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## Earnings Disparities and Income Inequality in CEE Countries: An Analysis of Development and Relationships

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# Earnings disparities and income inequality in CEE countries: an analysis of development and relationships

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## Abstract

*The potential in survey data for the study of simultaneous changes in earnings disparities, inequality of household income, and the connections between them has thus far been underexploited. This paper presents various data on four Central and East European (CEE) countries and, for the sake of comparison, partially on Austria and Germany. It uses data from multiple sources. Microdata come from the Luxembourg Income Study (LIS), an excellent source of secondary cross-national survey data on households and from the Statistics on Income and Living Conditions (EU-SILC) surveys. First, I compare the changes in both distributions over time since the communist period as reported in various sources and ask: how much did disparities and inequalities increase during the transition? Second, I present some methodological and empirical attempts that have been made so far to analyse the connections between the two distributions and ask: how should the association between personal and household earnings be analysed and what do we know about its development? Third, I present the changing links between earned and disposable income in CEE countries using LIS data for history and EU-SILC data for the present time. Here the question is: how strong was and currently is the association in CEE countries and how do they differ in packaging family income? Two perspectives are used: employed persons (examining the association between their earnings and the income of the households they live in) and employee households (examining the sources of their income by decomposing their inequality). Various sources confirm that earnings disparities and income inequalities rose more or less in all four CEE countries after 1989. This is apparent in the individual countries in various phases of their transition. In contrast, no increase occurred from 2004 to 2007, according to the EU-SILC surveys.*

**Keywords:** earnings disparities, income inequality, CEE countries.
**JEL Classification:** I31, J31, P36.

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There are numerous economic and socio-political studies on the changes in income inequality that occurred during the transition. In the relevant literature, there seems to be a gulf between the analysis of personal earnings and household income. The usual topic in labour economics is the distribution of personal earnings and its determining factors, particularly education. Sociological or social-policy research focuses mainly on income inequality among households and the factors behind poverty and ways of reducing it. Rare are the studies which survey both distributions side by side and analyse the relationship between the two. As an OECD report states, "analyses of earnings and income distribution typically develop along parallel tracks, using different methodologies to address different questions" (OECD 2008, p. 92).

Unlike this division in the field of economics and social-policy analysis, in the real world, the choices, decisions and strategies connected to earnings activities of individuals and the overall household economy naturally occur within a single unit – the family or household. A family's living standard depends on many circumstances and decisions: from the educational and occupational paths that individuals select, to the formation of couples by selective mating, to the decisions – under constraints – that a husband and wife make to shape and balance their careers, the timing and number of children they have, and how they balance work and family commitments. Opportunities in the labour market are of utmost importance, as is the issue of how adult family members take advantage of these opportunities in terms of contracts, hours and wages. Last but not least, the tax and social benefit policies of the state also considerably affect the disposable income of families.

The separation of the two fields is linked not just to the specific approaches used and questions raised in each field, but also to their sources of data, which in the past were different – wage surveys versus household income surveys. In recent decades, however, this has only partly been true. While wage surveys conducted among companies continue, income surveys among households also often contain personal data, which allow a comparison of the personal and the household perspectives. For cross-national comparison, the two perspectives can be confronted over several decades using the *Luxembourg Income Study (LIS)* data archive. Since 2005, personal and household files are both included in the *Statistics on Income and Living Conditions (EU-SILC)* surveys, which are applied uniformly in all member states (and some others) under the direction of Eurostat, which also produces comparative datasets.

So far, the potential these surveys offer to explore connections between these two distributions has been little used for this purpose, or, to be more precise, analyses have been carried out on one side only, by decomposing household income by its sources. Nevertheless, more attention to this task should be devoted. Recently, the OECD (2008) embarked on important work in this direction and continues to pursue it, as it was announced by the Working Party on Social Policy (OECD 2009). Also our project "Individuals and Households in the Czech Republic: Transformation Changes and a Cross-national Comparison", launched in 2008, aims to explore the connections between distributions of earnings and household income (Večerník 2009). In connection to this project, the present paper provides information, both secondary and primary, on the distributions of earnings and household income in four Central and East European (CEE) countries and, for the sake of comparison, in Austria and Germany.

The paper is organised as follows. First, I compare the changes in both distributions over time since the communist period and as reported in various sources, while posing the following

question: how much did the disparities and inequalities increase during the transition? Second, I present some of the methodological and empirical attempts made so far to analyse the connections between the two distributions, posing the question: how might the association between personal and household earnings be analysed and what do we know about its development? Third, I present the changing links between earned and disposable income in CEE countries using LIS data for the past and EU-SILC data for the present time. Here the question is: how strong was and currently is the above-mentioned association in CEE countries and how do they differ in packaging family income? Two perspectives (observation units) are used: employed persons (looking at the association of their earnings with the income of the households they live in) and employee households (looking at the sources of their income by decomposing their inequality). In (preliminary) conclusion, various aspects of comparison of and with CEE countries are discussed.

**1. The communist period and the early transition: separate and disparate observations**

The availability of income data for the communist period and early 1990s is limited. This is not so much due to the fact that they were not collected but rather to the fact that they were not made available for research and thus were not processed or even not publicised owing to restrictions at the time they were collected. Data from wage and income surveys were not available as datasets but at most just in the form of tables produced by statistical offices. Nevertheless, there was a substantial amount of data on income and the data were of good quality, something that surprised even the authors of the most outstanding oeuvre about income inequality under the communist regime: "The surveys of eastern Europe typically have had larger samples, have had higher response rate (except for Poland), have been able to substantiate earnings data from employers, have considered deviations of survey results from macro aggregates, and have set out to collect information on annual income" (Atkinson and Micklewright 1992, pp. 74-75).

Taking just the example of the former Czechoslovakia, regular income surveys among households (Microcensuses) were carried out by the Statistical Office on two percent representative samples of households since 1958. However, their results were presented exclusively in tables uniformly organised according to bands of income per capita set in absolute terms. The table templates remained basically the same for three decades (and most of them are still the same even now), while only income bands shifted slightly over time. Data on persons were used only for household income aggregates, though the quality of the data was high and comparable to wage survey data, because information on the wages of employees was provided by employers' personnel records and data on pension benefits by the post offices that delivered them. No additional analyses of income surveys were ever made, and after pre-designed simple tables were produced the data (punched cards, later magnetic tapes) were no longer stored.

CEE national data have been compiled and comparatively analysed only several times since 1990. First and foremost, there is the seminal work by Tony Atkinson and John Micklewright (1992). Using secondary tables produced by national statistical offices, the authors sourced the best possible secondary data on earnings and household income. In their presentation, they covered the period 1958-1988 in the former Czechoslovakia, 1970-1988 in Hungary and 1970-1989 in Poland. All data were presented in full in the Statistical Appendix of their book. Besides their meticulous presentation of rough data, the authors were very attentive about explaining the value of income data for the standard of living.

National surveys of CEE countries collected after 1990 are stored in the LIS database. The surveys have already been analysed in many LIS working papers and articles or book chapters. Currently, the database contains several waves of the survey for the Czech Republic (1992, 1996 and 2002), Hungary (1991, 1994 and 1999), Poland (1986, 1992, 1995, 1999 and 2004) and Slovakia (1992 and 1996 – but only the household file in the latter case). Unfortunately, Czech and Slovak data from the large Microcensus 1988 could not be stored in the LIS database, because, while the database requires complete personal and household datasets, the Czechoslovak Statistical Office stored in full only the household file of the survey, and not the file which includes all persons. The dataset of persons was reduced to "full-time" employees and pensioners, i.e. whose status does not change throughout the entire year under observation.

