	79.08	78.20	76.92	77.90	-1.67
Slovakia	91.45	91.69	88.40	88.66	88.77	87.63	85.63	87.31	-4.15
Slovenia	-	-	-	-	80.55	84.13	83.44	84.20	3.65
CEEC-9 <sup>1)</sup>	85.73	-	-	-	-	86.41	85.32	86.22	0.49

Note: 1) Weighted with the share of each country in the total population of all considered CEECs (except Slovenia). For the years 1989 to 1992 population data were not available for all considered CEECs.

Source: Own calculations based on FAOStat, OECD publications and national statistics, see Tables A.11 to A.21.

**Table A.5: Consumption Similarity Index Aggregating over Proteins - Convergence in the Structure of Food Consumption between the EU-15 and the CEEC-10**

Country	1988	1989	1990	1991	1992	1993	1994	1995	Abs. Change 1988/95
Bulgaria	75.43	77.75	78.02	75.59	79.74	80.57	78.01	78.04	2.60
Czech Republic	87.94	87.79	89.15	87.98	90.00	86.99	89.62	90.36	2.42
Estonia	76.16	75.24	74.17	87.26	75.64	74.70	83.01	83.53	7.37
Hungary	85.31	83.54	83.95	83.60	83.98	87.10	85.32	85.25	-0.05
Latvia	79.90	79.77	78.98	79.41	76.77	85.41	83.72	84.96	5.07
Lithuania	74.53	74.50	72.37	81.82	88.59	82.50	78.77	79.52	4.99
Poland	90.41	89.21	89.89	89.05	88.30	87.52	87.07	85.63	-4.78
Romania	81.60	81.46	83.16	83.56	80.64	79.08	80.03	79.83	-1.77
Slovakia	94.34	93.19	92.33	90.27	89.41	87.83	83.77	86.57	-7.77
Slovenia	-	-	-	-	86.66	91.04	90.91	91.02	4.36
CEEC-9 <sup>1)</sup>	85.57	-	-	-	-	84.58	84.24	83.94	-1.63

Note: 1) Weighted with the share of each country in the total population of all considered CEECs (except Slovenia). For the years 1989 to 1992 population data were not available for all considered CEECs.

Source: Own calculations based on FAOStat, OECD publications and national statistics, see Tables A.11 to A.21.

**Table A.6: Pooled Regression Analysis - Analysis of Convergence or Divergence of Food Consumption in the EU-15 and the CEEC-9**

Product	Pooled Regression Analysis		
	b	b=1 ?	$R^2_{uncentered}$
Wheat	0.71***	< 1 **	0.61
Potatoes	0.85***	< 1 **	0.90
Sugar	0.42***	< 1 ***	0.55
Vegetables	1.02***	= 1	0.92
Fruits	1.00***	= 1	0.95
Beef and veal	0.71***	< 1 **	0.65
Pork	0.65***	< 1 *	0.42
Poultry	1.63***	> 1 *	0.63
Milk and products	0.49***	< 1 ***	0.68

Note: \*\*\*, \*\*, \*: Level of significance of 1 %, 5 % and 10 % respectively.

Source: Own calculations based on FAOStat, OECD publications and national statistics, see Tables A.11 to A.21.

**Table A.7: Pooled Regression Analysis - Analysis of Convergence or Divergence in the Structure of Food Consumption between the EU-15 and the CEECs**

Country	Based on Calories			Based on Protein		
	b	b=1 ?	$R^2_{uncentered}$	b	b=1 ?	$R^2_{uncentered}$
Bulgaria	0.93***	< 1 *	0.97	0.88***	< 1 *	0.92
Czech Republic	0.46***	< 1 ***	0.33	0.56***	< 1 **	0.46
Estonia	0.48***	< 1 ***	0.60	0.52***	< 1 ***	0.72
Hungary	0.86***	= 1	0.85	0.16*	< 1 ***	0.23
Latvia	0.38***	< 1 ***	0.36	0.41***	< 1 ***	0.49
Lithuania	0.58***	< 1 ***	0.49	0.50***	< 1 ***	0.49
Poland	0.92***	= 1	0.75	0.50***	< 1 ***	0.49
Romania	1.00***	= 1	0.96	0.89***	= 1	0.85
Slovakia	0.87***	= 1	0.30	1.16***	= 1	0.25

Note: \*\*\*, \*\*, \*: Level of significance of 1 %, 5 % and 10 % respectively.

Source: Own calculations based on FAOStat, OECD publications and national statistics, see Tables A.11 to A.21.

**Table A.8: Weighted Level of the Intra-industry Trade Index in Different Food Groups for the EU-15 and for Selected CEECs in 1988 and its Change over the Period 1988 to 1995<sup>1)</sup>**

Product description	Poland				Hungary				Romania				Bulgaria			
	Value		Quantity		Value		Quantity		Value		Quantity		Value		Quantity	
	Level 1988	Abs. Change 88/95	Level 1988	Abs. Change 88/95	Level 1988	Abs. Change 88/95	Level 1988	Abs. Change 88/95	Level 1988	Abs. Change 88/95	Level 1988	Abs. Change 88/95	Level 1988	Abs. Change 88/95	Level 1988	Abs. Change 88/95
1 - Live animals	3.13	3.29	1.84	1.47	4.43	1.76	0.57	3.75	1.07	18.16	0.12	15.43	3.00	0.44	0.16	2.96
2 - Meat	4.94	18.46	4.32	33.88	0.62	23.38	0.53	26.94	5.76	40.55	13.99	20.72	1.19	11.00	0.96	45.58
3 - Fish and crustaceans	5.37	18.02	15.25	16.47	4.06	8.46	0.51	11.99	4.19	3.87	7.25	-4.88	9.88	-4.20	1.25	1.99
4 - Dairy products; birds	3.28	31.95	2.53	37.81	10.50	11.78	5.19	8.38	0.24	14.13	0.23	12.03	2.19	46.47	5.76	20.72
7 - Edible vegetables	1.54	24.15	0.63	25.33	5.09	11.99	1.78	15.37	7.42	-0.85	2.28	7.41	15.43	-6.02	4.50	17.20
8 - Edible fruits and nuts	0.64	13.68	0.29	18.35	5.03	12.79	1.14	17.85	1.40	6.41	0.85	7.10	7.55	8.67	5.76	0.34
10 - Cereals	0.55	1.19	0.05	0.61	11.05	-4.17	2.45	-1.90	4.91	40.90	0.44	10.33	0.50	0.79	0.00	1.36
11 - Products of the milling industry	9.87	2.85	1.32	1.80	8.65	-1.53	7.91	-1.27	0.00	0.10	0.00	0.03	0.00	1.93	0.00	2.48
12 - Oil seeds	0.09	3.53	0.01	1.00	3.21	15.43	0.80	18.63	0.00	9.91	0.45	1.98	0.71	2.24	0.34	0.42
15 - Animal or vegetable fats	0.24	1.55	0.29	0.04	8.87	10.33	2.98	19.01	0.00	3.33	0.00	3.20	1.18	17.42	0.00	17.41
16 - Preparations of meat	20.72	19.75	19.18	33.06	0.64	4.24	0.31	10.80	0.85	50.26	0.25	43.55	16.72	-6.22	8.44	4.68
17 - Sugars and sugar confectionary	47.00	-31.71	8.88	-0.59	21.83	7.56	4.39	1.98	17.00	-16.14	1.63	-1.53	0.00	39.03	0.00	30.37
19 - Preparations of cereals	11.04	20.90	9.93	23.80	45.42	-6.44	92.35	-59.32	1.32	-1.21	0.00	0.18	0.00	0.00	0.00	0.00
20 - Preparations of vegetables	17.90	0.00	18.21	2.88	16.58	22.93	11.95	23.90	21.22	17.43	25.65	6.55	8.46	41.06	6.69	41.77
<b>Average</b>	<b>4.98</b>	<b>13.61</b>	<b>2.66</b>	<b>13.71</b>	<b>4.29</b>	<b>15.67</b>	<b>2.80</b>	<b>12.68</b>	<b>3.22</b>	<b>13.66</b>	<b>2.80</b>	<b>6.94</b>	<b>3.83</b>	<b>14.73</b>	<b>2.12</b>	<b>10.34</b>

