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## **Food security analysis and policies for transition countries**

Peter Wehrheim

*At the time this study was written, Associate Professor for Economic and Agricultural Policy  
University of Bonn, Germany  
Currently with the Directorate-General for Agriculture and Rural Development,  
European Commission, Brussels, Belgium*

Doris Wiesmann

*Food Security and Nutrition Specialist  
and post-doc  
Centre for Development Research, University of Bonn, Germany*

**Abstract:** *This article explores the characteristics of food security in the context of economies in transition. These special characteristics derive from the “legacies” of socialist systems, both economy-wide ones and others specific to the agriculture and the food sector. Food insecurity in transition countries is considered predominantly “transitory”, while social safety nets dating back to the socialist years provide some cushion. Market failures and other institutional constraints are prevalent, inhibiting the process towards improvement of the food security situation. Conflict takes a heavy toll in terms of hunger and malnutrition in economies in transition and macro level factors are at work to determine food security outcomes. At the same time, socialist legacies determine differences in food security outcomes between transition and developing countries beyond what would be explained by income differences.*

**Keywords:** *Food security, poverty, malnutrition, transition countries, agriculture, agricultural policy, safety nets.*

## Introduction

Most methodological materials and analyses of food security pertain to the classical developing countries of the world. These countries usually start from a lower income level than transition countries, have predominantly agricultural economies and have experienced either a sizeable decrease or stagnation of their poverty levels in the last decade. Naturally, their institutional environment is rather different from those of transition economies. In contrast, during the 1990s Eastern Europe and Central Asia was the only major region of the world experiencing a marked increase in poverty: while a World Bank study recorded for 1987/88 an average of 14 million people living in absolute poverty in Central and Eastern European Countries (CEECs) and in the Former Soviet Union (FSU), by 1993–1995, the number of persons in this region officially classified as poor had increased more than tenfold to an average of 147 million.

Poverty and income in transition economies themselves, though, are not homogenous. Absolute poverty (US\$2.15 per day) head counts range from nearly 70 percent of the population in Tajikistan to nearly zero in Slovenia. Food security in this region has deteriorated as well. According to the FAO (1999), there has been a decrease in dietary energy supply in the transforming countries. True, in 12 of the 27 transition countries, undernourishment is still not a significant problem. This should not obscure the fact, however, that the number of undernourished persons in the states of the FSU has risen enough to cause concern, and at 35 to 47 percent of the population is very high in Armenia, Azerbaijan and Tajikistan (FAO 2001). Given these differences in poverty experiences, different starting places and different institutional and policy environments, we will address the following questions:

- What pattern of food insecurity has developed across the transition countries?
- Are there specific characteristics of food insecurity and related policies in the transition economies which can be attributed to the legacy of the socialist era?
- Are there any mandatory adjustments in the analysis in order to compensate for potential differences in the determinants of food insecurity between transition and developing countries?

We argue that indeed there are some significant differences between food insecurity in developing countries as compared with food insecurity in the transition economies. The transition countries taken into consideration in this study are those of central, eastern and southeastern Europe as well as the countries which used to belong to the FSU. The differences we are referring to are the following. First, there are various legacies from the socialist system which are decisive for today's economic and social environment in which food insecurity in these countries arises and has to be tackled. Second, we argue that these legacies and specific economic and political circumstances of transition countries also need to be taken into account when analysing food insecurity.

## Box 1

### Definitions, data and measurement issues

#### What does food insecurity mean?

**Food security:** A situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

**Food insecurity:** A situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active, healthy life. It may be caused by the unavailability of food, insufficient purchasing power or the inappropriate distribution or inadequate use of food at the household level. Food insecurity, poor conditions of health and sanitation and inappropriate care and feeding practices are the major causes of poor nutritional status. Food insecurity may be chronic, seasonal or transitory.

#### Which indicators are available for transition economies?

**Indicators of food availability and access to food:** per capita dietary energy supply, percentage of undernourished in the population, depth of undernourishment. Undernourishment is defined as food intake being continuously insufficient to meet dietary energy requirements.

**Indicators of nutritional status:** prevalence of low birth weight in newborns, prevalence of wasting (low weight for height), stunting (low height for age) and underweight (low weight for age) in preschool children, eventually prevalence of underweight, overweight and obesity in adults, and scattered data about micronutrient deficiencies. Undernutrition, i.e. a shortfall in nutritional status that is captured by human body measurements (anthropometry), results from undernourishment, poor absorption and/or poor biological use of nutrients consumed.

Source: FAO, 2001.

Against this background the outline of the study is as follows. In the following section we elaborate on some selected legacies that seem to be particularly relevant with respect to the state of food security and food security policies needed in these countries. We then discuss how the standard conceptual framework for the analysis of food security has to be adapted to take the specific characteristics of transition countries into account. In the final section, we first provide a geographical overview of food insecurity in the region and, second, compare the factors that are likely to determine food security in the transition countries with those in developing countries. This comparison is done by adjusting for income levels. In the concluding section we summarize the paper, provide some policy conclusions and discuss in which areas we have identified the most essential knowledge gaps which have to be filled in order to implement more comprehensive, efficient and well-targeted policies to reduce food insecurity in the transition countries.

## Legacies of the socialist era that might affect food security in transition

### economies

The term ‘*transition*’ refers to the *set of reforms and the timing and sequencing of reforms* with which a country implements the *system switch from plan to market*. Transition countries are different from developing countries mainly because of two distinct features: first, structural breaks (e.g. sudden economy-wide output decline; significant increase of unemployment) and second, legacies. The former have been associated with the partial or total abolition of the former socialist system.

However, instead of bringing prosperity, the collapse of the planned economy and the implementation of the first reform policies led to the destruction of the former state-operated enterprises, to economic restructuring, and usually to a drastic decline in national product and thus also in overall available income. It was only in the second phase of transition that institution building, specifically the creation of a framework for regulatory policy, was seen to be an essential part of reforms. Thus, the initial conditions and the transition process itself, which was by no means completed at the turn of the millennium, resulted in rather unique country-specific institutions which are decisive for the extent to which the current conditions reflect decentral market coordination. Therefore, there are also country-specific legacies of the socialist era which will have differing effects on food security issues. In the following, we discuss some of these legacies which have the potential to impact on food security, nutrition and health outcomes of people in transition countries.

In our understanding such legacies can be defined as follows: features of the social, political or economic sphere that can be traced back to the socialist period and which have been abolished only partially in the transition period, therefore continuing to form part of the system of incentives and constraints determining the decision-making process of economic agents. We explicitly relate the legacies to the question of how they are likely to affect food security in transition countries. At the same time it is usually difficult to express such legacies in a quantitative way. Hence, this overview will be based by and large on a qualitative discussion of selected legacies which we believe affect food insecurity in transition economies<sup>1</sup>. We made a distinction between economy-wide legacies and sector-specific legacies. However, it is obvious that many of these legacies refer to institutional features of societies which by their very nature are hard to quantify, at least at a macro level and given the data constraints one encounters when working on transition countries. In spite of these difficulties, Table 1 provides an overview of indicators for which significant differences between transition and developing countries have been identified after controlling for GDP effects (see notes of Table 1 for further details on the methodology).

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<sup>1</sup> The list of legacies given in this paper is by no means complete but should rather exemplify the type of legacies which are expected to be particularly relevant for food insecurity in these countries. For a more comprehensive discussion of the legacies see Wehrheim and Wiesmann (2003)

**Table 1****Selected socio-economic indicators revealing statistically significant differences between transition and developing countries for 1998 (or 1997)**

<b>Indicator for 1998 (or 1997)</b>	<b>Sign of indicator for dummy (transition country = 1)</b>
Commercial energy use (kg of oil equivalent per capita)	+
Electric power consumption (kwh per capita)	+
General government consumption/GDP	+
Births attended by health staff (% of total)	++
Public health expenditures / GDP	+
Immunization ratio of children under 12 months (DPT)	++
Immunization ratio of children under 12 months (measles)	++
Births per woman	--
Agricultural value added in % of GDP, in 1991	++
Bread and cereal prices in PPP (US price =100)	-

Notes: 1) To identify statistically significant differences between transition countries and developing countries with respect to selected socio-economic variables characteristic for the respective structural legacy we developed scatter plots showing the cross-country relationship (e.g. electric power consumption in Kwh per capita or births attended by health staff) and GDP per capita. We included observations for developing countries and transition countries for which we had data. In cases where non-linear relationships were revealed we log-linearized the plots and then used a linear regression in which the respective variable and a dummy variable (1= transition countries) were regressed on GDP per capita. Depending on the significance of the dummy variable we concluded if the respective variable is significantly different for developing and transition countries.

+ positive dummy, significant at the 5% level; ++ positive dummy, significant at the 1% level;  
- negative dummy, significant at the 5% level; -- negative dummy, significant at the 10% level.

Source: Author's calculations; data from World Bank (2000).

***Economy-wide legacies***

*Unemployment and inequality legacy.* The system change from plan to market was a one-time event that induced significant structural breaks in the transition countries, which in turn caused an unprecedented decline in economic output and an increase in poverty. This process has been associated with steadily increasing unemployment (World Bank 2000). Another feature of the transition process was that assets were distributed at the outset of reforms in the course of privatization. The distribution of assets was very different between countries and sectors. One common feature of asset distribution, however, was that it rarely complied with equity rules. In some cases so-called “*nomenklatura-privatization*” has yielded very uneven distribution of assets. With respect to land reform, for instance, the distribution of assets was not at all egalitarian. There are also extreme differences in the approaches chosen: Belarus and Turkmenistan have not yet implemented land reforms at all, while in Albania and Armenia land has been fully distributed (Csaki and Lerman, 2000). It is obvious that uneven distribution

of assets can have certain common effects on specific population groups and can contribute to the risk of becoming food insecure.

Increasing unemployment and manner of asset distribution have contributed to another feature typical of the transition countries: rising inequality. The former socialist countries entered the transition process with one of the lowest levels of inequality in the world. But since then inequality has increased steadily in all transition countries – and dramatically in some (World Bank, 2000). Therefore, while unemployment, poverty and high levels of inequality are also common features of developing countries it must be taken into account that the transition countries came from a completely different point of departure.