A modest effort to collect evidence on early changes in earnings and income distribution was also made in the project *Social Consequences of Transition (SOCO)*, initiated and headed by the Institute for Human Studies in Vienna. Comparative tables involving four CEE countries and covering the period 1989-1992 were produced by national experts using official statistical data. They showed quite different situations in CEE countries. While in both parts of the former Czechoslovakia the two distributions were quite similar, disparities in earnings were bigger than household income inequality in Hungary and the opposite was true in Poland. Regarding change in the early period of the transition, the most important increases occurred in earnings in Poland and in family income in Hungary. While Czech data showed a considerable and uniform rise in both distributions, no change was reported from Slovakia (Table 1)

Table 1 about here

The first comprehensive comparison of pre-transition (1987-1988) and post-transition (1993-1995) inequality in household income was made by Branko Milanovic (1998) for 18 post-communist states, including also the Czech Republic, Hungary, Poland and Slovakia. Using mostly household budget surveys, he found a significant increase of inequality in three of those CEE countries, the exception being Slovakia. The largest increase was found in the Czech Republic. Since statistical data for the second period were not available for the Czech Republic, the figure of a smaller survey on *Economic Expectations an Attitudes* was applied. Microcensus 1996, available later, witnessed that the figure was correct (0.27 reported by Milanovic against 0.26 in Microcensus).

In contrast, using the LIS database, Jens Hölscher (2006) stated that in the Czech Republic, Hungary, and Poland income distribution remained relatively stable before and throughout the transition period. The reason of divergence in findings might be that unlike other authors, Hölscher applied the concept of unadjusted household income. As I have shown on the Czech case, a trade-off occurred in early transition between the effect of the number of economically active person in household and disparities in personal earnings which resulted into lower increase in inequality in total disposable income than in inequality after income adjustment (Večerník 2001 and 2009).

*LIS Inequality and Poverty Key Figures* provided by LIS staff report a considerable increase in income inequality in the Czech Republic and Slovakia, which is consistent with other sources of data that used the same large household income surveys. Data on Hungary 1991-1999 suggest decreasing inequality, while, by contrast, data on Poland indicate rising inequality, with a Gini

coefficient of 0.32 in 1995, and, after dropping slightly after that, reaching that level again in 2004; this is the highest Gini coefficient among all the CEE countries. Parallel data on disparities in earnings are not published by the LIS, but we can compute them using this database.

The most comprehensive and remarkably detailed figures on disparities in earnings in 20 OECD countries – including the Czech Republic, Hungary and Poland – were collected by Tony Atkinson (2008). In describing disparities, he applied quantile characteristics, which allowed him to interpolate wherever only rough data on income bands were available. Regarding the three CEE countries, he concluded that "... all showed a move towards increased earnings dispersion with the transition to a market economy, but there are differences, dispersion being less, and more stable, in the Czech Republic than in Hungary and Poland" (p. 52). The decile ratio he reported from OECD data increased between 1989 and the early 2000s from 2.4 to 3.0 in the Czech Republic, from 3.0 to 4.9 in Hungary, and from 2.4 to 4.0 in Poland.

Long-term, regularly updated time series are provided by the *TransMONEE Database* compiled by the UNICEF Innocenti Research Centre in Florence using reporters from individual countries. It captures a vast range of data relevant to the social and economic situation and well-being of children in the countries of Central and Eastern Europe and the former USSR. It also contains indicators of inequality in earnings (monthly wages of full-time employees as reported by employers) and income (per capita household income, mostly originated from family expenditures surveys). Unfortunately, the time series on earnings is complete only for the Czech Republic, while it is partial for Hungary and Poland, and almost missing entirely for Slovakia (Graphs 1 and 2).

Graphs 1 and 2 about here

Regarding comparative levels of disparities in earnings, the TransMONEE data correspond roughly to what Eurostat reported in its *Structure of Earnings Survey 2002*, which collected data on gross earnings and earnings disparities in the "Industry and Services" sector (Eurostat 2006). The decile ratio, which was only published in Eurostat's tables, was 3.0 for the Czech Republic, 4.2 for Hungary, 4.5 for Poland, and 3.4 for Slovakia, and 3.3 for Austria and 3.6 for Germany. An additional contribution of the survey is its PPS adjustment, which makes clear that, for instance, the purchasing power on the D9 earnings level in the Czech Republic is only slightly above the D1 earnings level in Luxembourg.

The TransMONEE database, in its per capita income section (probably mostly based on family budget data), was challenged by Pradeep Mitra and Ruslan Yemtsov (2005). Against these data, which they called "official" and suspected of suffering from inconsistency and cross-national incomparability, the authors constructed the indicator of "consistent per capita consumption". However, of CEE countries only Hungary and Poland are included among the many countries dealt with by the authors. In both countries, economic inequality was computed to be lower than what was found in the "official" database, but the increase from the early 1990s to 2002 was about the same in Poland and was slightly less significant in Hungary. As I have pointed out elsewhere, Czech data on household income in the TransMONEE database differ from data provided by representative income surveys. Instead of ups and downs, income surveys show a fast increase in earnings inequality in the early 1990s and considerable stability since then (Večerník 2009, chpt. 5).

A consistent time series on CEE and Baltic countries, based on *World Bank data*, was presented by Salman Zaidi (2009). The Czech Republic, Hungary and Poland (data for Slovakia were presented just for the year 2006, probably owing to the questionable reliability of earlier figures) witnessed an increase in inequality of per capita household income between 1987-1990 and 2006, as measured by Gini coefficient: the highest was in Hungary (occurring mostly in the period between 1996-1999 and 2006), the Czech Republic was in the middle (located mostly to the period between 1987-1990 and 1993-1994), and the lowest was in Poland, where, however, the original inequality was the highest.

Finally, the *Statistics on Income and Living Conditions (EU-SILC)*, which cover all EU countries, have been available since 2005, with the first record on incomes being for 2004. The cross-national datasets are produced by Eurostat from national surveys conducted by using uniform questionnaires. The datasets are collected from a rotating panel sample, in which each household is surveyed for four consecutive years. Several comparative computations have already been made using these datasets, most of them returning consistent if not strictly identical results (OECD 2008, TÁRKI 2009, Eurostat 2009, Večerník 2009, Comparative Annex).

Table 2 about here

The pictures provided by various sources of data are presented in a snapshot in Table 2. It is evident that the data collected from various sources do differ, but mostly to just a negligible degree. The only questionable parts are the jumps up or down, because it is hard to find any reason for them in the economic context or social-policy measures. But these relate almost exclusively to the TransMONEE database. In sum, it is difficult to formulate unambiguous conclusions, other than to say that both kinds of distributions were moving towards greater inequality, at least up until a certain moment which differs in individual countries. The observation of the increase in inequality is accepted by most authors regarding development in the first half of the 1990s. Some disagreement exists over developments in the later phase, as to whether inequality increased further, remained stable, or decreased.

In their analysis of household panel survey data from 26 post-communist countries covering the entire 1990-2005 period, Branko Milanovic and Lire Ersado (2008) spoke of unprecedented increases in inequality in most transition economies up to about 1995-1997, and stabilization and even of slight subsequent decreases in inequality. Here they distinguished various components of transformation finding for instance that while economic growth is pro-rich, political democratization is pro-poor. Michele Giammatteo (2006, p. 1) stated that many of the studies covering the 1990s concluded that increasing income inequality during the first half of the 1990s was followed by a continuous reduction until the end of the decade so that "... around 2000 income differences were lower than the five previous years but still higher than 1990".

The evidence we collected does not indicate any decrease until the mid-2000s. Only EU-SILC surveys, which were launched in 2005, signal a possible decrease in income inequality in CEE countries, which appears quite significant in Poland. In contrast to expectations of a decrease in income inequality, Pradeep Mitra and Ruslan Yemtsov (2005) argue that rising inequality is also possible in transitional countries, depending both on transition-related factors (the evolution of the education premium, the bias in the investment climate against new private sector firms, which

are important vehicles of job creation, and regional impediments to mobility of goods and labour) and, increasingly, general technological change and globalisation.

The other message of Table 2 is that developments in inequality in earnings and household income are mostly parallel. This corresponds to what Tony Atkinson (2000) called the "Transatlantic Consensus" about rising wage inequality as being the source of rising income inequality. This link between the two is determined by the higher wage dispersion that the higher demand for skilled workers causes, and that in turn leads to the better remuneration of workers.