Note: 1) The change in the intra-industry trade index was calculated only for those food products in each subgroup which are produced in the respective countries. The following products were included in the calculation: 102-106; 201-204 and 206-210; 301-307; 401-409; 701-713; 802 and 805 to 814; 1001-1008; 1101-1107 and 1109; 1202 and 1204-1208; 1507-1510 and 1512 and 1514-1517; 1604-1605; 1701-1704; 1901-1902 and 1904-1905; 2001-2009.

Source: Own calculations based on EUROSTAT (1997).



**Table A.9: Different Results Obtained - Products**

Product	Weighted Relative Deviation	Differences in Quantities Consumed (Pooled Regression)
<b>Wheat</b>	Convergence	Convergence
<b>Potatoes</b>	Convergence	Convergence
<b>Sugar</b>	Convergence	Convergence
<b>Vegetables</b>	Divergence	- <sup>1)</sup>
<b>Fruits</b>	Convergence	- <sup>1)</sup>
<b>Beef and veal</b>	Divergence	Convergence
<b>Pork</b>	Divergence	Convergence
<b>Poultry</b>	Divergence	Divergence
<b>Milk and products</b>	Divergence	Convergence

Note: 1) Neither statistical significant convergence nor divergence is proven.

Source: Tables A.2 and A.6.

**Table A.10: Different Results Obtained - Countries**

Country	Weighted Relative Deviation	Consumption Similarity Index		Differences in Shares (Pooled Regression)	
		Calories	Protein	Calories	Protein
<b>Bulgaria</b>	Convergence	Convergence	Convergence	Convergence	Convergence
<b>Czech Republic</b>	Divergence	Convergence	Convergence	Convergence	Convergence
<b>Estonia</b>	Convergence	Convergence	Convergence	Convergence	Convergence
<b>Hungary</b>	Convergence	Convergence	Divergence	- <sup>1)</sup>	Convergence
<b>Latvia</b>	Convergence	Convergence	Convergence	Convergence	Convergence
<b>Lithuania</b>	Divergence	Convergence	Convergence	Convergence	Convergence
<b>Poland</b>	Convergence	Convergence	Divergence	- <sup>1)</sup>	Convergence
<b>Romania</b>	Divergence	Divergence	Divergence	- <sup>1)</sup>	- <sup>1)</sup>
<b>Slovakia</b>	Convergence	Divergence	Divergence	- <sup>1)</sup>	- <sup>1)</sup>

Note: 1) Neither statistical significant convergence nor divergence is proven.

Source: Tables A.3, A.4, A.5, and A.7.

**Table A.11: Selected Data for Bulgaria**

Per capita consumption of selected foodstuff (kg per year)								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	202.32	191.07	192.38	178.60	156.77	153.59	152.46	154.63
Potatoes	29.20	32.03	32.12	31.49	31.56	29.30	28.91	29.64
Sugar	35.46	34.00	25.83	23.78	29.54	28.78	26.88	23.72
Vegetables	114.86	121.49	116.69	99.44	99.89	91.01	101.24	124.47
Fruits	108.69	85.25	98.64	84.14	90.82	74.86	77.68	91.74
Beef and veal	14.38	15.78	14.57	12.50	15.13	15.27	12.93	11.35
Pork	37.39	39.21	41.25	39.25	35.11	32.63	26.43	29.95
Poultry	16.59	17.33	18.73	10.00	8.35	10.06	8.77	10.76
Milk and products	185.47	182.35	184.82	157.42	162.89	154.48	133.80	146.83
Annual average calorie share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	38.72	37.29	38.91	40.34	36.17	37.27	38.48	37.87
Potatoes	1.45	1.62	1.68	1.84	1.88	1.84	1.88	1.86
Sugar	10.10	9.90	7.79	8.00	10.17	10.39	10.10	8.63
Vegetables	1.93	2.11	2.02	2.03	2.10	1.81	2.20	2.86
Fruits	3.12	3.07	3.38	3.30	3.40	2.66	2.91	3.47
Beef and veal	1.69	2.00	1.85	1.75	2.23	2.39	1.98	1.58
Pork	4.49	4.80	5.23	5.55	5.08	4.97	4.25	4.64
Poultry	1.50	1.62	1.82	1.08	0.91	1.16	1.06	1.27
Milk and products	3.14	2.93	3.41	3.55	4.99	5.32	5.17	5.33
Annual average protein share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	41.44	39.09	39.45	42.11	39.33	40.70	41.98	40.70
Potatoes	0.90	0.91	0.92	1.05	1.12	1.16	1.23	1.16
Sugar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vegetables	2.70	3.64	2.75	3.16	3.37	3.49	3.70	4.65
Fruits	0.90	0.91	0.92	1.05	1.12	1.16	1.23	1.16
Beef and veal	5.41	5.45	5.50	5.26	6.74	6.98	6.17	4.65
Pork	9.01	10.00	10.09	11.58	11.24	10.47	8.64	9.30
Poultry	6.31	6.36	7.34	4.21	3.37	4.65	4.94	4.65
Milk and products	6.31	5.45	6.42	6.32	8.99	9.30	9.88	9.30
Gross Domestic Product per capita								
	1988	1989	1990	1991	1992	1993	1994	1995
Real GDP per capita in PPP USD (base 1993)	NA	4861	4456	4076	4106	4195	4407	4653
Nominal GDP per capita in USD at exchange rate	NA	NA	6623	940	1008	1276	1196	1543
Real GDP <sup>2)</sup> per capita in Bulgarian lev	NA	NA	NA	NA	14738	23354	36046	63600
Food expenditure								
	1988	1989	1990	1991	1992	1993	1994	1995
Share in GDP (%)	NA	29.50	34.55	39.60	NA	NA	39.00	40.00
In real GDP per capita in PPP USD (base 1993)	NA	1434	1540	1614	NA	NA	1719	1861