*State sector and capture legacy.* The former socialist countries were obviously characterized by a very high share of economic turnover attributable to state activities. Due to the size of the state and to the fact that in many transition countries there was a switch from the omnipresent Leviathan state to a society in which oligarchs play an important role, “state capture” is another typical feature inherited from the socialist era. While the phenomenon of the capture economy is not restricted to the transition economies, the specific conditions under which this capture economy has evolved from socialism is typical for transition countries. Kaufmann, Kraay and Zoido-Lobaton (2000) argue that state capture can actually be explained by some features of the old regime and the nature of the transition process itself.

*Welfare legacy.* The quantity – and even more, the quality – of social service provision in a given country is decisive for food security analysis because it directly influences the health status of the respective population and the caring capacity of households. During the socialist period a social welfare system that was based on egalitarian principles was established in all socialist countries. Basic social services were abundant, while quality of these services was often weak. The state shouldered the total costs of the former system which meant that many social services were effectively public goods (Lohlein, Juetting and Wehrheim, 2003). Early on in the transition process the former social security and welfare system collapsed and deteriorated without there existing an alternative, market-based system to replace it.

On the one hand, the sudden deterioration of the social safety net has increased the vulnerability of specific population groups (e.g. pensioners). On the other hand, there are various indicators which show that the social welfare system in transition countries in general is still in better condition than in most developing countries. For instance, in 1998 the variable “births attended by health staff (as percentage of total)” was still significantly higher for transition countries. Similarly, the variable “share of public health expenditures, in percent of GDP, in 1998” was still significantly higher for transition countries as compared with developing countries (see Table 1). Particularly important with respect to child nutrition are social services that help to reduce children’s vulnerability to infectious diseases. Indeed, the two indicators “percentage of children under 12 months that were immunized against DPT” and “percentage of children under 12 months that were immunized against measles” were both significantly higher for transition countries as compared with developing countries.

*Gender legacy.* The role of women in a society is of pivotal importance with respect to food security issues for various reasons. In particular, the caring capacity of households, which in turn is influential for the nutritional status of household members, is mainly determined by women. Clearly the role of women in socialist countries has been rather different than that of women in many developing countries. Two indicators highlight significant differences in the role of women between the two country groups. On the one hand, the number of births per woman in transition countries in 1998 was significantly lower than in developing countries. On the other hand the average educational level of women in transition countries has been much higher. Even in transition countries in which the Muslim religion dominates (such as in Uzbekistan), the share of literate women at the end of the 1990s was comparatively high at 77 percent. This is relevant for food security analysis because the educational level of women is decisive for the status of child nutrition.

### ***Agricultural sector legacies***

*Rural bias legacy.* The median percentage of the population which is urban for all transition countries included in this study is 57 percent, significantly higher than for developing countries. Only in a few countries such as Albania and in most countries in Central Asia the share of the total population living in urban settings is around or below 40 percent. (In Kazakhstan the share of the urban population is 56 percent.) Not surprisingly, it is also these countries that have the highest share of the total labour force employed in agriculture (Albania 55 percent; Kyrgyzstan 32 percent; Uzbekistan 35 percent; Tajikistan 41 percent; Turkmenistan 37 percent in 1990).

In contrast, in countries such as the Czech Republic and the Russian Federation, the share of the urban population is even higher than 70 percent. Hence, we expected an urban rather than a rural bias to persist in transition countries. However, contrary to our expectations the empirical analysis did not reveal an urban bias in transition countries. If corrected for differences in GDP per capita, neither the share of the urban population nor the share of value added produced in agriculture in GDP (in 1998) yields any significant differences for transition countries. (See notes to Table 1 for further explanation of the method used.) The contrary seems to have been the case before transition started: the fact that the share of value added produced by agriculture in GDP plunged in the 1990s is an indication for this indicator having been higher on the eve of transition. Indeed a regression analysis which controls for the level of GDP per capita of the transition and developing countries indicates that in 1990/91 the share of value added produced in agriculture in GDP was in transition countries on average higher by 13 percentage points.

Furthermore, some indirect indicators for 1998 reveal that not only the urban but also the rural sectors are relatively advanced in transition countries, contributing to high average energy consumption rates. For instance, electric power consumption per capita or commercial energy use per capita (kg of oil equivalent) is significantly higher for transition countries as compared with developing countries. Both indicators indirectly hint at the fact that infrastructure in rural areas of transition is also relatively well-developed. Nevertheless, Csaki and Tuck (2000) point

out that in a sample of 20 transition countries the incidence of rural poverty was on average 60 percent higher than in urban areas.

*Agricultural policy legacy.* Prior to reforms and, hence up to the late 1980s, agricultural production in the former socialist countries had been highly subsidized.<sup>2</sup> In contrast, many developing countries discriminated against agriculture in the 1970s and 1980s (e.g. Wiebelt *et al.*, 1992). In transition countries, the government shouldered the burden of subsidies to producers and consumers of food alike. Agricultural protection levels as measured by Nominal Protection Rates or Producer Subsidy Equivalents for the CEECs as a group have fallen below that of the EU since 1991 and have tended to converge over time. With respect to the CEEC, Swinnen (1996) observed that after an initial phase of liberalization ad hoc protectionist measures were introduced in the second phase of reforms. This also seems to be true within the limits set by public budget deficits for many countries in the FSU, e.g. for Russia (OECD 2000). However, country-specific analyses reveal substantial differences between the more recent levels of CEECs' agricultural protection (Hartell and Swinnen 2000).

*Agricultural production and trade legacy.* The point of departure of agricultural development in the transition countries is significantly different from that of most developing countries. Not only the direction and the degree of policy interventions have been different but also the underlying production structures. Furthermore, the output decline that most countries in transition have experienced has been an inevitable part of market reform (Liefert and Swinnen, 2002). Because of central planning, the production structure of agriculture in the former socialist countries was by and large determined by government decisions, with the notable exception of subsistence farming. At the same time a large share of agricultural production in most transition countries has been more industrialized than that in developing countries, using more industrial inputs and a higher share of capital. However, at the end of the 1990s the relative importance of agriculture as expressed by the share of value added by agriculture to total GDP was not significantly different in transition countries than in developing countries. While the relative importance of agriculture declined in both country groups, it declined much faster in the transition countries than in others. Between 1990 and 1998 the portion of GDP represented by agricultural value added in the transition countries declined by 1.1 percent per annum, while in developing countries it declined by only 0.24 percent per annum.

Furthermore, most CEECs, and especially the republics of the FSU, were forced to specialize in the production of specific agricultural commodities. The best example is Uzbekistan, where cotton production on irrigated land became the prime factor behind the shrinking of the Aral Sea, one of the world's most severe ecological disasters. Indeed such specialization in a limited range of cash-crops is still significantly affecting food security in those countries which have not succeeded in reversing this trend. The volume and share of intra-regional agricultural trade plummeted accordingly. Between 1992 and 1999 the total value of intra-CIS

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<sup>2</sup> This has been shown in various OECD reports for the group of transition countries (OECD 2000) as well as in individual country studies such as, for example, that of the Russian Federation (OECD 1998).

agricultural trade plummeted from about 20 billion US\$ to merely 12 billion US\$ (GOSKOMSTAT, 2001). Borders opened for competitive imports from world markets. As a result, agricultural and food trade with the rest of the world was restructured substantially. For instance, livestock production in the region collapsed because in the early 1990s cereal imports in the FSU plummeted while import of meat products increased substantially over the course of the 1990s.

While the newly-gained openness of the trade regime and the abolishment of the centrally-planned trade flows between the former socialist countries reduced inter-regional food trade, during the 1990s transition countries experienced a trend of increasing intra-industry trade with agricultural and food commodities. For instance, intra-industry coefficients for agriculture and food trade for Poland increased from 23 percent in 1988 to 37 percent in 1996 and 45 percent in 2000 (in Hungary from 30 percent in 1988 to 51 percent in 1996 to 68 percent in 2000). For the Russian Federation, the intra-industry coefficient for agriculture and food trade increased from only 0.05 percent in 1992 to 0.20 percent in 2000.

*Agricultural reform legacy.* Collectivization of agriculture, which started in the former socialist countries with Stalin's anti-kulak campaign in the 1930s, resulted in a long-standing bias against rural areas and neglect of agriculture in the FSU. After World War II the ideological campaign against family-farm agriculture spread to the CEECs. Because the period of collectivization was much shorter in this region than in the FSU or never occurred (as in Poland), the eradication of rural entrepreneurship in the CEECs was not as complete as in the FSU. During the transition period agriculture was de-collectivized in most transition countries. Today there is a wide spectrum of forms of farm structures in the transition countries, including former collective, corporate and large farms, medium-sized family farms, and the small subsistence-oriented household plots (Csaki and Lerman, 2000). While agricultural and rural reforms in the CEECs made remarkable progress, there was reform fatigue in the CIS (Csaki and Tuck, 2000).

*Dual agriculture and subsistence legacy.* In most transition countries, and particularly in the FSU, agriculture under socialism had a dualistic structure comprising large-scale collective farms and small-scale household plots. Agricultural output decline was most pronounced in those transition countries where the dualistic structure of agriculture survived the socialist era (Koester, 1996). At the same time it seems as if the risks of poverty, market upheaval, increases in real prices and inefficiency of markets during the early transition phase led to a growth in the significance of household food production in these countries in particular (e.g. von Braun, Qaim and tho Seeth, 2000 and Abele and Frohberg, 2003). In fact, the rise in subsistence production has been one of the most important strategies for coping with the significant output decline and the fall in real incomes in the early transition period, and has been the most significant buffer against becoming food insecure during the transition crisis (tho Seeth *et al.*, 1997). Therefore, it is likely that subsistence production will continue to be an important part of agriculture as long as the economic situation remains unimproved, the opportunity costs of work do not increase, and subsistence production continues to constitute a major segment of overall income.

*Food consumption legacy.* The analysis of food consumption in transition countries involves issues specific to the transformation process (Brosig and Hartmann, 2001). In most transition countries there was a structural break in food demand at the outset of reforms. To some extent this food consumption legacy is linked with the above-mentioned agricultural production and trade legacy (i.e. inter-regional specialization and trade in agricultural commodities). For instance, because of its specialization in cotton production, Uzbekistan had a rather low level of self-sufficiency in food products, and continues to have a high dependence on imports: in recent years it imported more than 60 percent of its wheat requirements, 50 percent of potatoes, 30 percent of meat and 25 percent of milk.