To say more about the link between earnings and family income requires the use of consistent data sources that include both personal and household files and make it possible to examine the association from various perspectives. There are two sources that meet these requirements: the *Luxembourg Income Study (LIS)* database of income surveys, and national surveys that are standardized and conducted under the umbrella of the *Statistics on Income and Living Conditions (EU-SILC)*. Both sources are used in the third part of this paper, the first for "historical" comparison, and the second for researching the recent state. But first we should devote some attention to what can be found in literature on the topic.

## 2. The links between personal and household income: important research efforts

As documented above, the difficulties involved in working with data on earnings and household income start with very production of a simple time series of earnings distribution. Different sources are not always consistent and the results often vary. Moreover, when trying to proceed cross-nationally, we need a comparable adjustment. The study of the intermediate structures between personal earnings and household income is a complex matter that can be tackled by various methods.

The problems of the transition from personal earnings to household income are well summarized by Peter Gottschalk and Tim Smeeding: "The expansion from individual earning to household disposable income ... raises a whole host of analytical as well as measurement issues. Economic and demographic decisions within the household are endogenous and so complex that empirical research is far from being able to sort out the linkages ... The problem of endogeneity is further aggravated by the expansion to international context. Social and political institutions that may affect how other household members and government taxes and transfers respond to changes in market conditions differ considerably across countries (Gottschalk and Smeeding, 1997, p. 635).

There are evidently several intermediate structures between the two distributions: the earnings of the main breadwinner are not the only source of household market income, as there are often also the spouse's earnings and other incomes from self-employment, business and property. Importantly, the state interferes by imposing taxes and providing social benefits and does so unevenly according to household composition and income level. While earnings are most commonly surveyed among employees, employee households are the prevailing, but not the only type of households. Intermediary structures are of course more or less interlinked and related to the life cycle of the family.

While there are only a few problems involved in defining earnings, it is difficult to capture all the diversity that we face when looking for the "appropriate" definition of disposable income or, better put, a household's well-being. Family income has to be adjusted by household size and

composition – a task that can never be solved satisfactorily with one across-time and cross-nationally universal indicator. The various constituents of adjustment usually include the degree of economic activity of adult members of the household, the number and age of children, but theoretically they should also include variations in the costs of living by type of housing, type of locality and regional specificities.

As mentioned above, most of the literature in the broad field of economic inequality falls into one of two separate streams and so focuses either on earnings disparities or on inequality of household income. Sometimes, however, both distributions are surveyed in parallel or even compared.

Tony Atkinson and John Micklewright (1992) collected information about both kinds of distribution in their study on transition countries under the communist regime and in the early transition. They could not study their link any more closely because they had nothing else but statistical tables at their disposal for their analysis of income inequality. Again, John Micklewright and John Flemming paralleled earnings and household income in the chapter on income distribution during the transition in their *Handbook of Income Distribution* (Atkinson and Bourguignon, 2000). The two fields were approached separately in this handbook, as they were, again, in the *Oxford Handbook on Economic Inequality* (Salverda, Nolan and Smeeding 2009).

In their study of inequality in earnings and family income in the United States, Peter Gottschalk and Sheldon Danziger discovered a similarity in the timing of changes in earnings and income on four distinct distributions: the distribution of hourly wage rates, the distribution of annual earnings of individuals, the distribution of annual earnings of families, and the distribution of total family income adjusted for family size. They found that during the period of 1975-2002, "male wage inequality and inequality of family income closely mirror each other" (Gottschalk and Danziger 2005, p. 253).

In the effort to inspect the sources of income inequality, decomposition analysis was applied to household datasets containing information about the economic status and incomes of adult family members and to other income sources. This method, which was introduced by Lerman and Yitzhaki (1985) and Stark, Taylor and Yitzhaki (1986), makes it possible to determine the impact of a particular income source on total net income inequality as represented, most often, by the Gini coefficient. This method has been applied in many analyses, and has even been used several times on individual CEE countries or selected groups of them. The main problem that decomposition analysis has been used to address is the degree to which the redistribution system counteracts the effect of increasing disparities of income from labour.

Pradeep Mitra and Ruslan Yemtsov (2005) applied decomposition analysis to examine changes in income inequality in Hungary, Poland and countries of the former Soviet Union both by income source and socio-economic group (regions and educational categories). They found that the increase in inequality differed substantially across countries, with the size and speed of its evolution depending on the relative importance of changes in wage distribution, employment, entrepreneurial incomes and social benefits. While in Poland the increase in inequality has been steady but gradual and reflects larger changes in employment and compensation benefits, there was an explosive rise in inequality in Russia, which peaked in the mid-1990s before attenuating as wage arrears were extinguished during its post-1998 recovery.

The decomposition method was also used by Alina Jedrzejczak (2008), who found that the main sources of disposable income inequality in Poland are disparities in earnings, while pension and social benefits are negatively correlated with it. Maria Piotrowska (2009) analysed LIS data for the Czech Republic, Hungary and Poland. Like others, she found that increased wage differentials are an important determinant of increasing inequality and that incomes from self-employment and entrepreneurial activity in the private sector have introduced more inequality. Capital incomes have contributed substantially to the growth in inequality, while farmer incomes and pensions have only weak effect.

Paul Kattuman and Gerry Redmond (1997) used family budgets data to examine changes in household income inequality in Hungary from 1987 to 1993. They found that public policy inhibited the increase in inequality in the first period, but this was followed by a sharp increase later. Later they updated the findings and compared them with the UK (Redmond and Kattuman, 2001). While households with and without employed members were considerably polarised in the UK in the mid-1990s, this was less of a feature in Hungary, in spite of the massive withdrawal of men and women from the labour market between 1987 and 1995. Rather, a narrowing of the gender pay gap and a continuously high level of female employment made the distribution of household earnings and disposable income more equal in Hungary than in the UK.

Thesia I. Garner and Katherine Terrell (1998) used family budgets data for the Czech Republic and Slovakia from 1989 to 1993. They stated that disposable income inequality increased very little in both countries. Using a decomposition analysis of changes in the channels of redistribution they found that the sizeable increase in household earnings was mitigated by changes in the tax and transfer components in both republics. In a later paper (Garner and Terrell 2001), which focused just on Slovakia, they found that the increase in the inequality of labour income drove the large increase in inequality in 1988-1996. Changes in the distribution of pensions and other social payments mitigated the rise in earnings inequality, with the latter playing more of a role in reducing changes in overall income inequality over time.

Using also family budgets data, Branko Milanovic (1999) analysed different factors of the change in household income inequality such as wages, pension and family social transfer income in the period between 1987-1989 and 1995-1996 in six transition countries, among them Hungary and Poland from CEE countries. He identified disparities in earnings (measured in total for all household members) as the main factor of rising income inequality: the increasing wage concentration was responsible for 5.5 Gini points increase in Hungary and for 7.9 Gini points increase in Poland (Milanovic 1999, p. 319).

Michele Giammatteo (2006) examined inequality patterns in the 1990s in Poland, Russia and Hungary using the LIS database. He applied three different definitions of income (market, gross and disposable) and analysed the contributions to inequality of their sources and then the main factor components using the decomposition method. The inequality-decreasing effect of tax and transfers proved to be widely robust with respect to the inequality measure adopted, continuously increasing during the 1990s, and more vigorous in Poland and Hungary, i.e. for countries with relatively low market inequality.

As mentioned above, an OECD project launched in 2008 marked a crucial step in bridging the

two distributions. The transmission of inequalities from individual earnings to household earnings and the transmission of inequalities from household earnings to disposable household income were examined in a study edited by Michael Förster and Marco Mira d'Ercole (OECD 2008). The project aims to decompose inequality of household income by four underlying income sources: 1. labour earnings; 2. other income such as investment and private pensions; 3. government cash benefits; and 4. personal income taxes. This approach make it possible to determine the extent to which income components, particularly labour earnings and government transfers, contribute to rising income inequality (OECD 2009).