Notes: NA: Not Available. 1) Share in the total of calorie (protein) intake of the nine products included in the analyses. 2) Expressed in prices of the preceding year.

Source: Per capita consumption: FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. Per capita nutrient consumption shares: Own calculations based on FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. GDP: THE VIENNA INSTITUTE FOR COMPARATIVE ECONOMIC STUDIES (1996, pp. 46-69), BMWi (1995, pp. 69-77), own calculations. Food expenditure: Own calculations based on OECD (1996a, p. 170).

**Table A.12: Selected Data for the Czech Republic**

Per capita consumption of selected foodstuff (kg per year)								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	92.59	97.92	103.81	93.78	101.22	97.88	102.04	107.11
Potatoes	83.70	82.80	77.90	84.20	84.10	85.11	79.80	81.98
Sugar	42.58	39.80	44.00	42.30	39.50	36.37	31.95	33.16
Vegetables	70.30	68.70	66.60	73.60	69.70	69.92	68.02	72.38
Fruits	63.70	70.50	59.70	64.40	69.50	72.70	71.50	80.29
Beef and veal	24.24	30.40	28.40	22.80	20.70	20.72	17.04	16.03
Pork	50.79	49.90	50.00	47.80	48.80	58.65	52.69	56.99
Poultry	12.17	13.00	13.60	12.80	12.50	11.86	11.50	14.65
Milk and products	263.41	267.91	264.40	250.47	221.26	208.00	185.84	189.19
Annual average calorie share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	19.74	20.52	21.24	20.41	22.14	21.86	22.71	23.46
Potatoes	4.73	4.60	4.23	4.86	4.88	5.18	4.65	4.69
Sugar	13.92	12.79	13.80	14.12	13.25	12.56	10.88	11.09
Vegetables	1.51	1.45	1.38	1.62	1.54	1.59	1.54	1.57
Fruits	2.18	2.37	1.96	2.25	2.44	2.49	2.47	2.68
Beef and veal	2.17	2.67	2.43	2.08	1.90	1.99	1.57	1.45
Pork	6.83	6.60	6.45	6.57	6.74	8.44	7.35	7.78
Poultry	1.31	1.38	1.41	1.41	1.38	1.36	1.28	1.61
Milk and products	7.19	7.19	6.92	6.98	6.19	6.48	5.13	5.01
Annual average protein share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	19.43	19.59	20.87	20.64	22.72	21.51	23.08	22.92
Potatoes	3.81	3.59	3.39	4.02	4.09	4.30	3.30	4.17
Sugar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vegetables	2.05	1.91	1.86	2.25	2.18	2.15	2.20	2.08
Fruits	0.91	0.96	0.82	0.97	1.07	1.08	1.10	1.04
Beef and veal	8.80	10.52	9.87	8.67	8.03	7.53	6.59	6.25
Pork	13.59	12.73	12.82	13.41	13.96	16.13	15.38	15.63
Poultry	4.26	4.34	4.56	4.70	4.68	4.30	4.40	5.21
Milk and products	17.50	16.97	16.83	17.45	15.72	16.13	13.19	11.46
Gross Domestic Product per capita								
	1988	1989	1990	1991	1992	1993	1994	1995
Real GDP per capita in PPP USD (base 1993)	9288	9420	9308	8233	8276	8425	8890	9547
Nominal GDP per capita in USD at exchange rate	NA	NA	3050	2358	2713	3023	3488	4420
Real GDP per capita in Czech koruna	NA	NA	NA	NA	NA	NA	NA	NA
Food expenditure								
	1988	1989	1990	1991	1992	1993	1994	1995
Share in GDP (%)	NA	32.90	33.45	34.00	NA	NA	32.00	32.00
In real GDP per capita in PPP USD (base 1993)	NA	3099	3114	2799	NA	NA	2845	3055

Notes: NA: Not Available. 1) Share in the total of calorie (protein) intake of the nine products included in the analyses.

Source: Per capita consumption: FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. Per capita nutrient consumption shares: Own calculations based on FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. GDP: THE VIENNA INSTITUTE FOR COMPARATIVE ECONOMIC STUDIES (1996, pp. 46-69), BMWi (1995, pp. 69-77), own calculations. Food expenditure: Own calculations based on OECD (1996a, p. 170).