Another legacy with respect to consumption relates to the benefits consumers derived from extensive food subsidies. This double-edged sword was very expensive from a fiscal point of view and contributed to pressure on public budgets in the late period of socialism. At the same time food subsidies were granted only for certain staple products that were available in high quantities but often at low quality. To some extent consumption habits were determined by the fact that during the socialist period the problem was often one of low food availability (empty shelves and long lines in front of retail stores) rather than of access to food. Only a limited range of food items was available and this affected food consumption patterns significantly.

These food consumer policy and consumption habits still persist to some extent in some countries. Bread was often subsidized to such an extent that it could be bought to feed livestock in private production. In an analysis for three Russian regions, Melyukhina, Qaim and Wehrheim (1998) showed that in 1995 bread was the only food commodity still significantly subsidized. In 1998, the purchasing power parity (US=100) of bread and cereal prices in transition countries was still significantly lower than in developing countries (see Table 1). These consumption legacies are likely to contribute to food insecurity patterns in some transition countries, characterized by overnutrition and vitamin and mineral deficiencies rather than by undernutrition (Sedik, Sotnikov and Wiesmann (2002) for Russia). At the same time, rapid and profound changes in the markets for consumer goods, as well as rapid changes in income, affected consumer behaviour in transition countries significantly and in fact have caused structural changes in many transition countries (Grings, 2001 and Elsner, 1999).

## **Conceptual framework: Determinants of food insecurity in transition**

### **economies**

Bearing in mind the legacies outlined above, we now go on to discuss the implications of those legacies for the analysis of food insecurity in the region. We argue that many of the basic factors determining the degree of food security in transition countries are similar to those in developing countries. However, in the transition context these factors by themselves are affected by the legacies from the socialist period. In our view, these factors have to be taken into account in the analysis of food insecurity in transition countries because they

change the patterns of food insecurity and the coping mechanisms of those people at high risk of becoming food insecure. Such coping mechanisms are likely to be different in transition countries for various reasons: people in most transition countries enjoyed relatively high (food) security for many decades and were quite suddenly fell vulnerable to food insecurity with the advent of transition; they have experienced structural breaks and at the same time continue to live with the effects of the various legacies. In contrast, the perception of “secure access to food” in a developing country that is on a gradual reform path and is characterized by a steady state is likely to be different. People in developing countries have often developed various means of coping with those adverse events that reduce food security over time.

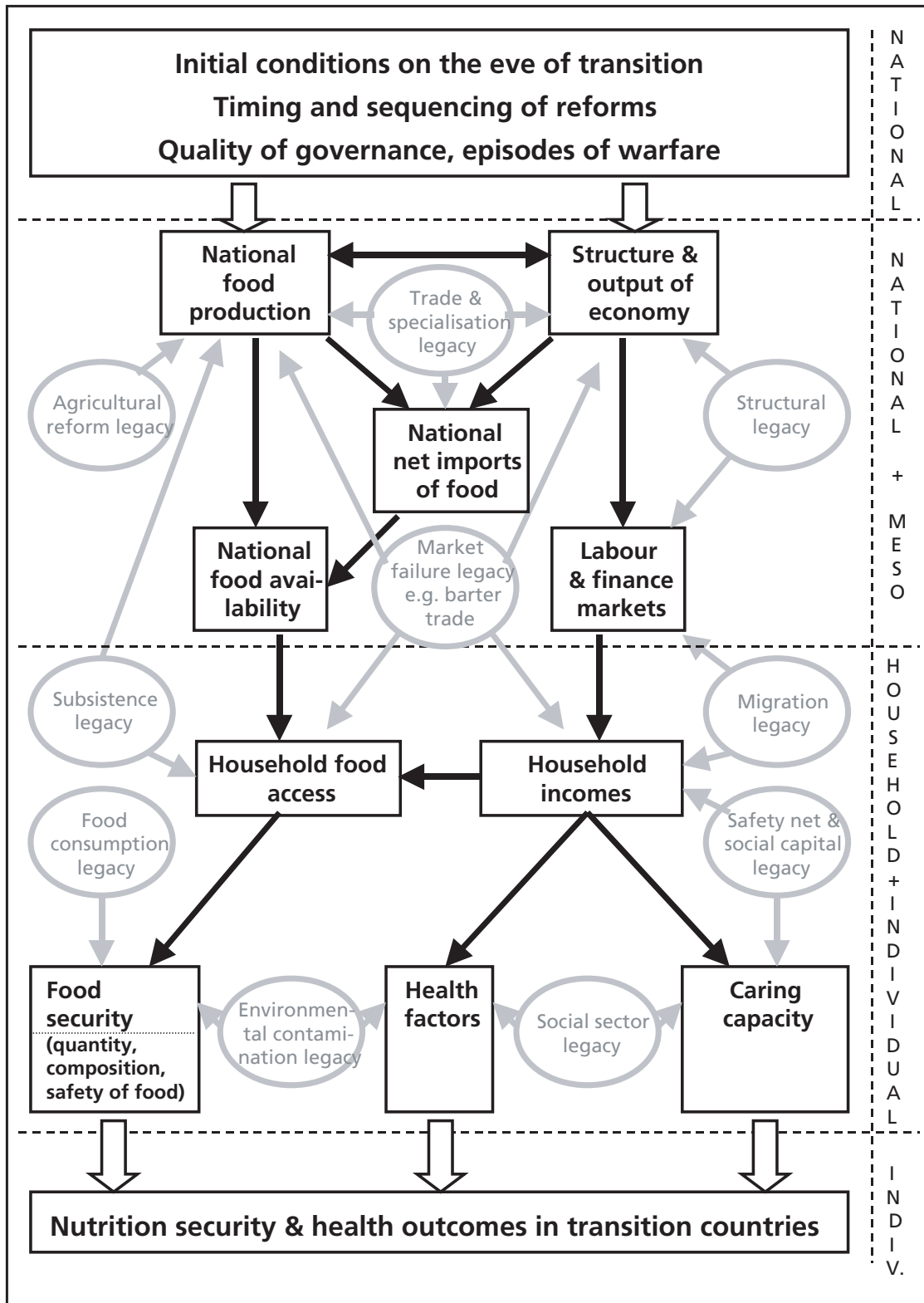
Figure 1 conceptualizes various factors affecting food security, nutrition and health outcomes of the population in transition countries. On the one hand we indicate those basic factors also relevant to developing countries (in squares with bold lines). On the other hand, these factors and determinants themselves are affected in transition countries by the various legacies discussed in the previous section (shown in shaded ellipses). All factors and determinants of food and nutrition security are distinguished at three different levels.

On the first (national) level, the transition path of each individual country is decisive for the food security situation of the population in the respective country. The most essential factors affecting the economic outcome of this process are the initial economic, social and political conditions on the eve of transition, the timing and sequencing of reforms thereafter and the evolving quality of private and public governance. In some countries the latter was not only extremely weak but even led to episodes of warfare which quite obviously affected most negatively the performance of those economies.

This leads us to one substantial difference between food security issues in transition countries as compared with developing countries: while food insecurity in developing countries is often chronic, in most transition countries it is expected to be transitory and is in fact no longer a significant problem in many transition countries. Chronic food insecurity is to be expected only in those countries where the J-curve shape of economic development does not materialize in due course and where at the outset of the transition process the initial conditions with respect to food security were already very unfavourable. Economic development, more efficient sector and economy-wide reforms – as well as the discontinuation of war episodes in transition countries – provide the possibility to significantly and quickly reduce food insecurity in the region.

On the second (national/meso) level, various factors affecting food security on a national and regional level are shown. The essential determinants are the level of national food production, the structure and output of the economy in general, national trade balances, labour and financial markets and national food availability. The speed at which agricultural sector reforms (such as the privatization and distribution of land) are being implemented is obviously decisive for the recovery of domestic agriculture and food production. One key legacy is the prevalence of market failures. These are often due simply to the vacuum of institutions resulting from the abolition of the old centrally-planned institutions or to market power and non-competitive pricing which again are often holdovers from the old system.

**Figure 1**  
**Factors affecting food security in transition countries**



Source: Adapted from Smith (1998), Smith and Haddad (2000).

On the third (household) level, the food security of households and individuals is mainly a question of accessibility to sufficient amounts of safe and nutritious food. Insufficient purchasing power, high levels of inequality, the inappropriate distribution or inadequate use of food result in food insecurity. Food security, health factors and the caring capacity of households are essential for the nutrition security of individuals. However, similarly to the national and meso-levels, there are various legacies from the socialist era which have the potential to affect these household factors significantly either positively (e.g. higher caring capacity of women; better social security system for pensioners) or negatively (e.g. environmental contamination of agricultural production areas, persistent consumption habits with high-fat, low-vitamin, high-alcohol diets).

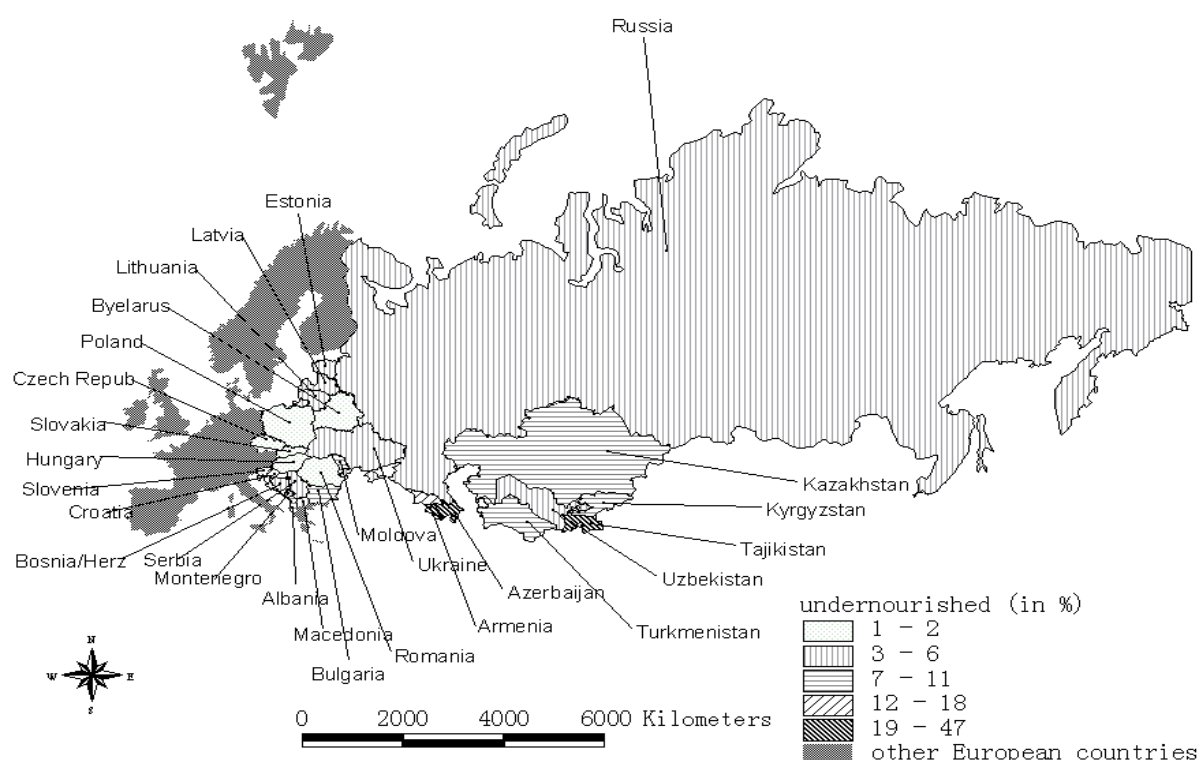
### **Cross-country analysis of food security and its determinants: contrasting transition countries and developing countries**