**3. Transitional changes and the current state: the LIS and the EU-SILC evidence**

Here we use two sources of data to observe the links between personal and household income. The first, for historical comparison, is the LIS database. *LIS database* stores national files of various surveys which are standardized by a considerable effort developed by the LIS staff. The second, to complete the time series and provide a more detailed cross-sectional analysis, is the *Statistics on Income and Living Conditions (EU-SILC)*, which, unlike the LIS database, is a uniformly designed survey from start to finish and the same questionnaires are applied across the countries involved. While LIS-based analyses begin in the early 1990s for the transition countries, the EU-SILC starts with information on income from 2004 (survey of 2005) and ends, so far, with information on income in 2007 (survey of 2008).

Both databases make it possible to look at the association between earnings and income from the two – personal and household – perspectives. For the sake of better comparability, our analysis is limited to employees and omits the self-employed and farmers. The problem with the latter two categories is that they do not report on earned income consistently across time and countries. The calculation of disposable household income may also be biased in their case. Limited to employees, personal earnings is the gross wage from dependent employment. Household income is observed in three concepts: total disposable income of the household, income per capita, and income adjusted to EU equivalent unit.

By applying the perspective of persons, we ask how well how well people with different earnings levels make do after all intermediate processes that affect households are taken into account. This means after deducting taxes, adding other adult members' earnings and social benefits, and then after spreading all the disposable income among household members, whether equally (per person) or with respect to different needs levels.

Table 3 about here

In Table 3, the pre-1989 situation is presented just for the Czech Republic and Poland. A specific feature of that situation is the low correlation between personal earnings and household income. In the Czech Republic, the strong wage equalization meant that it was not the individual earnings of an economically active person but rather the number of employed persons in the household that was important for determining the amount of disposable family income. In the transition, the situation changed quickly, and the early 1990s already saw a tremendous (in the Czech Republic) or substantial (in Poland) increase in this correlation, as disparities in earnings grew and family social benefits were reduced. The same scheme and process in principle also applied to Slovakia, for which 1988 data are missing.

While 1986 and 1992 (not involved in the table) figures on Poland suggest that the situation there was quite similar to that in the former Czechoslovakia, the situation in Hungary was quite different. In this country, the association between personal earnings and family income was much stronger as a result of the larger disparities in earnings and the weaker effect of transfer income. After 1990 the situation has changed considerably in all CEE countries. While the correlation between personal and household income strengthened in the Czech Republic in the early 1990s and then in Poland in the late 1990s, it weakened in Hungary in the 2000s and remained stable in Slovakia. In any case, the differences between CEE countries are smaller in the end of the period under observation than they were at the beginning of the transition.

The household perspective, unlike that of individual persons, which is rarely applied, is frequently employed in decomposition analyses, some of which we mentioned in the preceding section of this paper. Before using this perspective for comparative data, it is necessary to inquire into simple correlations between household income, on the one hand, and household size and composition on the other.

I have always stressed when writing about the Czech system (Večerník 2001 and 2009) that, under the communist system, demographic factors (the number of active earners and children in the household, the life-cycle phase of the household) outweighed socioeconomic factors (education, sector of employment, occupation). In other words, the "need principle", which refers to the reproduction of the labour force, prevailed over the "market principle", which can be viewed as an assertion of the association between a person's performance, including invested skills and risk taking, and earnings. Although the communist regime ostensibly challenged income equalization and accused of undermining work incentives, it resisted all attempts at economic reforms aimed de-equalizing wages.

Table 4 about here

By applying the perspective of households, we ask how much the household disposable income is dependent on family size and composition, and on individual income sources. First we observe the sole effect of the number of economically active members and dependent children. Again, the data on pre-1989 situation refer only to the Czech Republic and Poland (Table 4).

Except Hungary, the data indicate a weakening, but still very significant association between income and the size of a household. The dependence of household income on the number of active earners has decreased considerably in the first phase of the transition in the Czech Republic and Poland, somewhat less in Hungary until 2004 and later also in Slovakia. The cross-sectional comparison with Austria and Germany based on EU-SILC surveys for 2007 reveals that the number of active earners in still more important for household income in post-communist countries (except Poland), and that the number of children has a bigger redistributive effect on per capita income in the Czech Republic and Hungary than in other two CEE countries, Austria and Germany.

EU-SILC surveys enable a good comparison of the current situation in individual countries. In Tables 5-8, I present a cross-sectional comparison of countries using the most recent EU-SILC data for 2008, which contains information on individual sources of yearly income in 2007. For the sake of brevity, I call the four CEE post-communist countries "CEE countries" and Austria

and Germany are called “Western countries”. The structure of household income is compared first, inequality in individual income sources is compared second, and the decomposition of inequality is provided third. Lastly, I observe the correlations between earnings with household income using three income concepts. In all these observations, the comparison only rarely shows any systemic differences between the two groups of countries.

Tables 5-8 about here

In the structure of income (Table 5), earned income is obviously the prevailing source of household income everywhere. The earnings of household members other than the main couple are more important in CEE than in Western countries owing to the higher number of multi-generational families. Rather unexpected differences are found in the area of social transfer income, the share of which is lowest in the Czech Republic and Slovakia and highest in Austria and Hungary. There is only one systemic difference relating to income tax and insurance payments (unfortunately not separable in the EU-SILC data), which are lower in CEE countries than in Western countries. However, the level of taxation differs in CEE countries, ranging from 17% of gross household income in Slovakian employee households to 27% in Hungarian employee households.

Regarding the inequality of individual income sources (Table 6), there are no systemic differences between CEE and Western countries. Earned income is the most differentiated in Hungary and Germany, but when employee households alone are taken into account, the highest wage inequality is in Hungary and Poland. Transfer income is more differentiated in Western countries than in CEE countries, except Poland. The biggest differences between countries are in taxes and social insurance contributions, and there are two CEE countries that figure at the two extremes of the disparity pole: Poland has the smallest disparities (close to Austria) and Hungary the largest. Ultimately, however, when all households are considered, the reduction of inequality in earned income by every channel of redistribution is strongest in Hungary and weakest in Poland, while the Czech Republic, Slovakia and Western countries figure somewhere in between. When only employee households are taken into account, there is a wider variety of situations, ranging from Hungary with the biggest reduction of inequality by means of transfers and taxes and Germany with the smallest reduction.

There are no systemic differences either connected with the effect of individual income sources on inequality of disposable income (Table 7). For the most part the differences between CEE and Western countries are not big, but sometimes it is possible to identify a special “country-specific” feature, such as the effect of earnings of household members other than the main couple in Slovakia, the effect of pension benefits in employee households in Hungary, or the high effect of the household head’s salary on total disposable income in Germany. As for the redistribution effect of social transfers and taxation, it is significantly higher in Western than in CEE countries, with the exception of Hungary, which conforms to the “Western” pattern.

Focusing just on earned income, we again see this lack of systemic differences in the correlations between individual earnings and household income which is this time adjusted also to per capita and per EU equivalent unit (Table 8). While the adjustment of income per capita slightly enlarges the differences between countries, the adjustment per equivalent unit (EU measure) reduces them slightly. The picture varies depending on the given income concept and the selection of

households. Only two consistent cases can be found throughout: Austria which conforms to a "paternalistic" model, where the head of household is the most important for family income, and Slovakia which corresponds to a "multigenerational" model where the earnings of other household members are as important as the earnings of the household head's spouse.

## 4. Concluding discussion

In this paper I examined the available information – both secondary and primary – on changes in the distributions of earnings and household income since the end of the communist period and up until 2007. A Gini coefficient was used to provide a picture of the change. Various sources confirm that earnings disparities and income inequalities rose more or less in all four CEE countries after 1989. This is apparent in the individual countries in various phases of their transition. In contrast and somewhat surprisingly, no increase of income inequality occurred from 2004 to 2007, according to the EU-SILC surveys.

Increasing income inequality is naturally not a feature specific to transition countries, but is a general occurrence documented to varying degrees and at different periods in most of OECD countries (Atkinson 2008, OECD 2008). Nevertheless, in the two "Western" countries taken as benchmark countries here, the increase was very small or none.