**Table A.13: Selected Data for Estonia**

Per capita consumption of selected foodstuff (kg per year)								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	76.39	73.59	69.00	85.15	81.00	82.00	80.00	99.22
Potatoes	101.00	94.00	98.00	104.00	99.00	109.95	111.15	104.17
Sugar	49.50	43.60	44.50	36.10	35.00	32.00	31.00	31.00
Vegetables	71.08	69.30	65.75	67.53	63.30	47.62	65.02	49.47
Fruits	43.00	43.00	36.00	27.00	25.00	25.00	26.00	28.00
Beef and veal	19.85	20.40	22.91	17.88	25.00	27.05	26.00	25.00
Pork	50.58	49.72	47.10	33.84	27.52	20.20	22.00	25.00
Poultry	9.60	9.56	8.91	7.66	5.00	3.91	4.00	3.00
Milk and products	463.73	495.44	518.06	345.88	362.23	250.38	282.77	304.44
Annual average calorie share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	16.74	16.54	15.56	27.07	19.77	26.00	24.93	27.05
Potatoes	5.54	5.28	5.53	8.27	7.10	7.66	7.24	6.73
Sugar	15.68	14.17	14.51	16.60	8.28	7.77	7.99	8.29
Vegetables	1.36	1.36	1.30	1.88	1.39	1.10	1.49	1.23
Fruits	1.60	1.64	1.38	1.46	1.24	1.97	1.81	2.86
Beef and veal	3.53	3.72	4.19	4.62	5.46	5.91	4.15	3.42
Pork	13.08	13.18	12.53	12.69	9.04	6.63	8.38	6.98
Poultry	0.95	0.97	0.91	1.10	0.81	0.45	0.75	0.85
Milk and products	15.73	17.24	18.09	NA	13.88	14.33	13.07	11.11
Annual average protein share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	16.18	15.35	14.23	29.86	13.79	18.52	19.81	22.55
Potatoes	4.56	4.18	4.31	7.78	4.31	4.63	4.72	4.90
Sugar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vegetables	2.14	2.06	1.93	3.37	1.72	0.93	1.89	1.96
Fruits	0.62	0.61	0.50	0.64	0.32	0.34	0.36	0.98
Beef and veal	8.00	8.10	8.99	11.93	8.62	10.19	7.55	6.86
Pork	14.47	14.01	13.11	16.03	6.90	5.56	7.55	6.86
Poultry	2.74	2.69	2.47	3.62	1.72	0.93	1.89	1.96
Milk and products	28.31	29.79	30.78	NA	19.83	20.37	17.92	15.69
Gross Domestic Product per capita								
	1988	1989	1990	1991	1992	1993	1994	1995
Real GDP per capita in PPP USD (base 1993)	NA	NA	5435	4862	3985	3785	3803	4053
Nominal GDP per capita in USD at exchange rate	NA	NA	NA	NA	NA	NA	NA	NA
Real GDP <sup>2)</sup> per capita in Estonian kroons	NA	NA	NA	1170	15613	14544	14318	14886
Food expenditure								
	1988	1989	1990	1991	1992	1993	1994	1995
Share in GDP (%)	NA	28.20	32.30	36.40	NA	NA	32.00	30.00
In real GDP per capita in PPP USD (base 1993)	NA	NA	1756	1770	NA	NA	1217	1216

Notes: NA: Not Available. 1) Share in the total of calorie (protein) intake of the nine products included in the analyses. 2) Until 1992 (introduction of the Estonian kroon) base year 1991. Since 1993 base year 1993.

Source: Per capita consumption: FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. Per capita nutrient consumption shares: Own calculations based on FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. GDP: THE VIENNA INSTITUTE FOR COMPARATIVE ECONOMIC STUDIES (1996, pp. 46-69), BMWI (1995, pp. 69-77), own calculations. Food expenditure: Own calculations based on OECD (1996a, p. 170).

**Table A.14: Selected Data for Hungary**

Per capita consumption of selected foodstuff (kg per year)								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	138.00	137.55	139.11	126.79	129.25	120.16	113.23	113.33
Potatoes	56.62	55.42	57.50	55.90	57.90	60.87	60.03	61.40
Sugar	33.78	38.90	38.15	35.09	39.87	24.08	34.56	37.66
Vegetables	91.88	86.15	87.55	89.58	90.59	89.43	84.35	80.46
Fruits	74.45	73.82	73.50	72.02	74.07	77.91	72.89	53.76
Beef and veal	7.45	7.58	6.52	7.04	6.93	7.57	5.14	5.03
Pork	75.79	77.91	70.63	67.57	66.31	59.05	56.84	50.86
Poultry	20.51	22.05	22.40	19.65	23.16	21.34	23.01	24.04
Milk and products	189.62	195.27	171.01	178.81	169.93	165.16	152.76	153.25
Annual average calorie share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	26.94	26.52	27.07	26.26	26.34	26.01	25.19	25.26
Potatoes	2.85	2.72	2.86	2.93	2.94	3.29	3.32	3.42
Sugar	9.80	10.97	10.91	10.57	11.71	7.49	11.04	12.08
Vegetables	1.94	1.84	1.81	1.93	1.83	1.91	1.87	1.76
Fruits	2.52	2.45	2.51	2.61	2.71	3.00	2.96	2.24
Beef and veal	0.57	0.59	0.49	0.57	0.55	0.62	0.45	0.42
Pork	9.69	9.61	8.81	8.84	8.42	7.96	7.81	7.12
Poultry	2.87	2.96	3.11	2.39	2.63	2.47	2.62	2.57
Milk and products	5.53	5.70	4.84	5.51	5.18	4.53	4.34	4.36
Annual average protein share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	30.48	30.19	32.67	31.25	31.96	31.52	30.00	30.68
Potatoes	1.90	1.89	2.97	2.08	3.09	3.26	3.33	3.41
Sugar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vegetables	3.81	2.83	2.97	3.13	3.09	3.26	3.33	3.41
Fruits	0.95	0.94	0.99	1.04	1.03	1.09	1.11	1.14
Beef and veal	2.86	2.83	1.98	2.08	2.06	3.26	2.22	2.27
Pork	17.14	17.92	16.83	16.67	16.49	15.22	14.44	13.64
Poultry	7.62	7.55	7.92	7.29	9.28	8.70	10.00	11.36
Milk and products	11.43	11.32	10.89	11.46	10.31	9.78	8.89	9.09
Gross Domestic Product per capita								
	1988	1989	1990	1991	1992	1993	1994	1995
Real GDP per capita in PPP USD (base 1993)	5924	5912	5712	5594	5842	5992	6365	6639
Nominal GDP per capita in USD at exchange rate	NA	NA	3189	3228	3608	3745	4046	4300
Real GDP per capita in 1000 Hungarian forint (base 1991)	NA	NA	NA	241	235	234	242	246
Food expenditure								
	1988	1989	1990	1991	1992	1993	1994	1995
Share in GDP (%)	NA	25.40	23.45	21.50	NA	NA	22.30	NA
In real GDP per capita in PPP USD (base 1993)	NA	1502	1339	1203	NA	NA	1419	NA

Notes: NA: Not Available. 1) Share in the total of calorie (protein) intake of the nine products included in the analyses.

Source: Per capita consumption: FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. Per capita nutrient consumption shares: Own calculations based on FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. GDP: THE VIENNA INSTITUTE FOR COMPARATIVE ECONOMIC STUDIES (1996, pp. 46-69), BMWI (1995, pp. 69-77), own calculations. Food expenditure: Own calculations based on OECD (1996a, p. 170).