The vast and heterogeneous region of CEECs and the FSU has been subject to increased spatial differentiation since the beginning of the transition in the early 1990s. As mentioned in other sections, initial conditions (for instance those resulting from geographical location or legacies from the socialist period) are expected to play an important role in this process. Below we begin by giving an overview of the variation of food security and nutrition indicators within the region. Next, a multivariate approach is employed to investigate whether there are significant differences between countries in transition and developing countries with respect to food security indicators and their determinants.

#### ***Geographical overview of food security and nutrition in transition countries***

A range of variables for the assessment of the food security and nutrition situation was presented above in Box 1. Regarding the percentage of under-nourished as an indicator of food security, no long-term time series are available for countries in transition, as the first estimates for this region were released in 2000 (FAO, 2000). The map in Figure 2 illustrates the percentage of undernourished for the average of the years 1997–1999 for the CEEC and FSU region (FAO, 2001). Obviously, the conflict countries at the southern rim of the FSU region (Armenia, Azerbaijan, Tajikistan) are the most affected by food insecurity according to estimated percentage of undernourished, which exceeds 35 percent. For some other Central Asian and Caucasian countries (Kyrgyzstan, Kazakhstan and Georgia) as well as some Balkan countries (Albania, Bulgaria, and Croatia) and Moldova, it is estimated that 10 to 20 percent of the population cannot meet their minimum dietary energy requirements. In contrast, the situation is on average quite favourable in all other countries in Central Europe, with the share of undernourished people falling below 2.5 percent.

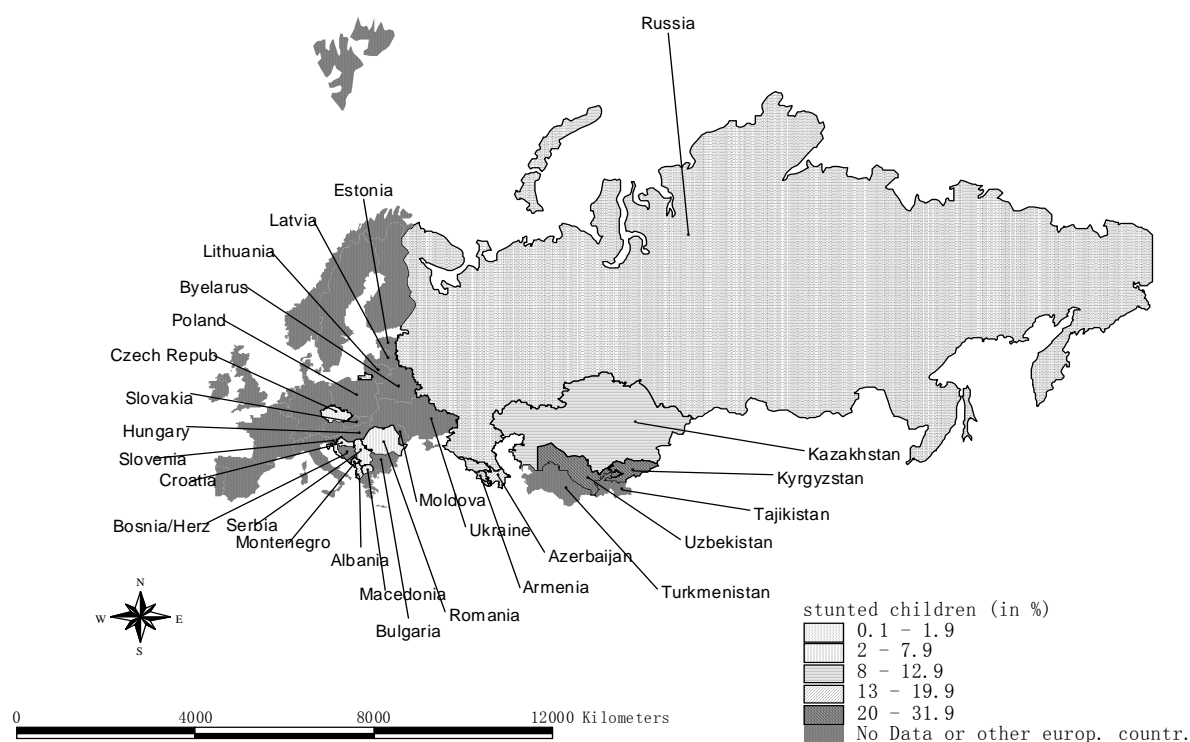
**Figure 2**  
**Mapping of the percentage of undernourished in the CEECs and FSU**



*Source:* Author presentation based on data from FAO (2001).

Another variable related to food security is child malnutrition, which is indicated by the share of children that are stunted, wasted or underweight (see Box 1). It should be noted that nutritional outcomes hinge not only on food security at the household level, but also on caring practices and factors affecting health outcomes (UNICEF, 1990; see Figure 1). For 13 out of 27 countries, nationally representative nutrition surveys were conducted among children during the 1990s. The map in Figure 3, illustrating the share of stunted children (data from WHO, 2002), reveals a slightly different situation than Figure 2.

**Figure 3**  
**Mapping of the prevalence of stunting in children in the CEECs and FSU**



Source: Author presentation based on data from WHO (2002).

Although a similar tendency of adverse outcomes as measured by the percentage of undernourished can be observed in the southern part of the region, in Uzbekistan the state of food security seems to be much better than that of child nutrition – and vice versa for Kazakhstan. Whereas Albania is doing poorly with respect to both the percentage of undernourished (10 percent in 1997–1999) and stunting in children (15.4 percent in 1996–1998), the relatively high level of food deprivation estimated for Croatia (15 percent in 1997–1999) is not reflected in the share of stunted children, which amounted to merely 0.8 percent in 1995/96.<sup>3</sup> To understand the variation of food security and nutritional outcomes better, the next section considers differences in food security between developing countries and countries in transition, controlling for GDP per capita and considering quantifiable legacies of the socialist era as possible explanatory factors.

### ***Comparison of food security in transition countries and developing countries***

Transition countries and developing countries have had quite different experiences regarding economic growth and the development of social indicators since the beginning of the 1990s.

<sup>3</sup> One explanation for these differences could be the observation that undernourishment in Croatia has been an immediate reflection of the country's involvement in war in the mid-1990s and is a transitory rather than a chronic phenomenon.

These experiences, together with the specific characteristics of the institutional and political environment in transition countries, are expected to result in distinct patterns, levels and trends of food insecurity. In this section we seek to answer the following questions:

- Are there systematic differences between transition countries and developing countries with respect to economic and agricultural growth, the change and level of dietary energy supply and the composition of the diet? If so, can the differences be quantified?
- Can these differences be attributed to any legacies of the socialist era and related policies that may still affect the course of economic development, the structure of agricultural production and food consumption patterns?
- How do any such legacies modify the relationship of food security indicators to nutritional and health outcomes?

The analysis roughly follows the pathways depicted in Figure 1, although not all potential determinants and legacies can be considered (partly due to lack of data).

### ***Methodology***

Simple comparisons of the means of different food security variables for transition countries and developing countries are useful, but offer only limited insights, since most countries in transition have arrived at a higher average level of economic development than the developing countries. As GDP per capita strongly influences the variation of most socio-economic variables, a methodological approach is needed which allows to control for the impact of GDP per capita on the variation of food security indicators in transition countries and developing countries and their potential determinants, including the legacies.

Linear regression will be used as the main tool of analysis in this section. We developed scatter plots showing the relationship of the variables under consideration (e.g. dietary energy supply per capita per day or births attended by health staff) and GDP per capita. In the cases where non-linear relationships were revealed we log-linearized the plots. We then used a linear regression in which the variable under consideration was regressed on GDP per capita and a dummy variable (1= transition countries). Depending on the significance of the dummy variable we concluded whether the dependent variable is significantly different for developing and transition countries. This technique is applicable to food security indicators themselves as well as to variables describing socialist legacies or other potential determinants. Regional dummies for groups of countries in transition were used to differentiate the findings.

### ***Trends in dietary energy supply and economic and agricultural growth***

An overview of the key indicators of national food availability and economic and agricultural growth is given in Table 2 for transition countries and developing countries. If we consider

the population-weighted averages, we find that with respect to dietary energy supply per capita per day (DES), the prevalence of undernourishment<sup>4</sup> and the level of GDP per capita, people in transition countries are still better off than the average inhabitant of a developing country. However, the ranges from minimum to maximum values are large for both country groups, revealing the diversity of living conditions not only in developing countries, but also in the FSU and CEECs. An important difference between developing countries and transition countries are the negative trends in DES, GDP per capita and value added in agriculture observed for the latter in the 1990s.