For Austria, Tony Atkinson (2008, p. 141) reported on social security data showing a nearly stable Gini from 1981 to 2003 at a level of 0.31. Gudrun Biffl (2007) documented increasing inequality in equivalent income per individual, with the Gini rising from 0.24 in the mid-1980s to just 0.26 in the mid-2000s. In Germany, the development differed in the two parts of the country. Using the *German Socio-Economic Panel (GSOEP)*, Tilman Brück and Heiko Peters (2009) compared total gross income per individual in East and West Germany between 1992 and 2007 and found rising inequality in the East (Gini from 0.27 to 0.30) against stable inequality in the West (Gini 0.37). *The LIS Inequality and Poverty Key Figures* reported a Gini of equivalent income rising from 0.26 in 1989 to 0.28 in 2000 for Germany as a whole.

Of course, it is not easy – if at all fully possible – to distinguish between transitional and other factors behind the rise or any other change in income inequality.

Branko Milanovic (1999) devised a model a model depicting the changes in income that occurred during the transition. First he identified the changes in the share of different factor income sources (the state sector, the private sector and pensioners) and changes in the distributions in individual sectors. The assumption is that inter-group inequality rose more than intra-group inequality. Second, instead of income recipients, he distinguished between income sources and disaggregated inequality by factor incomes, reaching the conclusion already cited above: that the most important factor driving overall inequality upwards were rising wage disparities.

Milanovic (1999, p. 321) considers to be the "hollowing out of the middle". When I wrote about the neglect of the middle class in the early 1990s I also stated that " ... income hierarchy has been fixed at the bottom, opened up towards the top but was compressed in the middle" (Večerník 1999, p. 410). The difference in the development of income inequality between more stable Western and the less stable transitional societies is very apparent in the example of the Czech Republic compared to Austria (Graphs 3 and 4),for which I found suitable data from Gudrun Biffl (2007).

Graphs 3 and 4 about here

The question is what were the reasons for the changes that occurred during the transition. Branko Milanovic relates the hollowing out of the middle to "the movement of state-sector workers into either 'rich' private sector activity or 'poor' unemployment". Also, Jens Hölscher (2006, p. 305) noted that "(p)arallel to the demand-shift-story of Western industrialised countries, in the transition countries a shift from state sector employment to private sector employment explains rising inequality in earnings and finally rising general inequality". In a discussion of how the middle class was neglected during the early transition, I described (Večerník, 1999) the constraints on small businesses and low remuneration in public sectors such as education and health services.

However, probably the main reason for the squeeze in the middle of income distribution was the relative fall in wages in the enterprise sector. While under the communist regime wages in the Czechoslovak enterprise sector were above the national average, they sharply decreased from 115% in 1989 to 104% of the average in 1996 and only later improved slightly. The thesis about the private-sector effect on increasing wage disparities relates more to self-employment and small businesses, where, however, the relevant information is somewhat scarce. According to income surveys among households (Microcensus 1996 and EU-SILC 2005), the self-employed earned 109% of the average salary in 1996 and 127% in 2004, while small employers declared earnings of 214% of the average salary in 1996 and 207% in 2004.

An important source of the change in disparities under the transition was the better remuneration skilled workers enjoyed, which occurred mainly in reaction to the suppression of the wage premium for education under the communist regime. As I have mentioned elsewhere (Večerník 2009, p. 79), while the standard explanation for better remuneration is that the demand for skilled workers increased because of the higher productivity of their work, in CEE post-communist countries the same workers started to receive better wages for the same work just because the political regime had changed and the economic system was liberalized. This was particularly true in the Czech Republic, which had the greatest equalization of earnings under the previous regime and the smallest wage disparities by education. This may also have been a source of the bigger subsequent increase in these disparities and consequently also in inequality of household income.

When acknowledging the dominant role of wage disparities in household income inequality, we have to think also about labour market regulations. Daniele Checchi and Cecilia García-Peñalosa (2008) saw a unifying framework for the study of inequality in earnings (the topic of labour economists), the wage share (the topic of macro-economist) and household income inequality (topic of policy-makers) in labour market institutions, which "emerge as a key determinant of inequality". The authors found that there is a trade-off between institutions that decrease inequality and the unemployment rate. Unfortunately, the authors did not have enough observations about the change in income inequality and/or labour market institutions to be able to include transition countries in the analysis (information about the Czech Republic, Hungary and Poland was included in the descriptive tables of their article only).

In CEE countries, labour was weak during the transition (Vanhuysse 2007), which, following Checchi's and García-Peñalosa's reasoning, is associated with larger earnings differentiation. In

the Czech Republic, the rise in wage levels and disparities has been held back by measures that have had an adverse effect on differentiation, but only slightly so. Wage growth was controlled until 1992, when wages were partly liberalised. After a period of no controls at the beginning of 1993, tax-based wage regulation was reintroduced, but was then eliminated again in 1995. A minimum wage, previously non-existent, was introduced in 1991, but it remained de facto frozen until 2000, which made its effect negligible (Večerník 2009, pp. 77-78).

The accession of CEE countries to the EU on the one hand and the availability of comparative data for EU-27 on the other hand bid us to observe income inequality in the EU within one single framework. Following Tony Atkinson et al. (2002), such a procedure was developed by Andrea Brandolini, who applied Purchasing Power Parities and Standard (PPP and PPS) to convert incomes in national currencies to one real basis. He thus provided "the first systematic picture of inequality and poverty in the enlarged EU as if it was a single country" (Brandolini 2007, p. 20; see also Brandolini and Smeeding 2009). Of course, there are many problems attached to the method used to calculate the indexes. They relate not only to the national figures but also their desirable but unfeasible disaggregation: since consumer baskets differ on various income levels, the conversion from nominal to real income cannot be the same across the income hierarchy.

Graphs 5a-5c about here

Inspired by Brandolini, and purely as an exercise, I used *OECD Comparative Price Levels* to adjust household incomes to real terms expressed in Euro. As we can see, while the value of D9 in the Czech Republic – which is the richest of the CEE countries – does not even reach the value of D1 Germany in nominal terms (Graph 5a), in real terms the values are closer, so that D9 in the Czech Republic reaches the level of D4 in Germany and nearly the level of D3 in Austria (Graph 5b). When viewed this way, the distance between CEE and Western countries diminishes somewhat, but it is still considerable and is the bigger the higher is the income level.

In order to put the figures on a more realistic base it is also possible to take into account the informal economy. As Branko Milanovic noted (1999, p. 323), the informal economy expanded under transition and it now provides much higher income than it did under the communist regime. A study by the European Commission (2004) ranked the Czech Republic and Slovakia among countries where the share of undeclared work is relatively low (about 8-13% of GDP), while Hungary and Poland were located at medium level (14-23% of GDP). In all those countries the share of the informal economy was supposed to have decreased since the mid-1990s. According to Friedrich Schneider's (2002) estimates, in the four CEE countries the relevant share is relatively low among post-communist countries, but still very important: 19% in the Czech Republic and Slovakia, 25% in Hungary and 28% in Poland. Using this estimate to fine-tune the income figures for CEE countries (and assuming there is no such income in Austria and Germany), the gap between CEE and Western countries diminishes a bit more (Graph 5c).

EU-SILC data indirectly signal the existence of some informal activities too, when household composition is taken into account. Household composition varies considerably between CEE countries: nearly one-fifth of household members in Hungary and Poland are declared as "other adult persons" (i.e. not economically active persons, pensioners or children) compared to just 12% in the Czech Republic and 7% in Slovakia (see the Annex). It is likely that most of these persons are economically active in some way, whether as family workers on a household farm or

in a family firm, or outside the home performing odd jobs in the informal sector. This might also explain why the link between the number of economically active persons in the household and household income (see Table 4 above) is much weaker in Hungary and Poland than in the Czech Republic and Slovakia where the share of informal earners is much smaller.