**Table A.15: Selected Data for Latvia**

Per capita consumption of selected foodstuff (kg per year)								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	107.00	106.00	107.00	105.00	110.00	111.00	112.00	113.00
Potatoes	117.00	118.00	125.00	115.00	116.00	119.00	120.00	114.00
Sugar	50.80	43.60	48.10	40.50	32.80	36.00	36.00	36.00
Vegetables	76.00	74.00	69.00	69.00	74.93	74.47	76.14	76.00
Fruits	38.00	42.00	33.00	37.00	34.00	50.00	52.00	46.00
Beef and veal	22.72	22.88	25.43	35.23	27.85	28.86	25.83	23.88
Pork	51.12	50.25	48.25	43.11	33.87	25.68	27.84	30.55
Poultry	17.04	16.88	15.71	12.37	7.90	5.00	5.02	4.72
Milk and products	455.00	457.00	454.00	420.00	370.00	355.00	345.00	356.00
Annual average calorie share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	18.39	18.76	18.59	19.23	17.48	19.95	18.26	19.01
Potatoes	4.74	4.93	5.12	4.97	7.33	7.21	7.05	7.18
Sugar	12.00	10.60	11.48	10.19	11.94	12.41	12.14	12.84
Vegetables	1.12	1.12	1.03	1.08	1.72	1.65	1.63	1.85
Fruits	1.08	1.23	0.95	1.12	1.62	2.30	2.40	2.60
Beef and veal	2.79	2.90	3.16	4.62	6.85	5.37	4.90	4.92
Pork	5.44	5.51	5.19	4.89	4.09	4.08	4.32	4.92
Poultry	1.27	1.30	1.19	0.99	0.38	0.56	0.54	0.54
Milk and products	14.51	15.01	14.64	14.27	4.54	6.22	7.59	7.62
Annual average protein share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	16.34	16.24	16.39	16.48	16.30	19.57	18.09	18.28
Potatoes	3.27	3.31	3.50	3.30	5.43	5.43	5.32	5.38
Sugar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vegetables	1.30	1.27	1.18	1.21	2.17	2.17	2.13	2.15
Fruits	0.43	0.48	0.38	0.43	0.64	0.94	0.95	1.08
Beef and veal	5.91	5.96	6.63	9.41	18.48	11.96	10.64	10.75
Pork	9.58	9.44	9.06	8.30	7.61	7.61	8.51	9.68
Poultry	4.29	4.26	3.97	3.20	1.09	2.17	2.13	2.15
Milk and products	23.66	23.83	23.67	22.44	7.61	10.87	13.83	13.98
Gross Domestic Product per capita								
	1988	1989	1990	1991	1992	1993	1994	1995
Real GDP per capita in PPP USD (base 1993)	NA	5606	5177	4689	3476	3070	3201	3271
Nominal GDP per capita in USD at exchange rate	NA	NA	NA	NA	NA	NA	NA	NA
Real GDP per capita in Latvian lats (base 1993)	NA	NA	1106	994	655	567	580	578
Food expenditure								
	1988	1989	1990	1991	1992	1993	1994	1995
Share in GDP (%)	NA	30.30	34.05	37.80	NA	NA	42.50	41.50
In real GDP per capita in PPP USD (base 1993)	NA	1699	1763	1772	NA	NA	1360	1357

Notes: NA: Not Available. 1) Share in the total of calorie (protein) intake of the nine products included in the analyses.

Source: Per capita consumption: FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. Per capita nutrient consumption shares: Own calculations based on FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. GDP: THE VIENNA INSTITUTE FOR COMPARATIVE ECONOMIC STUDIES (1996, pp. 46-69), BMWI (1995, pp. 69-77), own calculations. Food expenditure: Own calculations based on OECD (1996a, p. 170).

**Table A.16: Selected Data for Lithuania**

Per capita consumption of selected foodstuff (kg per year)								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	111.00	104.00	108.00	138.00	137.59	119.30	130.35	186.89
Potatoes	143.00	145.00	146.00	128.00	94.99	121.99	99.95	127.00
Sugar	50.00	47.00	43.20	31.00	23.10	25.10	22.70	22.20
Vegetables	84.00	82.00	79.00	83.00	65.09	69.92	66.37	65.00
Fruits	49.00	56.50	33.00	51.00	30.26	50.29	48.31	48.00
Beef and veal	38.50	34.80	39.10	30.60	35.10	32.80	25.80	22.22
Pork	39.30	39.10	39.90	28.50	28.63	21.33	17.21	17.68
Poultry	8.70	9.20	9.60	6.40	4.80	4.50	5.40	6.78
Milk and products	441.00	447.00	480.00	315.00	334.00	319.00	291.00	141.55
Annual average calorie share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	16.66	16.04	16.44	23.98	25.67	28.50	29.50	30.87
Potatoes	6.20	6.46	6.42	6.43	5.77	7.65	6.02	7.45
Sugar	12.51	12.08	10.96	8.98	8.19	9.08	8.02	7.64
Vegetables	1.28	1.28	1.22	1.46	1.33	1.60	1.41	1.34
Fruits	1.53	1.82	1.05	1.85	1.36	2.32	2.04	2.11
Beef and veal	5.61	5.21	5.78	5.16	4.05	4.78	4.37	4.38
Pork	8.20	8.39	8.45	6.88	8.49	6.48	4.87	4.99
Poultry	0.68	0.74	0.76	0.58	0.90	0.61	0.66	0.74
Milk and products	15.28	15.92	16.87	12.64	6.57	7.41	9.47	6.58
Annual average protein share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	15.57	14.93	14.68	22.32	23.23	27.17	27.84	30.53
Potatoes	4.50	4.66	4.45	4.64	4.04	5.43	4.12	6.32
Sugar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vegetables	1.86	1.86	1.70	2.12	2.02	2.17	2.06	2.11
Fruits	0.36	0.42	0.23	0.43	0.30	1.09	0.48	0.00
Beef and veal	11.52	10.66	11.34	10.56	8.08	9.78	9.28	9.47
Pork	8.48	8.63	8.34	7.09	9.09	6.52	5.15	5.26
Poultry	2.18	2.36	2.33	1.85	3.03	2.17	2.06	2.11
Milk and products	25.77	26.73	27.18	21.23	11.11	13.04	15.46	11.58
Gross Domestic Product per capita								
	1988	1989	1990	1991	1992	1993	1994	1995
Real GDP per capita in PPP USD (base 1993)	NA	8333	8067	7114	5166	3681	3804	4021
Nominal GDP per capita in USD at exchange rate	NA	NA	NA	NA	NA	NA	NA	NA
Real GDP per capita in Lithuanian litas (base 1993)	NA	NA	NA	NA	4262	2978	3015	3109
Food expenditure								
	1988	1989	1990	1991	1992	1993	1994	1995
Share in GDP (%)	NA	34.90	36.60	38.30	NA	NA	57.30	57.50
In real GDP per capita in PPP USD (base 1993)	NA	2908	2952	2725	NA	NA	2180	2312

Notes: NA: Not Available. 1) Share in the total of calorie (protein) intake of the nine products included in the analyses.