**Table 2**  
**Basic data and trends for countries in transition and developing countries**

	Developing countries			Transition countries		
	minimum	maximum	mean value	minimum	maximum	mean value
Basic variables (1997–99)						
DES (in kcal per capita per day)	1 649	3 373	2 677.27	1 899	3 383	2 882.44
Undernourished in the population (in %)	1	66	16.8377	1	47	6.71395
GDP per capita (in PPP\$)	468	11 570	2 951.63	939	13 739	5 649.57
Value added in agriculture (in % of GDP)	2	58	22.5598	4	54	12.0745
Annual growth rates (1990–98)						
DES change (in %)	-3.29	4.56	0.78846	-3.43	3.56	-0.64723
GDP per capita growth (in %)	-8.44	8.92	3.80606	-12.93	3.29	-5.49753
Value added in agriculture growth (in %)	-18.65	6.61	1.52905	-27.71	3.63	-12.3415

Source: Author's calculations with data from World Bank (2000) and FAO (2002).

Figures 4 and 5 show the annual average growth rates of GDP per capita and value added in agriculture (VAA) plotted against the initial level of GDP per capita in the 1990s (1990 or the earliest year for which data are available, i.e. generally the year of independence for the NIS).<sup>5</sup> Whereas the initial level of GDP per capita had little impact on the growth of economic output and of the agricultural sector according to this simplified delineation,<sup>6</sup> it

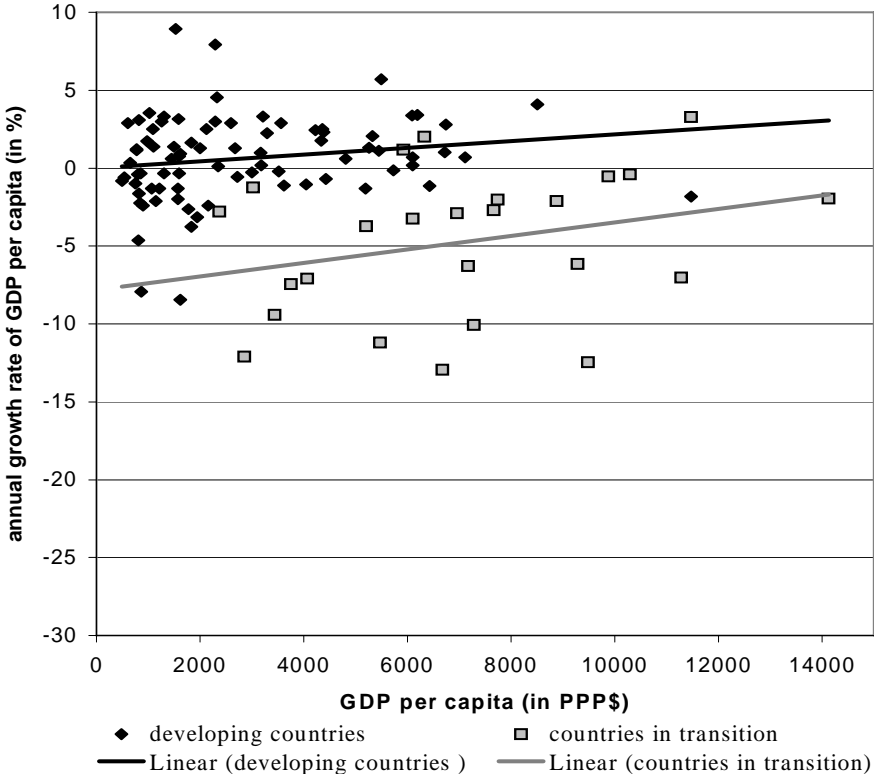
<sup>4</sup> DES is a measure of national food availability that is not equivalent to dietary energy intake per capita, but may be considered as a proxy for the latter. Since the percentage of undernourished is basically an inverse, regressive transformation of DES (see Wiesmann, von Braun and Feldbrügge, 2000) and data for undernourishment in transition countries are lacking for the period before 1998, DES is mostly preferred as a food security indicator in the present analysis.

<sup>5</sup> There are seeming inconsistencies between the graphs in Figures 4 and 5 and the figures in Table 2, e.g. the regression line fitted for the growth of VAA in developing countries is constantly below zero, although the mean value of this variable is indicated to be 0.8 percent in the table. Such discrepancies arise from the fact that the figures in Table 2 were aggregated by weighting the data for individual countries with the population size, whereas the regressions were not weighted. This explanation also holds for the following discussion of regression results for other variables.

<sup>6</sup> The coefficient of initial GDP per capita is significant in regressions of growth rates for the total sample, but respective coefficients are insignificant in separate regressions for developing countries and transition countries. The contrast of the upward slope in Figure 4 (indicating a more pronounced negative growth trend in transition

becomes evident that countries in transition fared much worse than developing countries. The extent to which growth in transition economies has fallen behind can be seen from the highly significant dummy variable for transition countries: the coefficient for the dummy amounts to  $-6.6$  and to  $-8.9$  percentage points in regressions of total economic and agricultural growth on GDP per capita, respectively.

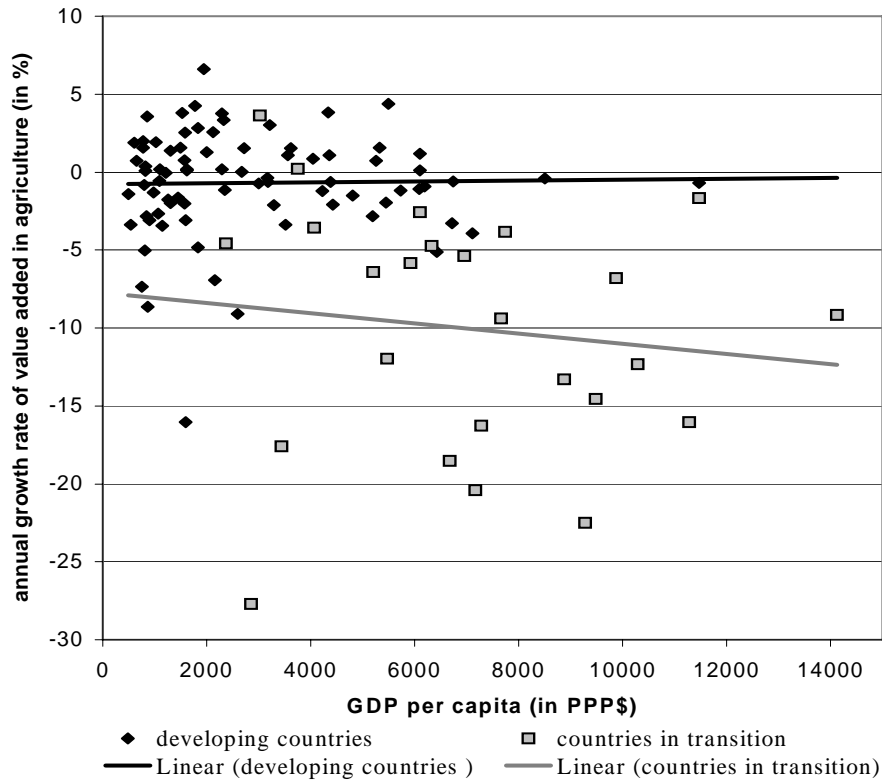
**Figure 4**  
**GDP per capita growth (1990<sup>1</sup>–98) plotted against GDP per capita in 1990<sup>1</sup>**



<sup>1</sup> Note: Or earliest year in the 1990s for which data are available for the Newly Independent States  
 Source: Author presentation based on data from World Bank (2000).

countries that were poorer at the outset) and the downward slope in Figure 5 (suggesting a faster decrease of VAA for initially wealthier transition countries) seems interesting. Yet, since the coefficients of the regression lines are insignificant, the empirical base is too weak for further interpretation.

**Figure 5**  
**Growth of VAA (1990<sup>1</sup>–98) plotted against GDP per capita in 1990<sup>1</sup>**



<sup>1</sup> Note: Or earliest year in the 1990s for which data are available for the Newly Independent States  
 Source: Author presentation based on data from World Bank (2000).

The comparison between Figure 4 and Figure 5 suggests that the agricultural sector was more affected than the total economy in transition countries.<sup>7</sup> Structural breaks and socialist legacies described in the second section later in this chapter are expected to have had a negative impact on all economic sectors. However, we assume that two specific legacies of the agricultural sector contributed to the disproportionate output decline: the agricultural reform legacy and associated market failure as well as the agricultural policy legacy, i.e. the high subsidization of agriculture in the past which inflated agricultural production in relation to the other sectors. Thus, the reduction of subsidies in the course of transition led to a considerable shrinking of value added in agriculture. Controlling for GDP per capita, we found the share of VAA in percent of GDP to be significantly higher in transition countries than in developing countries for 1991 (+12.8 percentage points according to the coefficient of the transition dummy), but no significant difference was found for this variable in 1998.

Considering the development of DES throughout the 1990s, we find that the change rate was negative for countries in transition and positive for developing countries. Although the

<sup>7</sup> Yet, this conclusion should be regarded with caution, because GDP per capita is a gross figure (including intermediate inputs) whereas value added in agriculture is a net figure (excluding intermediate inputs).

decline of DES in some CEECs is likely to indicate a reduction of widespread overnourishment rather than the rise of serious food insecurity, the fall in DES by more than 500 kcal in Moldova, Ukraine and Kazakhstan should be noted, and considerable undernourishment was estimated for the conflict countries in the FSU at the end of the 1990s: 47 percent in Tajikistan, 35 percent in Armenia, 37 percent in Azerbaijan and 18 percent in Georgia (data for 1997–1999 (FAO, 2001)). Together with Uzbekistan, Tajikistan, Armenia and Azerbaijan had the lowest GDP per capita among countries in transition in 1996–1998. At the beginning of transition, the latter three countries were among the poorest eight countries in the CEEC and the FSU already, and they experienced decreases of GDP per capita between -7.5 percent and -11.2 percent annually up to 1998. The fall in GDP per capita was much more pronounced than the decline in DES, which is not surprising, given the fact that food is a basic necessity. Adding a dummy variable for countries in transition to the regression of the annual change rate of DES (1997–1999) on GDP per capita (early 1990s) confirms that there is a significant difference between developing countries and transition countries (coefficient of the dummy = -0.8, p-value = 0.049).