Yet it is also necessary to mention the problem of data quality. Branko Milanovic (1999, pp. 322-331) has described the "inequality bias" that exists in comparisons of surveys on the pre-transition and the transition periods. He rightly notes that refusal rates have increased and the coverage of wage and social transfer income has deteriorated during the transition, so that reported incomes are now more underestimated than in the past. Taking the countries of our interest into account, he estimates, however, that in Hungary and Poland the increase in inequality is slightly overestimated: in Hungary because the home consumption (generally greater for the poorer households) is missing and in Poland because well-off segments of the population are absent in pre-transition surveys.

Milanovic's study does not include the Czech Republic, where, in contrast, the increase in inequality is rather underestimated because the method of data collection used in surveys that are formally the same changed substantially after 1989, shifting from administrative to self-reported data. As I mentioned above, under the communist regime, the most important sources of income were directly transferred to statisticians by the state administration. After 1989, only self-reporting is possible, and, moreover, people also feel less obliged to answer questions on income. Thus, while in the 1988 Microcensus the non-response rate was only 4%, in 1992 it amounted to 16% and in 2002 it was already 28%. The coverage of income observed in surveys in comparison with National Accounts decreased from 86% in 1988 to 80% in 1992 and to 76% in 2002.

Nevertheless, even with the best possible data on personal and household incomes available for analysis, there is still much we do not know about income sources, development and inequality. In fact, we cannot expect that income statistics will ever be capable of describing real incomes and income inequality in full. However, not having any other source of general information about income distribution, we cannot do anything else but examine the surveys from various angles and try, from time to time, to look beyond just data.

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**Table 1**
**Distribution of earnings and household income between 1989 and 1992 (%)**

| Quintile shares | Czech Republic | | Hungary | | Poland | | Slovakia | |
|---|---|---|---|---|---|---|---|---|
| and coefficients | 1989 | 1992 | 1989 | 1992 | 1989 | 1992 | 1988 | 1992 |
| *Earnings of employees:* | | | | | | | | |
| 1 | 11.9 | 11.1 | 8.9 | 8.4 | 12.7 | 11.2 | 12.0 | 12.6 |
| 2 | 15.7 | 14.6 | 13.4 | 12.7 | 16.1 | 14.6 | 15.8 | 15.6 |
| 3 | 19.2 | 17.9 | 17.2 | 16.4 | 18.5 | 17.2 | 19.0 | 18.5 |
| 4 | 22.9 | 22.1 | 22.0 | 21.6 | 21.5 | 21.0 | 22.8 | 22.1 |
| 5 | 30.3 | 34.3 | 38.5 | 40.9 | 31.2 | 36.0 | 30.4 | 31.2 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Gini coefficients | 0.19 | 0.23 | 0.29 | 0.32 | 0.18 | 0.25 | 0.18 | 0.18 |
| *Adjusted household income:* | | | | | | | | |
| 1 | 11.1 | 11.9 | 11.2 | 10.3 | 9.3 | 9.7 | 11.9 | 12.6 |
| 2 | 15.7 | 15.0 | 15.1 | 14.2 | 14.2 | 14.4 | 16.5 | 16.3 |
| 3 | 19.3 | 17.7 | 18.1 | 17.3 | 18.4 | 18.1 | 19.2 | 19.0 |
| 4 | 23.0 | 21.4 | 22.0 | 22.0 | 23.1 | 23.0 | 22.7 | 21.9 |
| 5 | 30.9 | 34.0 | 33.6 | 36.2 | 35.0 | 34.8 | 29.7 | 30.3 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Gini coefficients | 0.20 | 0.22 | 0.22 | 0.26 | 0.26 | 0.25 | 0.18 | 0.18 |

*Source:* SOCO database (see Večerník 1996, Tables 4.1 and 4.5).
In this table, household income is adjusted according to 1.0, 0.7, 0.5 principle.

**Table 2**
**Change in earnings disparities and income inequality since 1990 according to various sources (Gini coefficients)**

| | Czech Republic | Hungary |
|---|---|---|
| *Personal earnings* | | |
| LIS | 0.27 in 1992, 0.28 in 1996, 0.26 in 2002 | 0.28 in 1991, 0.28 in 1999, 0.32 in 2005 |
| TransMONEE | Jumps up in 1993 and 1995, fall in 1996, a slight increase in the 2000s to 0.27 | A fast and steady increase already beginning in 1990; the series ends by 2001on 0.39 |
| Atkinson | A fast increase in 1990-1995, a very slow increase since then | As in the TransMONEE database, the rise continues after 2001, the time series ends in 2003 |
| EU-SILC 2004-2007 | 0.28 in 2004 and 0.28 in 2007 | 0.37 in 2004 and 0.35 in 2007 |
| *Adjusted household income* | | |
| LIS | An increase from 0.21 in 1992 to 0.26 in 1996 | A decrease from 0.32 in 1991 to 0.28 in 1994, followed by stability: 0.29 in 2005 |
| TransMONEE | A slow increase with single increases in 1990-1998, a faster increase since then, jumping in 1999 and 2005 to 0.26 | A steady increase 1991-2005 from 0.21 to 0.28 |
| Zaidi | A fast increase from 0.19 in 1987-90 to 0.27 in 2006 | A fast increase from 0.21in 1987-1990 to 0.34 in 2006 |
| EU-SILC | From 0.26 in 2004 to 0.25 in 2006 (0.26 in 2007) | From 0.28 in 2004 to 0.26 in 2006 (0.25 in 2007) |

| | Poland | Slovakia |
|---|---|---|
| *Personal earnings* | | |
| LIS | 0.28 in 1992 and 1995, 0.35 in 2004 | 0.28 in 1992 (Personal file is missing in 1996) |
| TransMONEE | A fast increase in 1990-1996 and then again in the 2000s; the series ends in 2004 at 0.35 | Missing data |
| Atkinson | Jumps upwards in 1991 and 1994, a steady rise since then, the last year available 1999 with Gini 0.31 | Missing data |
| EU-SILC | From 0.38 in 2004 to 0.37 in 2007 | From 0.29 in 2004 to 0.27 in 2007 |
| *Adjusted household income* | | |
| LIS | An increase from 0.27 in 1992 to 0.32 in 1995 and – newly - from 0.29 in 1999 to 0.32 in 2004. | An increase from 0.19 in 1992 to 0.24 in 1996. |
| TransMONEE | An increase from 0.27 in 1990 to 0.37 in 2004, then a decrease to 0.35 in 2007 | An increase from 0.24 in 1996 to 0.30 in 2003, then a decrease to 0.24 in 2007. |
| Zaidi | An increase from 0.28 in 1987-1990 to 0.33 in 2006 | Missing data |
| EU-SILC | From 0.36 in 2004 to 0.32 in 2006 (0.33 in 2007) | From 0.26 in 2004 to 0.24 in 2006 (0.24 in 2007) |

*Sources:* TransMONEE 2009 Database (release of May 2009); The Social Situation in the European Union 2009, p. 281; Atkinson 2007; Zaidi 2009; LIS Inequality and Poverty Key Figures as of 30 July 2009; Luxembourg Income Study (LIS) Database, http://www.lisproject.org/techdoc.htm (multiple countries; March-June 2010); EU-SILC surveys (income inequality 2004-2006 from Eurostat's publications, figures on personal earnings and equivalent income inequality in 2007 – put in parentheses – are based on own computations).

The adjustment of disposable household income differs in individual databases. In the LIS database, equivalized income is equal to unadjusted household income divided by the square root of the number of persons in the household. In the TransMONEE database, income per capita is measured. In Zaidi's paper and EU-SILC data presentation, equivalent household size is applied, assigning a weight of 1 to the first adult household member, 0.5 to each additional adult member, and 0.3 to each child. Adult members are aged 14 years and older, while children are 13 years and under.