Source: Per capita consumption: FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. Per capita nutrient consumption shares: Own calculations based on FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. GDP: THE VIENNA INSTITUTE FOR COMPARATIVE ECONOMIC STUDIES (1996, pp. 46-69), BMWI (1995, pp. 69-77), own calculations. Food expenditure: Own calculations based on OECD (1996a, p. 170).

**Table A.17: Selected Data for Poland**

Per capita consumption of selected foodstuff (kg per year)								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	124.02	121.21	103.80	107.74	109.72	114.74	111.17	109.07
Potatoes	142.02	142.72	143.76	140.10	144.39	147.34	136.58	139.27
Sugar	45.24	45.87	43.10	34.61	35.53	40.44	38.59	36.71
Vegetables	118.93	118.91	123.35	129.15	112.03	126.20	120.03	126.20
Fruits	32.53	31.59	29.02	37.34	41.44	46.04	35.79	42.07
Beef and veal	19.44	17.94	18.01	17.10	14.12	12.99	10.08	10.21
Pork	45.01	46.54	46.42	51.62	52.04	50.14	46.79	47.80
Poultry	8.11	8.43	7.66	8.19	9.06	9.44	10.69	10.66
Milk and products	232.13	221.74	220.95	208.60	196.13	188.63	181.80	179.28
Annual average calorie share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	24.05	24.43	24.60	25.23	25.72	25.82	26.20	25.43
Potatoes	7.53	7.53	7.92	7.83	7.92	7.93	7.61	7.74
Sugar	13.84	13.97	13.68	11.18	11.27	12.60	12.46	11.76
Vegetables	2.16	2.16	2.37	2.47	2.12	2.35	2.38	2.45
Fruits	1.21	1.18	1.14	1.43	1.61	1.76	1.40	1.60
Beef and veal	2.05	1.93	2.01	1.95	1.56	1.38	1.13	1.12
Pork	7.24	7.44	7.74	8.71	8.64	8.17	7.71	8.07
Poultry	0.87	0.92	0.87	0.94	1.02	1.03	1.19	1.15
Milk and products	5.51	5.86	6.39	7.22	6.55	5.76	5.39	5.08
Annual average protein share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	24.76	25.96	25.74	25.49	26.47	28.00	28.13	27.84
Potatoes	5.71	5.77	5.94	5.88	5.88	6.00	6.25	6.19
Sugar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vegetables	3.81	3.85	3.96	3.92	3.92	4.00	4.17	4.12
Fruits	0.95	0.79	0.74	0.98	0.98	1.00	1.04	1.03
Beef and veal	8.57	7.69	7.92	7.84	5.88	6.00	5.21	5.15
Pork	13.33	14.42	14.85	15.69	15.69	16.00	14.58	15.46
Poultry	2.86	2.88	2.97	2.94	3.92	4.00	4.17	4.12
Milk and products	9.52	10.58	12.87	12.75	11.76	10.00	10.42	9.28
Gross Domestic Product per capita								
	1988	1989	1990	1991	1992	1993	1994	1995
Real GDP per capita in PPP USD (base 1993)	4669	4678	4192	3983	4381	4668	5044	5522
Nominal GDP per capita in USD at exchange rate	NA	NA	1547	1999	2198	2232	2402	3055
Real GDP <sup>2)</sup> per capita in Polish zloty	NA	NA	1470	1363	1394	3102	4252	5834
Food expenditure								
	1988	1989	1990	1991	1992	1993	1994	1995
Share in GDP (%)	NA	36.90	34.65	32.40	NA	NA	30.30	28.00
In real GDP per capita in PPP USD (base 1993)	NA	1726	1453	1290	NA	NA	1528	1546

Notes: NA: Not Available. 1) Share in the total of calorie (protein) intake of the nine products included in the analyses. 2) All data converted in "new" zlotys. Until 1992 base year 1990. Since 1993 expressed in prices of the preceeding year.

Source: Per capita consumption: FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. Per capita nutrient consumption shares: Own calculations based on FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. GDP: THE VIENNA INSTITUTE FOR COMPARATIVE ECONOMIC STUDIES (1996, pp. 46-69), BMWI (1995, pp. 69-77), own calculations. Food expenditure: Own calculations based on OECD (1996a, p. 170).



**Table A.18: Selected Data for Romania**

Per capita consumption of selected foodstuff (kg per year)								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	140.00	150.72	141.43	133.19	132.69	148.42	146.11	146.92
Potatoes	58.19	71.62	59.40	48.41	60.95	74.17	66.77	71.10
Sugar	22.34	24.12	24.00	23.02	22.71	20.78	20.65	22.06
Vegetables	141.30	132.44	109.09	88.51	100.78	118.40	104.67	115.71
Fruits	55.02	53.87	61.22	48.47	48.06	64.68	53.61	48.95
Beef and veal	5.20	10.10	15.88	12.98	10.03	9.91	10.70	10.87
Pork	31.11	30.85	35.00	33.04	31.24	28.98	28.89	28.08
Poultry	16.08	12.43	15.80	13.97	9.74	11.06	10.00	10.33
Milk and products	155.68	137.26	95.39	137.00	138.83	163.09	166.44	177.21
Annual average calorie share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	33.50	35.42	33.42	33.11	33.54	35.12	35.37	35.19
Potatoes	3.38	4.06	3.40	2.92	3.73	4.25	3.93	4.11
Sugar	7.48	7.94	7.95	8.03	8.07	6.87	6.96	7.36
Vegetables	2.81	2.73	2.12	1.90	2.27	2.40	2.23	2.53
Fruits	2.37	2.26	2.62	2.10	2.17	2.93	2.39	2.24
Beef and veal	0.73	1.40	2.21	1.90	1.50	1.37	1.53	1.55
Pork	3.85	3.75	4.27	4.26	4.10	3.56	3.61	3.51
Poultry	1.74	1.30	1.68	1.54	1.10	1.19	1.09	1.11
Milk and products	7.26	5.92	3.96	6.79	7.27	8.46	8.94	9.38
Annual average protein share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	35.71	37.76	36.84	36.26	37.50	38.95	38.30	37.50
Potatoes	3.06	3.06	3.16	2.20	3.41	3.16	3.19	3.13
Sugar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vegetables	5.10	5.10	4.21	3.30	3.41	4.21	4.26	4.17
Fruits	1.02	1.02	1.05	1.10	1.14	1.05	1.06	1.04
Beef and veal	2.04	4.08	7.37	5.49	4.55	4.21	5.32	5.21
Pork	7.14	7.14	8.42	8.79	7.95	7.37	7.45	7.29
Poultry	7.14	5.10	6.32	6.59	4.55	4.21	4.26	4.17
Milk and products	14.29	12.24	8.42	13.19	13.64	15.79	15.96	16.67
Gross Domestic Product per capita								
	1988	1989	1990	1991	1992	1993	1994	1995
Real GDP per capita in PPP USD (base 1993)	4484	4194	3972	3551	3545	3703	3966	4352
Nominal GDP per capita in USD at exchange rate	NA	NA	1648	1244	859	1159	1324	1567
Real GDP <sup>2)</sup> per capita in Romanian leu	NA	NA	32537	32220	88231	269008	916429	2345876
Food expenditure								
	1988	1989	1990	1991	1992	1993	1994	1995
Share in GDP (%)	NA	48.00	49.15	50.30	NA	NA	60.00	66.00
In real GDP per capita in PPP USD (base 1993)	NA	2013	1952	1786	NA	NA	2380	2872