A significant, albeit low correlation of the change in DES with both GDP per capita growth and VAA growth can be identified for the total sample<sup>8</sup> (compare Table 3). Not surprisingly, a high and significant correlation of overall economic growth and agricultural growth can be observed. An interesting feature becomes apparent when correlations are analysed separately for developing countries and countries in transition: for developing countries, the rate of change of DES is significantly correlated to GDP growth, but not to the growth in VAA, and vice versa for transition countries (for which we find a closer connection between economic and agricultural growth).<sup>9</sup>

We conclude that for transition countries, the fate of the agricultural sector was more decisive for trends in national food availability than for developing countries.<sup>10</sup> The fact that both overall economic and agricultural growth were predominantly in the negative range for transition countries, whereas this was not the case for developing countries, might provide an explanation: weak macro-economic performance of the FSU and CEECs in the 1990s hampered their ability to substitute shortfalls in national food production with imports, and the agricultural specialization and disruption of trade relations within the NIS may have exacerbated the situation. In contrast, the shrinking of the agricultural sector in some

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<sup>8</sup> Only Ghana and Eritrea had to be omitted, see notes below Table 3.

<sup>9</sup> Rank correlation coefficients are in general less affected by the functional form of the relationship or by outliers. In the present analysis, their calculation reveals a pattern similar to the results for absolute coefficients shown in Table 3. However, the size of the coefficients and significance levels of the rank correlations tend to be lower. For example, the coefficient of the correlation between VAA growth and DES change amounts to 0.37 only, and it is merely significant at the 10 percent level.

<sup>10</sup> This statement can be checked by regressing the change in DES on both VAA and GDP per capita growth. For transition countries, only VAA growth is significant among this combination of independent variables, but for developing countries, only GDP per capita growth shows a significant impact. This result may be blamed on the multicollinearity of agricultural and economic growth; compare Table 3. However, VAA growth is also insignificant if used as the sole independent variable in the regression for developing countries, and the same holds for GDP per capita growth with regard to a regression for transition countries.

developing countries could be compensated by positive overall economic growth which enhanced the ability to purchase food on international markets.<sup>11</sup>

**Table 3**  
**Pearson's correlation coefficients for the annual growth rates of GDP per capita, value added in agriculture and DES (1990–1998)**

	GDP % growth	VAA growth	DES change
<b>Full sample (n=106)</b>			
GDP per capita growth	1		
Growth of value added in agriculture (VAA)	0.705*** (0.000)	1	
Change in dietary energy supply per capita (DES)	0.325 *** (0.001)	0.325 *** (0.001)	1
<b>Developing countries (n=81)</b>			
GDP per capita growth	1		
Growth of value added in agriculture (VAA)	0.423 *** (0.000)	1	
Change in dietary energy supply per capita (DES)	0.369 *** (0.001)	0.182 (0.103)	1
<b>Transition countries (n=25)</b>			
GDP per capita growth	1		
Growth of value added in agriculture (VAA)	0.627 *** (0.001)	1	
Change in dietary energy supply per capita (DES)	0.255 (0.219)	0.423 ** (0.035)	1

Notes: All growth rates are per annum and in percent, calculated for the period from 1990 (or the earliest year in the 1990s with available data) to 1998. Ghana and Eritrea were excluded from the correlation analysis in order to avoid a distortion of the results for developing countries. (They were identified as extreme outliers in a scatterplot of VAA growth and DES change due to the extraordinary combination of strong negative VAA growth and positive growth of DES.) Figures in brackets indicate the significance according to an F-test, stars the significance level: \*significant at the 10 percent level, \*\*significant at the 5 percent level, \*\*\*significant at the 1 percent level.

Source: Author's calculation based on data from World Bank (2000) and FAO (2002).

<sup>11</sup> It has to be noted that these results are based on *averages* for each group of countries. Therefore, there very well may be individual countries within each group that have experienced opposite trends.

## **National food availability, macro-economic output and structure**

In a cross country analysis, macro-economic output is identified as the most important determinant of the level of DES: the logarithm of GDP per capita (in PPP\$) accounts for 58 percent of the variation of DES (average of 1997-99) in 83 developing countries and 25 countries in transition for which data are available. The relationship of the two variables is depicted in Figure 6. Adding a dummy variable for countries in transition to the linear regression confirms that DES is significantly higher in the transition economies. The dummy amounts to 123 kcal per capita and is significant at the 10 percent level (p-value = 0.066). However, when several dummies are used for different regions – Central Europe, the Balkans/southeastern Europe, European FSU, Central Asian FSU, Caucasus – it can be shown that DES is only significantly higher in Central Europe and the European FSU (250 and 251 kcal, respectively, with p-values of 0.068 and 0.025; for the countries in the Caucasus, the dummy of –193 kcal indicates a lower relative DES, yet the result is insignificant). The scatterplot in Figure 6 suggests that separate linear regressions of DES on the logarithm of GDP per capita have different slopes for countries in transition and developing countries.

This finding raises the question of whether structural differences in the economy or in the agricultural sector are able to explain the variation in the level of DES relative to GDP per capita. The share of value added in agriculture (VAA) in percentage of GDP might be considered a suitable candidate for an explanatory variable, yet we have already learnt in the previous section that no significant difference between transition countries and developing countries was found with respect to the share of VAA in 1998.<sup>12</sup> When entering the share of VAA as an independent variable into the regression of DES on the logarithm of GDP per capita and on the dummy variables for the transition regions, the variable is indeed found to be insignificant.<sup>13</sup>

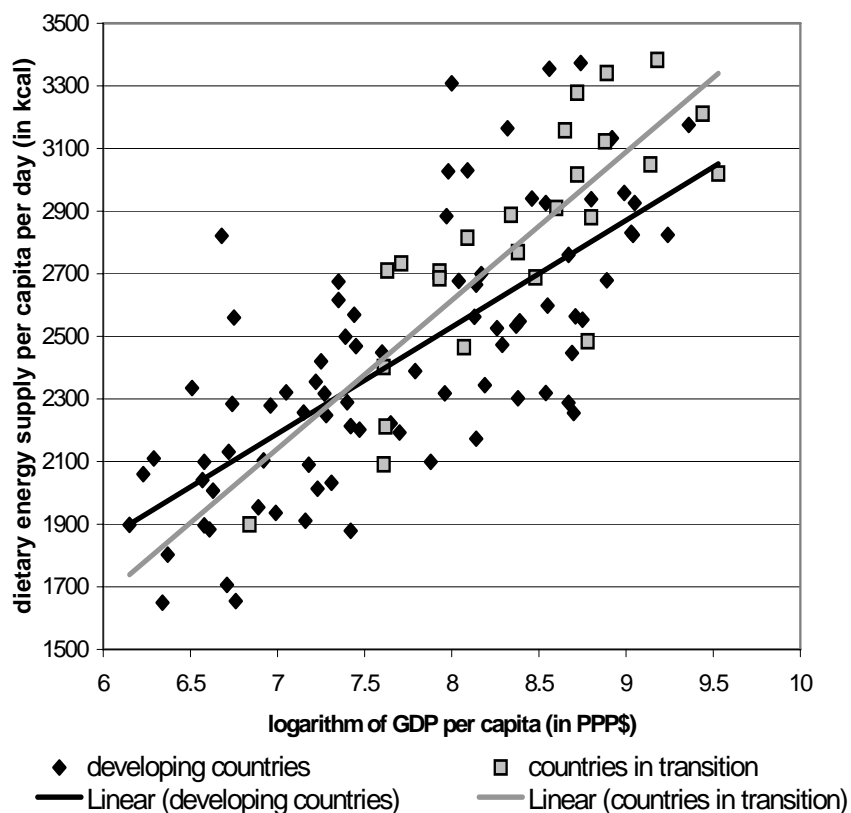
We conclude that other factors are responsible for the observed relative difference in DES. The fact that inequality in countries in transition still ranges below inequality in developing countries on the average might provide an explanation (see Wiesmann (2003) for an analysis of the sensitivity of DES to inequality), yet limited data availability is an impediment to testing this hypothesis empirically. Therefore, the next section continues with a consideration of the composition of food supply and the pattern of agricultural production.

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<sup>12</sup> As already mentioned, this finding was obtained by controlling for GDP per capita, which is necessary because the share of VAA in GDP tends to fall with GDP growth due to the structural change that takes place in the course of economic development.

<sup>13</sup> Moreover, the dummies for Central Europe and the European FSU retain their significance in the presence of the share of VAA. The insignificance of the share of VAA in a regression using the level of DES as a dependent variable is no contradiction to the findings of the previous section, where the development of the agricultural sector since 1990 was found to be an important determinant of the *trend* in DES.

**Figure 6**  
**Dietary energy supply plotted against the logarithm of GDP per capita**



Source: Author presentation based on data from World Bank (2000) and FAO (2002).

### ***The structure of agricultural production and food supply***

National food availability is based on domestic production and net imports (see Figure 1), with DES from different foodstuffs reflecting the balance of supply and demand. Starchy staples like cereals, roots and tubers are the most important component of people's diets in developing countries and transition countries (see Table 4). Thus, this group of foodstuffs is analysed first.

The domestic production of cereals per capita is significantly higher in transition countries (the dummy variable in a regression on GDP per capita indicates a relative surplus of 256 kg per capita per year) than in developing countries. Although some transition countries, like Hungary and Kazakhstan, were substantial net exporters of cereals already in the mid-

1990s,<sup>14</sup> calculating domestic supply per capita from production and net imports does not change the result for the dummy variable substantially: controlling for GDP per capita, the coefficient of the transition countries still indicates a relative surplus of 217 kg. To illustrate the actual food supply from cereals, Figure 7 shows the amount of DES gained from cereals plotted against GDP per capita for 83 developing countries and 25 countries in transition.