**Table 3**
**Correlation between personal earnings and household income between 1991/92 and 2007 (Pearson coefficients)**

| | Czech Republic | | | | Hungary | | | |
|---|---|---|---|---|---|---|---|---|
| | 1988 | 1996 | 2004 | 2007 | 1991 | 1999 | 2004 | 2007 |
| *Total disposable income* | | | | | | | | |
| All | 0.28 | 0.44 | 0.48 | 0.41 | 0.61 | 0.67 | 0.51 | 0.49 |
| Men | 0.32 | 0.54 | 0.56 | 0.49 | 0.72 | 0.71 | 0.68 | 0.55 |
| Women | 0.31 | 0.39 | 0.41 | 0.36 | 0.48 | 0.63 | 0.30 | 0.41 |
| *Income per capita* | | | | | | | | |
| All | 0.18 | 0.50 | 0.58 | 0.49 | 0.59 | 0.64 | 0.59 | 0.57 |
| Men | 0.17 | 0.56 | 0.63 | 0.53 | 0.66 | 0.63 | 0.66 | 0.60 |
| Women | 0.31 | 0.49 | 0.54 | 0.50 | 0.57 | 0.68 | 0.55 | 0.55 |
| | Poland | | | | Slovakia | | | |
| | 1986 | 1995 | 2004 | 2007 | 1992 | 1996 | 2004 | 2007 |
| *Total disposable income* | | | | | | | | |
| All | 0.33 | 0.42 | 0.63 | 0.62 | 0.40 | n.a. | 0.47 | 0.40 |
| Men | 0.39 | 0.48 | 0.65 | 0.72 | 0.46 | | 0.52 | 0.47 |
| Women | 0.24 | 0.37 | 0.61 | 0.48 | 0.35 | | 0.42 | 0.32 |
| *Income per capita* | | | | | | | | |
| All | 0.35 | 0.44 | 0.68 | 0.62 | 0.49 | | 0.59 | 0.56 |
| Men | 0.40 | 0.46 | 0.67 | 0.69 | 0.51 | | 0.58 | 0.62 |
| Women | 0.45 | 0.50 | 0.71 | 0.57 | 0.55 | | 0.62 | 0.50 |

*Source:* LIS, EU-SILC.
Observation units: persons in dependent employment. Household income is ascribed to each such person.

**Table 4**
**Correlation between disposable income in employee households and the number of household members (Pearson coefficients)**

| | Czech Republic | | | | Hungary | | | |
|---|---|---|---|---|---|---|---|---|
| | 1988 | 1996 | 2004 | 2007 | 1991 | 1999 | 2004 | 2007 |
| *Total disposable income* | | | | | | | | |
| All members | 0.55 | 0.36 | 0.36 | 0.44 | 0.39 | 0.33 | 0.32 | 0.37 |
| Econ active | 0.67 | 0.49 | 0.51 | 0.55 | 0.44 | 0.40 | 0.37 | 0.45 |
| Children | 0.24 | 0.09 | 0.07 | 0.11 | 0.20 | 0.11 | 0.15 | 0.08 |
| *Income per capita* | | | | | | | | |
| All members | -0.54 | -0.40 | -0.41 | -0.43 | -0.40 | -0.40 | -0.30 | -0.36 |
| Econ active | -0.00 | 0.06 | 0.08 | 0.07 | 0.03 | -0.05 | 0.01 | 0.07 |
| Children | -0.60 | -0.43 | -0.43 | -0.46 | -0.38 | -0.38 | -0.28 | -0.40 |
| | Poland | | | | Slovakia | | | |
| | 1986 | 1995 | 2004 | 2007 | 1992 | | 2004 | 2007 |
| *Total disposable income* | | | | | | | | |
| All members | 0.29 | 0.25 | 0.14 | 0.22 | 0.58 | n.a. | 0.36 | 0.47 |
| Econ active | 0.51 | 0.40 | 0.33 | 0.28 | 0.59 | | 0.47 | 0.61 |
| Children | -0.05 | 0.12 | 0.01 | 0.07 | 0.31 | | 0.07 | 0.10 |
| *Income per capita* | | | | | | | | |
| All members | -0.55 | -0.56 | -0.38 | -0.35 | -0.56 | | -0.32 | -0.35 |
| Econ active | 0.21 | 0.01 | 0.03 | -0.03 | 0.03 | | 0.03 | -0.01 |
| Children | -0.63 | -0.52 | -0.35 | -0.31 | -0.57 | | -0.36 | -0.38 |

*Sources:* EU-SILC for 2004 and 2007 data, LIS for other data on Hungary and Poland, Microcensus 1988 and 1996 for corresponding figures on the Czech Republic.
Observation units: households headed by an employee. In each household, all members, economically active members and dependent children are correlated with total disposable and per capita income.

**Table 5 Structure of household income in 2007 (% of gross household income)**

| | Czech Republic | Hungary | Poland | Slovakia | Austria | Germany |
|---|---|---|---|---|---|---|
| **A. All households** | | | | | | |
| *Total earned* | 75.5 | 66.8 | 73.6 | 75.7 | 68.1 | 70.8 |
| ▪ earnings head | 50.4 | 42.7 | 45.2 | 44.4 | 48.7 | 54.9 |
| ▪ earnings spouse | 16.5 | 15.1 | 17.6 | 17.2 | 12.3 | 13.0 |
| ▪ earnings other persons | 8.6 | 9.0 | 10.8 | 14.2 | 7.1 | 2.9 |
| *Total transfer* | 23.1 | 32.3 | 25.8 | 24.0 | 29.1 | 25.5 |
| ▪ pension benefits | 15.2 | 20.6 | 20.5 | 18.3 | 21.8 | 18.3 |
| ▪ other benefits | 7.9 | 11.8 | 5.3 | 5.7 | 7.4 | 7.1 |
| *Other income* | 1.5 | 0.9 | 0.7 | 0.3 | 2.7 | 3.8 |
| ***Total gross income*** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| *Tax and insurance* | 17.1 | 21.8 | 23.7 | 14.6 | 26.8 | 25.5 |
| ▪ income tax and insurance | 17.0 | 21.4 | 23.5 | 14.4 | 26.8 | 25.2 |
| ▪ other tax | 0.1 | 0.3 | 0.2 | 0.2 | - | 0.4 |
| ***Total disposable income*** | 82.9 | 78.2 | 76.3 | 85.4 | 73.2 | 74.5 |
| **B. Employee households** | | | | | | |
| *Total earned* | 87.2 | 81.6 | 88.1 | 87.0 | 86.9 | 90.6 |
| ▪ earnings head | 58.5 | 53.4 | 57.0 | 51.4 | 63.1 | 70.2 |
| ▪ earnings spouse | 18.7 | 17.5 | 20.4 | 19.5 | 15.2 | 16.6 |
| ▪ earnings other persons | 10.1 | 10.7 | 10.7 | 16.2 | 8.6 | 3.9 |
| *Total transfer* | 11.8 | 17.7 | 11.3 | 12.8 | 11.4 | 7.2 |
| ▪ pension benefits | 4.9 | 7.2 | 7.5 | 7.7 | 4.8 | 1.9 |
| ▪ other benefits | 6.9 | 10.5 | 3.9 | 5.1 | 6.6 | 5.3 |
| *Other income* | 1.1 | 0.7 | 0.6 | 0.2 | 1.7 | 2.2 |
| ***Total gross income*** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| *Tax and insurance* | 20.4 | 26.8 | 25.4 | 16.9 | 28.8 | 29.6 |
| ▪ income tax and insurance | 20.4 | 26.5 | 25.3 | 16.8 | 28.8 | 29.3 |
| ▪ other tax | 0.1 | 0.3 | 0.2 | 0.2 | - | 0.3 |
| ***Total disposable income*** | 79.6 | 73.2 | 74.6 | 83.1 | 71.2 | 70.4 |
| **C. Dual-earner employee households** | | | | | | |
| *Total earned* | 94.6 | 90.9 | 94.3 | 93.7 | 92.5 | 94.1 |
| ▪ earnings head | 52.1 | 46.5 | 51.4 | 46.9 | 56.0 | 60.9 |
| ▪ earnings spouse | 33.5 | 35.3 | 36.1 | 32.3 | 29.6 | 30.4 |
| ▪ earnings other persons | 9.2 | 9.1 | 6.8 | 14.4 | 7.0 | 2.8 |
| *Total transfer* | 4.0 | 8.5 | 5.0 | 6.1 | 5.9 | 4.1 |
| ▪ pension benefits | 1.0 | 2.9 | 3.4 | 2.9 | 1.3 | 0.2 |
| ▪ other benefits | 3.0 | 5.6 | 1.6 | 3.3 | 4.7 | 3.9 |
| *Other income* | 1.2 | 0.7 | 0.7 | 0.2 | 1.5 | 1.9 |
| ***Total gross income*** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| *Tax and insurance* | 22.4 | 29.7 | 26.5 | 18.0 | 30.1 | 30.6 |
| ▪ income tax and insurance | 22.3 | 29.4 | 26.4 | 18.0 | 30.1 | 30.3 |
| ▪ other tax | 0.1 | 0.3 | 0.1 | 0.1 | - | 0.3 |
| ***Total disposable income*** | 77.6 | 70.3 | 73.5 | 82.0 | 69.9 | 69.4 |

*Source:* EU-SILC 2008.