Notes: NA: Not Available. 1) Share in the total of calorie (protein) intake of the nine products included in the analyses. 2) Real GDP expressed in prices of the preceeding year.

Source: Per capita consumption: FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. Per capita nutrient consumption shares: Own calculations based on FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. GDP: THE VIENNA INSTITUTE FOR COMPARATIVE ECONOMIC STUDIES (1996, pp. 46-69), BMWI (1995, pp. 69-77), own calculations. Food expenditure: Own calculations based on OECD (1996a, p. 170).

**Table A.19: Selected Data for Slovakia**

Per capita consumption of selected foodstuff (kg per year)								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	87.10	90.60	94.20	93.10	87.20	85.83	128.89	101.65
Potatoes	80.20	77.60	85.80	90.80	77.70	89.63	75.43	74.40
Sugar	40.20	38.90	46.30	42.60	36.60	34.20	34.60	33.00
Vegetables	73.00	73.80	70.80	80.40	75.00	74.90	75.79	73.08
Fruits	51.10	59.40	51.30	56.70	60.40	63.30	69.80	65.00
Beef and veal	22.10	22.30	21.80	16.40	14.50	14.90	13.70	11.50
Pork	42.60	44.50	44.50	42.10	39.90	36.20	36.40	37.40
Poultry	14.60	14.20	15.20	16.80	13.30	11.80	12.00	13.50
Milk and products	126.01	119.61	111.35	101.96	92.88	89.89	80.60	80.39
Annual average calorie share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	22.51	23.16	22.88	23.38	24.13	21.91	30.84	26.14
Potatoes	5.11	4.88	5.13	5.61	5.30	9.03	4.90	5.95
Sugar	14.69	14.06	15.90	15.12	14.32	10.09	10.84	13.11
Vegetables	1.77	1.77	1.61	1.89	1.95	1.78	1.65	1.83
Fruits	1.87	2.15	1.76	2.01	2.36	1.57	2.10	2.32
Beef and veal	2.21	2.21	2.05	1.59	1.55	1.20	1.00	1.18
Pork	6.39	6.61	6.28	6.14	6.41	5.95	5.39	5.74
Poultry	1.76	1.69	1.72	1.97	1.72	1.37	0.74	0.93
Milk and products	5.30	4.98	4.40	4.17	4.18	7.86	6.06	4.67
Annual average protein share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	23.30	23.82	24.66	25.44	26.16	22.62	33.33	28.95
Potatoes	4.29	4.08	4.49	4.96	4.66	7.14	4.60	5.26
Sugar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vegetables	2.37	2.36	2.25	2.67	2.73	2.38	2.30	2.63
Fruits	1.12	1.28	1.10	1.27	1.49	1.19	1.15	1.32
Beef and veal	9.27	9.19	8.95	7.03	6.82	4.76	4.60	5.26
Pork	13.19	13.54	13.49	13.32	13.86	11.90	11.49	13.16
Poultry	6.10	5.83	6.21	7.17	6.23	4.76	2.30	3.95
Milk and products	10.36	9.66	8.96	8.56	8.56	15.48	11.49	10.53
Gross Domestic Product per capita								
	1988	1989	1990	1991	1992	1993	1994	1995
Real GDP per capita in PPP USD (base 1993)	6471	6563	6403	5629	6399	6302	6836	7486
Nominal GDP per capita in USD at exchange rate	NA	NA	2561	1798	2213	2256	2576	3247
Real GDP per capita in 1000 Slovak koruna (base 1993)	NA	NA	91	78	72	70	73	78
Food expenditure								
	1988	1989	1990	1991	1992	1993	1994	1995
Share in GDP (%)	NA	35.40	35.95	36.50	NA	NA	38.00	37.40
In real GDP per capita in PPP USD (base 1993)	NA	2323	2302	2055	NA	NA	2598	2800

Notes: NA: Not Available. 1) Share in the total of calorie (protein) intake of the nine products included in the analyses.

Source: Per capita consumption: FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. Per capita nutrient consumption shares: Own calculations based on FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. GDP: THE VIENNA INSTITUTE FOR COMPARATIVE ECONOMIC STUDIES (1996, pp. 46-69), BMWI (1995, pp. 69-77), own calculations. Food expenditure: Own calculations based on OECD (1996a, p. 170).