**Table 4**  
**Dietary composition in developing and transition countries (1997–1999)**

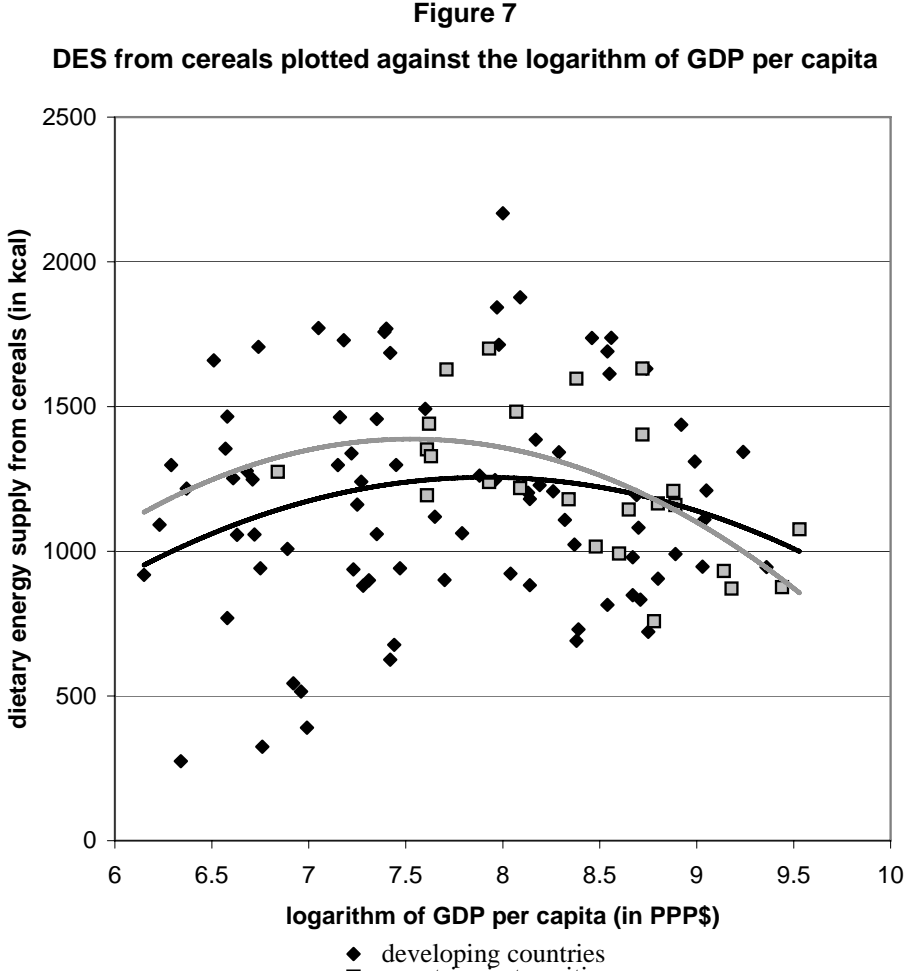
	Developing countries DES per capita per day		Transition countries DES per capita per day	
	(in kcal)	(in % of total)	(in kcal)	(in % of total)
<b>Vegetable products</b>	<b>2 339</b>	<b>87.4</b>	<b>2 218</b>	<b>76.9</b>
Cereals	1 475	55.1	1 226	42.5
Roots and tubers	151	5.6	188	6.5
Vegetable oil	198	7.4	224	7.8
Sugar	197	7.4	324	11.2
Alcoholic beverages	39	1.5	101	3.5
Fruit	68	2.5	50	1.7
Vegetables	59	2.2	62	2.2
Other vegetable products	152	5.7	43	1.5
<b>Animal products</b>	<b>338</b>	<b>12.6</b>	<b>665</b>	<b>23.1</b>
Meat and products	172	6.4	227	7.9
Milk and products	76	2.8	251	8.7
Animal fats	36	1.3	112	3.9
Eggs	26	1.0	38	1.3
Fish	22	0.8	25	0.9
Other animal products	7	0.3	11	0.4
<b>Total</b>	<b>2 677</b>	<b>100.0</b>	<b>2 882</b>	<b>100.0</b>

Source: Author's calculations based on data from FAO (2002).

Obviously, there is no linear relationship, but dietary energy supply from cereals tends to decline after an initial rise observed at low levels of economic development. Without trying to model precisely the varying elasticities of dietary energy supply from cereals at different income levels, inverted U-shaped functions were fitted into the scatterplot.<sup>15</sup> The dummy variable for countries in transition proved insignificant if added to a joint regression for transition and developing countries. Among the regional dummies for transition countries, the dummy for Central Asia showed weakly significant, indicating a higher dietary energy supply

<sup>14</sup> In the last three years cereal production in Russia and the Ukraine has also surpassed domestic demand. Together, Kazakhstan, Russia, and the Ukraine are expected to export in 2002/03 more cereals to the world market than the United States, approximately 23 million tonnes.

from cereals than the level of GDP per capita would allow one to expect (+284 kcal, p-value = 0.085). This corresponds to the fact that the estimated values of DES from cereals are higher for transition countries than for developing countries at lower income levels<sup>16</sup> (compare Figure 7).

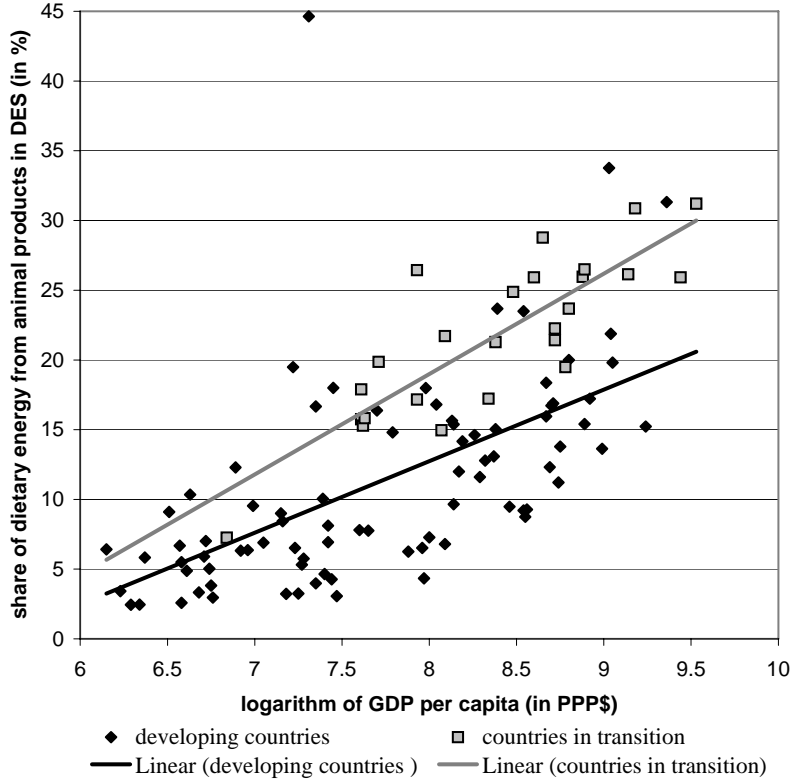


Source: Author presentation based on data from World Bank (2000) and FAO (2002).

In contrast to DES from cereals, there is a very marked difference in DES from animal products: the coefficients of the dummies in a log-linear regression amount to 218 kcal for all countries in transition (362, 205, 283, 152 and 53 kcal for Central Europe, the Balkans/southeastern Europe, the European FSU, Central Asia and the Caucasus (for which the coefficient is insignificant), respectively). This observation is directly related to the disparity between significantly higher cereal production in transition countries on the one hand and insignificant differences in food supply from cereals on the other: whereas 16 percent of domestic cereal supply is fed to animals in developing countries, this share amounts to 44 percent in transition countries.

To some extent, the absolute difference of 28.4 percentage points has to be accounted for by the higher economic development in transition countries (the share of feed in total cereal supply increases linearly with GDP per capita). However, controlling for the impact of GDP per capita, a significant difference of 13.4 percentage points still remains. Considering the large amount of cereals used for feed, the finding for DES from animal sources is not surprising. Figure 8 depicts the share of DES from animal sources plotted against the logarithm of GDP per capita, with estimated values from separate regressions for transition and developing countries (the outlier at the top of the graph is Mongolia, which is a particular case due to its pastoral agriculture). As this graph clearly shows, not only the absolute, but also the relative level of DES from animal products is high in countries in transition, even when controlling for differences in GDP per capita. These findings can be clearly traced back to policies pursued in the time of socialism: increasing the supply and consumption of meat and dairy products was an explicit target (Popkin *et al.*, 1997). High intake of animal products was believed to be indicative of the welfare of nations, and subsidies were an important instrument to promote it.

**Figure 8**  
**Share of DES from animal products plotted against GDP per capita**



Source: Author presentation based on data from World Bank (2000) and FAO (2002).

Although a considerable restructuring of production took place in the course of transition (as predicted by Sedik, Foster and Liefert, 1996), the change in food consumption patterns was rather sluggish.<sup>17</sup> In the case of Russia, livestock production declined more significantly than crop production, and in order to maintain relatively high levels of meat consumption, significant amounts of low-quality or subsidized meat (e.g. chicken legs from the United States or beef from the EU) had to be imported. The tradition of high meat and milk consumption is considered to have adverse health impacts, because animal products contain high shares of saturated fats that are known to be major risk factors for cardiovascular diseases (Popkin *et al.*, 1997). In fact, age-standardized death rates from cardiovascular diseases in the FSU are the highest in the world (even higher than in western industrialized countries), according to data from WHO (1999). Deficits in food security can be stated with respect to the composition of the diet, because according to the FAO definition of food security, not only should food be accessible and nutritious, the diet should also be healthy. In addition to an unfavourable diet, weaknesses in the health care system are likely to contribute to the high mortality rates from heart disease and other cardiovascular diseases.

## **Summary, conclusions and research agenda**

### ***Summary***

In this paper we argued that various legacies from the socialist system are decisive for today's economic and social environment in the transition countries in which food insecurity as a problem has arisen and needs to be tackled. In the second section (page 4) we provided a qualitative discussion of various types of such legacies. The discussion made a distinction between legacies that are specific to the agricultural and food sector and economy-wide legacies that are affecting the entire economic environment in the transition countries. Based on these observations we then discussed how the standard conceptual framework for the analysis of food security has to be adapted to take the specific characteristics of transition countries into account.

In the last section we started out with univariate analyses to identify the geographical pattern of food insecurity in the region. Using various indicators we showed that the conflict countries at the southern rim of the FSU region (Armenia, Azerbaijan, Tajikistan) are most affected by food insecurity. For other Central Asian and Caucasian countries as well as some Balkan countries (Albania, Bulgaria and Croatia) and Moldova, food insecurity is a concern for a sizeable share of the population as well. In contrast, the situation is quite favourable in all other countries in Central Europe. Hence, we concluded from the analysis that on the macro-level similar basic factors seem to determine food insecurity in transition countries and in developing countries. In order to identify the relevance of the legacies in shaping the social and economic environment which influences food insecurity, we employed multivariate analyses in the second part of the section. We used linear regression as the main tool for comparing food security indicators and their potential determinants between transition

countries and developing countries, including the legacies of the socialist era. We controlled for differences in levels of GDP per capita of the countries in this cross-country comparison. From this analysis we conclude that socialist legacies are likely to affect the social and economic environment that determines food insecurity. For instance, they have contributed to a disproportionate decrease in the agricultural sector in some countries in transition, and they still determine the pattern of food supply and consumption. However, micro-studies would be needed to identify more precisely which effects the legacies have on food security at the household level.