**Table A.20: Selected Data for Slovenia**

Per capita consumption of selected foodstuff (kg per year)								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	NA	NA	NA	NA	93.85	87.88	82.97	87.22
Potatoes	NA	NA	NA	NA	102.99	115.03	120.80	145.48
Sugar	NA	NA	NA	NA	13.73	15.32	12.57	15.10
Vegetables	NA	NA	NA	NA	54.14	62.29	76.88	87.95
Fruits	NA	NA	NA	NA	67.05	88.04	95.35	92.17
Beef and veal	NA	NA	NA	NA	17.81	26.20	26.78	27.09
Pork	NA	NA	NA	NA	25.31	42.26	43.69	45.16
Poultry	NA	NA	NA	NA	10.08	19.61	19.71	25.47
Milk and products	NA	NA	NA	NA	197.04	183.83	203.70	205.07
Annual average calorie share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	NA	NA	NA	NA	44.26	38.60	36.68	35.76
Potatoes	NA	NA	NA	NA	12.05	12.37	12.99	14.40
Sugar	NA	NA	NA	NA	9.25	9.55	7.86	8.15
Vegetables	NA	NA	NA	NA	2.49	2.65	3.31	3.42
Fruits	NA	NA	NA	NA	5.17	5.77	6.26	5.87
Beef and veal	NA	NA	NA	NA	3.38	4.54	4.67	4.51
Pork	NA	NA	NA	NA	6.70	10.37	10.69	10.49
Poultry	NA	NA	NA	NA	3.00	4.60	4.61	5.33
Milk and products	NA	NA	NA	NA	13.71	11.55	12.94	12.07
Annual average protein share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	NA	NA	NA	NA	35.71	28.79	26.47	26.39
Potatoes	NA	NA	NA	NA	7.14	7.58	7.35	8.33
Sugar	NA	NA	NA	NA	0.00	0.00	0.00	0.00
Vegetables	NA	NA	NA	NA	3.57	3.03	4.41	4.17
Fruits	NA	NA	NA	NA	1.79	1.52	1.47	1.39
Beef and veal	NA	NA	NA	NA	10.71	15.15	14.71	13.89
Pork	NA	NA	NA	NA	10.71	15.15	16.18	15.28
Poultry	NA	NA	NA	NA	7.14	10.61	10.29	12.50
Milk and products	NA	NA	NA	NA	23.21	18.18	19.12	18.06
Gross Domestic Product per capita								
	1988	1989	1990	1991	1992	1993	1994	1995
Real GDP per capita in PPP USD (base 1993)	NA	9592	9161	8616	8789	9237	10007	10606
Nominal GDP per capita in USD at exchange rate	NA	NA	8699	6331	6275	6366	7181	9352
Real GDP per capita in Slovenian tolar (base 1992)	NA	NA	NA	536395	510054	520924	546852	567587
Food expenditure								
	1988	1989	1990	1991	1992	1993	1994	1995
Share in GDP (%)	NA	25.70	26.30	26.90	NA	NA	25.20	NA
In real GDP per capita in PPP USD (base 1993)	NA	2465	2409	2318	NA	NA	2522	NA

Notes: NA: Not Available. 1) Share in the total of calorie (protein) intake of the nine products included in the analyses.

Source: Per capita consumption: FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. Per capita nutrient consumption shares: Own calculations based on FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. GDP: THE VIENNA INSTITUTE FOR COMPARATIVE ECONOMIC STUDIES (1996, pp. 46-69), BMWI (1995, pp. 69-77), own calculations. Food expenditure: Own calculations based on OECD (1996a, p. 170)

**Table A.21: Selected Data for the EU-15**

Per capita consumption of selected foodstuff (kg per year)								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	94.50	94.36	91.88	92.60	91.84	93.06	91.03	92.38
Potatoes	83.40	84.87	81.67	81.53	82.95	80.91	80.41	80.65
Sugar	32.92	32.79	31.75	33.75	34.42	33.24	32.64	32.52
Vegetables	114.70	115.61	116.90	118.49	117.90	111.16	114.14	109.78
Fruits	111.20	114.29	116.52	113.35	130.08	116.94	117.66	109.37
Beef and veal	22.55	22.47	22.71	23.10	21.97	20.19	19.27	20.04
Pork	41.23	40.55	41.01	39.98	40.18	41.58	40.60	40.49
Poultry	16.41	16.41	16.93	17.35	18.18	17.98	18.84	19.08
Milk and products	227.08	226.64	220.65	223.86	224.40	219.50	220.99	222.97
Annual average calorie share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	34.95	34.90	34.78	34.58	33.78	34.85	34.53	35.10
Potatoes	7.63	7.76	7.56	7.44	7.48	7.43	7.45	7.50
Sugar	17.54	17.49	17.19	17.96	18.16	17.89	17.77	17.76
Vegetables	3.87	3.92	3.99	4.01	3.99	3.86	4.02	3.89
Fruits	6.43	6.58	6.74	6.36	7.41	6.78	6.87	6.35
Beef and veal	4.37	4.35	4.48	4.47	4.24	4.05	3.85	4.07
Pork	12.47	12.33	12.66	12.25	12.35	12.63	12.55	12.42
Poultry	2.95	2.98	3.11	3.15	3.27	3.30	3.50	3.56
Milk and products	9.79	9.70	9.49	9.78	9.32	9.23	9.48	9.35
Annual average protein share of selected foodstuff (%) <sup>1)</sup>								
Product	1988	1989	1990	1991	1992	1993	1994	1995
Wheat	32.22	32.18	31.77	31.93	31.98	32.81	31.98	32.34
Potatoes	5.19	5.40	5.15	4.87	4.93	5.09	5.09	5.12
Sugar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vegetables	5.92	6.04	5.75	6.10	6.05	5.68	5.90	5.70
Fruits	2.24	2.32	2.41	2.37	2.41	2.41	2.45	2.39
Beef and veal	12.42	12.41	12.60	12.90	12.14	11.26	10.95	11.39
Pork	16.02	15.79	16.40	15.55	15.86	16.29	16.19	15.78
Poultry	9.57	9.32	10.14	10.36	10.81	10.86	11.39	11.38
Milk and products	16.42	16.55	15.79	15.91	15.82	15.60	16.05	15.91
Gross Domestic Product per capita								
	1988	1989	1990	1991	1992	1993	1994	1995
Real GDP per capita in PPP USD (base 1993)	17695	18337	18904	19211	19406	19309	19850	20346
Food expenditure								
	1988	1989	1990	1991	1992	1993	1994	1995
Share in GDP (%)	22	22	22	22	22	22	22	22
In real GDP per capita in PPP USD (base 1993)	3893	4034	4159	4227	4269	4248	4367	4476

Notes: NA: Not Available. 1) Share in the total of calorie (protein) intake of the nine products included in the analyses.

Source: Per capita consumption: FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. Per capita nutrient consumption shares: Own calculations based on FAOStat food balance sheets, updated 12<sup>th</sup> June, 1997. GDP: INTERNATIONAL MONETARY FUND (1996, pp. 155, 168), OECD (1996b, p. 27). Food expenditure: Own calculations based on OECD (1996a, p. 170).

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