### ***Policy conclusions***

The next question that follows from our analysis is “What must be done to reduce the food insecurity that persists and is even increasing in some of the transition countries?” On the whole, the best policy for reducing food insecurity appears to be promoting rapid economic recovery from the recession of the early transition phase and ending war or civil unrest. Growth and ending war are not enough, however: the policy must be accompanied by the building up of more efficient and more market-oriented institutions and of sound social security systems based on efficiency and effectiveness. These seem to be necessary but not sufficient preconditions for the reduction of food insecurity. Targeted policies designed specifically to combat food insecurity of specific population groups must be employed wherever it has taken root during the process of transition. However, for the time being, budget constraints and poor public governance are factors that often prevent the development of such targeted policies.

### ***Research conclusions***

One of the most essential requirements for reducing food insecurity in the transition countries, however, is to reduce remaining knowledge gaps. In this context the following knowledge gaps seem to be the most relevant:

- *Data availability* generally is a problem. For instance, in order to better judge the impact of food security on child nutrition in Tajikistan, anthropometric data would be essential. However, food insecurity is a rather new phenomenon in that region and did not receive much attention in the past. The lack of relevant data seems to be higher the more severe is the situation of food insecurity (examples are Tajikistan and Moldova).
- *Analysis of legacies contributing to food insecurity*. It remains to be analysed by what mechanisms – and even more importantly, to what extent – legacies from the socialist period contribute to food (in-)security in the transition countries. A systematic and quantitative assessment of the legacies, particularly if they include micro-economic studies, would help to better understand the evolution of food insecurity in the countries under discussion.

- *Food insecurity in countries engaged in warfare and instability.* The effects of war and civil unrest in this region cannot be ignored. In fact, the countries in the region that are worst affected by undernourishment have experienced episodes of warfare and political instability since their independence (Armenia and Azerbaijan, Tajikistan). Additionally, poor public governance and underdeveloped public infrastructure (resulting in high vulnerability to natural disasters like drought) contribute to the high levels of food insecurity in places like Turkmenistan and Tajikistan. At the same time it is extremely difficult to obtain relevant information on who are the food insecure in these countries and how they can be reached while public governance structures are not functioning.
- *Analysis of forms of food insecurity.* Our analysis indicated that in many transition countries food insecurity is not so much a matter of dietary energy intake falling below minimum requirement levels. Food security in the Russian Federation, for instance, is more a matter of malnourishment if it is a concern at all. According to a study conducted in selected regions of Russia, only the poorest of the poor cannot meet their dietary energy requirements. However, micronutrient malnutrition and overnutrition are much more prevalent in Russia than is undernutrition (Sedik, Sotnikov and Wiesmann, 2002).
- *Identification and targeting of vulnerable groups.* Analyses of food insecurity at the household level are particularly scarce. Because of growing inequality some groups are likely to be much worse off than they were before.
- *Analyses of malnutrition among children.* In some countries of the FSU and a few in southeastern Europe child malnutrition is a critical issue. While causes and symptoms of child malnutrition in transition economies are relatively similar to those of many developing countries, the factors contributing to the levels of child malnutrition are less clear. For instance, on the one hand comparatively high levels of female education in the countries of the FSU have prevented more severe undernutrition of children during the toughest economic period. On the other hand, factors such as extremely adverse ecological conditions might be one major reason for child malnutrition in Uzbekistan.
- *The role of subsistence farming in reducing food security in transition countries.* While subsistence farming is often said to be a vicious cycle of the transition process, one of its most obvious benefits is its role as a buffer against food insecurity. In fact,

in those regions where poverty is likely to persist in the medium run, support for subsistence farming might have the potential to reduce food insecurity substantially.

## References

- Abele S. & Frohberg, K.** 2003. *Subsistence agriculture in Central and Eastern European countries: How to break the vicious cycle?* Kiel, Vauk Publishers (forthcoming).
- Brosig, S. & Hartmann, M., eds.** 2001. *Analysis of food consumption in CEEC: Relevance and empirical methods.* Kiel, Vauk Academic Publishers.
- Csaki, C. & Lerman, Z., eds.** 2000. *Structural change in the farming sectors in Central and Eastern Europe.* World Bank Technical Paper No. 465. Washington DC, World Bank.
- Csaki, C. & Tuck, L.** 2000. *Rural Development Strategy – Eastern Europe and Central Asia.* World Bank Technical Paper No. 484. Washington DC, World Bank.
- Elsner, K.** 1999. Nahrungsmittelkonsum und Ernährungslage in Russland. In ZEF (Center for Development Research), IFPRI (International Food Policy Research Institute) & Deutsche Welthungerhilfe, eds. *Jahrbuch Welternährung – Daten, Trends, Perspektiven.* Frankfurt a. M, Fischer Publishers.
- FAO.** 1999. *The state of food insecurity in the world.* Rome.
- FAO.** 2001. *The state of food insecurity in the world.* Rome.
- FAO.** 2002. *The state of food insecurity in the world.* Rome.
- FAO.** 2002. *The FAOSTAT database.* Rome (available at <http://apps.fao.org/cgi-bin/nph-db.pl>).
- GOSKOMSTAT.** 2001. *CIS trade statistics.* Moscow.
- Grings, M.** 2001. Structural changes in Eastern German food consumption: Quantitative analysis and conclusions for research on food consumption in transition countries. In S. Brosig & M. Hartmann, eds. *Analysis of food consumption in CEEC: Relevance and empirical methods.* Kiel, Vauk Academic Publishers.
- Hartell J. & Swinnen, J., eds.** 2000. *Agriculture and East-West integration.* Aldershot, Ashgate Publishers.
- Kaufmann, D., Kraay, A. & Zoido-Lobaton, P.** 2000. *Governance matters.* Policy Research Working Paper No. 2196. Washington DC, World Bank.
- Koester, U.** 1996. The legacy of dualism in agriculture of the FSU countries as an impediment to transformation. *Quarterly Journal of International Agriculture*, 35(3): 207–210.

- Liefert, W. & Swinnen, J.** 2002. *Changes in agricultural markets in transition economies*. USDA/ERS, Agricultural Economic Report No. AER806. Washington DC, United States Department of Agriculture (USDA).
- Lohlein, D., Juetting, J. & Wehrheim, P.** 2003. Rural Russia in transition: What determines access to health-care services? *Post Soviet Affairs*, 19 (1): 80-94.
- Melyukhina O., Qaim, M. & Wehrheim, P.** 1998. Regional protection rates for food commodities in Russia: Producer and consumer perspectives. *European Review of Agricultural Economics*, 25 (3): 395–411.
- Organisation for Economic Co-operation and Development (OECD).** 1998. *Russian Federation. Review of agricultural policies*. Paris, Centre for Cooperation with Non-Members.
- OECD.** 2000. *Agricultural policies in emerging and transition economies 2000*. Paris.
- Popkin, B. M., Zohoori, N., Kohlmeier, L., Baturin, A. K., Martinchik, A. & Deev, A.** 1997. Nutritional risk factors in the former Soviet Union. In Bobadilla, J.-L., Costello, C. & Mitchell, F., eds. *Premature death in the New Independent States*, pp. 314–334. Washington, DC, National Academy Press.
- Sedik, D., Foster, C., & Liefert, W.** 1996. Economic reforms and agriculture in the Russian Federation, 1992–95. *Communist Economies and Economic Transformation*, 8(2): 133–148.
- Sedik, D., Sotnikov, S. & Wiesmann, D.** 2002. *The state of food security and prospects for improvement in the Russian Federation*. Rome, FAO. (mimeo)
- Smith, L.C.** 1998. Can FAO's measure of chronic undernourishment be strengthened? *Food Policy* 23(5): 425–445.
- Smith, L.C. & Haddad, L.** 2000. *Explaining child malnutrition in developing countries: A cross-country analysis*. IFPRI Research Report No. 111. Washington DC, IFPRI.
- Swinnen, J.F.M.** 1996. Endogenous price and trade policy developments in Central European agriculture. *European Review of Agricultural Economics*, 23:133–160.
- tho Seeth, H., Chachnov, S., Surinov, A. & von Braun, J.** 1997. Russian poverty. *World Development*, 26(9): 1611–23.
- UNICEF.** 1990. *Strategy for improved nutrition of children and women in developing countries*. New York.
- von Braun, J., Qaim, M. & tho Seeth, H.** 2000. Poverty, subsistence production, and consumption of food in Russia: Policy implications. In Wehrheim, P., Frohberg, K., Serova, E. & von Braun, J., eds. *Russia's agro-food sector: Towards truly functioning markets*, pp. 301–21. Boston/Dordrecht/London, Kluwer Academic Publishers.
- Wehrheim, P. & Wiesmann, D.** 2003. *Are legacies of the socialist period affecting food security in transition countries?* ZEF-Discussion Papers on Development Policy No. 61. Germany, University of Bonn (available at [www.zef.de](http://www.zef.de)).

- WHO.** 1999. *World health statistics annual*. Geneva (available at [www.who.int/whosis](http://www.who.int/whosis)).
- WHO.** 2002. *WHO global database on child growth and malnutrition*. Geneva (available at <http://www.who.int/nutgrowthdb/>).
- Wiebelt, M., Herrmann, R., Schenk, P. & Thiele, R.** 1992. *Discrimination against agriculture in developing countries?* Tübingen, Kiel studies (Horst Siebert, ed.).
- Wiesmann, D., von Braun, J. & Feldbrügge, T.** 2000. *An international nutrition index – Successes and failures in addressing hunger and malnutrition*. ZEF Discussion Paper on Development Policy No. 26. Bonn, Centre for Development Research.
- Wiesmann, D.** 2003. *An international nutrition index: Concept and analyses at country levels*. Frankfurt a. M., Peter Lang (forthcoming).
- World Bank.** 2000. *Making transition work for everyone. Poverty and inequality in Europe and Central Asia*. Washington DC.