**Table 6 Inequality in individual sources of income in 2007 (Gini coefficients)**

| | Czech Republic | Hungary | Poland | Slovakia | Austria | Germany |
|---|---|---|---|---|---|---|
| **A. All households** | | | | | | |
| *Total earned* | 0.55 | 0.60 | 0.58 | 0.54 | 0.57 | 0.61 |
| ▪ earnings head | 0.54 | 0.59 | 0.62 | 0.52 | 0.57 | 0.62 |
| ▪ earnings spouse | 0.78 | 0.81 | 0.81 | 0.74 | 0.83 | 0.84 |
| ▪ earnings other persons | 0.90 | 0.91 | 0.90 | 0.86 | 0.92 | 0.96 |
| *Total transfer* | 0.52 | 0.46 | 0.57 | 0.52 | 0.58 | 0.60 |
| ▪ pension benefits | 0.69 | 0.67 | 0.67 | 0.64 | 0.74 | 0.76 |
| ▪ other benefits | 0.75 | 0.67 | 0.82 | 0.76 | 0.73 | 0.76 |
| *Other income* | 0.98 | 0.99 | 0.99 | 0.97 | 0.88 | 0.81 |
| ***Total gross income*** | 0.37 | 0.37 | 0.39 | 0.37 | 0.37 | 0.41 |
| *Tax and insurance* | 0.60 | 0.66 | 0.49 | 0.57 | 0.51 | 0.59 |
| ▪ income tax and insurance | 0.61 | 0.66 | 0.49 | 0.58 | 0.51 | 0.59 |
| ▪ other tax | 0.74 | 0.62 | 0.72 | 0.49 | - | 0.75 |
| ***Total disposable income*** | 0.33 | 0.32 | 0.38 | 0.34 | 0.34 | 0.37 |
| **B. Employee households** | | | | | | |
| *Total earned* | 0.32 | 0.37 | 0.37 | 0.31 | 0.34 | 0.33 |
| ▪ earnings head | 0.28 | 0.35 | 0.37 | 0.26 | 0.32 | 0.32 |
| ▪ earnings spouse | 0.68 | 0.73 | 0.71 | 0.62 | 0.75 | 0.75 |
| ▪ earnings other persons | 0.86 | 0.86 | 0.86 | 0.80 | 0.88 | 0.93 |
| *Total transfer* | 0.64 | 0.55 | 0.71 | 0.64 | 0.68 | 0.70 |
| ▪ pension benefits | 0.86 | 0.84 | 0.83 | 0.81 | 0.92 | 0.96 |
| ▪ other benefits | 0.71 | 0.60 | 0.80 | 0.70 | 0.66 | 0.69 |
| *Other income* | 0.98 | 1.00 | 0.99 | 0.96 | 0.83 | 0.77 |
| ***Total gross income*** | 0.27 | 0.31 | 0.33 | 0.27 | 0.32 | 0.31 |
| *Tax and insurance* | 0.39 | 0.48 | 0.37 | 0.38 | 0.42 | 0.42 |
| ▪ income tax and insurance | 0.39 | 0.48 | 0.37 | 0.38 | 0.42 | 0.42 |
| ▪ other tax | 0.73 | 0.54 | 0.71 | 0.49 | - | 0.72 |
| ***Total disposable income*** | 0.25 | 0.27 | 0.32 | 0.26 | 0.29 | 0.29 |
| **C. Dual-earner employee households** | | | | | | |
| *Total earned* | 0.24 | 0.29 | 0.30 | 0.24 | 0.27 | 0.25 |
| ▪ earnings head | 0.26 | 0.34 | 0.35 | 0.24 | 0.30 | 0.29 |
| ▪ earnings spouse | 0.28 | 0.32 | 0.37 | 0.25 | 0.37 | 0.41 |
| ▪ earnings other persons | 0.86 | 0.86 | 0.89 | 0.80 | 0.85 | 0.91 |
| *Total transfer* | 0.75 | 0.60 | 0.83 | 0.71 | 0.60 | 0.60 |
| ▪ pension benefits | 0.96 | 0.92 | 0.90 | 0.92 | 0.97 | 0.99 |
| ▪ other benefits | 0.75 | 0.54 | 0.85 | 0.63 | 0.54 | 0.59 |
| *Other income* | 0.98 | 1.00 | 0.98 | 0.96 | 0.80 | 0.72 |
| ***Total gross income*** | 0.23 | 0.28 | 0.29 | 0.23 | 0.26 | 0.24 |
| *Tax and insurance* | 0.32 | 0.42 | 0.31 | 0.32 | 0.37 | 0.36 |
| ▪ income tax and insurance | 0.32 | 0.42 | 0.31 | 0.32 | 0.37 | 0.36 |
| ▪ other tax | 0.71 | 0.44 | 0.70 | 0.48 | - | 0.63 |
| ***Total disposable income*** | 0.21 | 0.23 | 0.28 | 0.21 | 0.22 | 0.22 |

*Source:* EU-SILC 2008.

**Table 7 Gini decomposition by income sources in 2007**

| | Czech Republic | Hungary | Poland | Slovakia | Austria | Germany |
|---|---|---|---|---|---|---|
| **A. All households** | | | | | | |
| *Total earned* | 1.38 | 1.33 | 1.32 | 1.30 | 1.28 | 1.31 |
| ▪ earnings head | 0.81 | 0.73 | 0.73 | 0.64 | 0.79 | 0.94 |
| ▪ earnings spouse | 0.36 | 0.35 | 0.35 | 0.32 | 0.30 | 0.30 |
| ▪ earnings other persons | 0.22 | 0.25 | 0.23 | 0.35 | 0.20 | 0.06 |
| *Total transfer* | -0.08 | 0.12 | 0.03 | -0.04 | 0.12 | 0.06 |
| ▪ pension benefits | -0.11 | 0.05 | 0.02 | -0.07 | 0.07 | 0.05 |
| ▪ other benefits | 0.03 | 0.06 | 0.01 | 0.03 | 0.04 | 0.01 |
| *Other income* | 0.04 | 0.03 | 0.02 | 0.00 | 0.07 | 0.07 |
| ***Total gross income*** | 1.34 | 1.47 | 1.36 | 1.26 | 1.47 | 1.44 |
| *Tax and insurance* | 0.34 | 0.47 | 0.36 | 0.26 | 0.47 | 0.44 |
| ▪ income tax and insurance | 0.34 | 0.47 | 0.36 | 0.26 | 0.47 | 0.43 |
| ▪ other tax | 0.00 | 0.00 | 0.00 | 0.00 | - | 0.01 |
| ***Total disposable income*** | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| **B. Employee households** | | | | | | |
| *Total earned* | 1.25 | 1.30 | 1.25 | 1.15 | 1.29 | 1.32 |
| ▪ earnings head | 0.55 | 0.61 | 0.65 | 0.38 | 0.68 | 0.81 |
| ▪ earnings spouse | 0.40 | 0.38 | 0.38 | 0.31 | 0.37 | 0.41 |
| ▪ earnings other persons | 0.30 | 0.31 | 0.23 | 0.45 | 0.24 | 0.10 |
| *Total transfer* | 0.06 | 0.19 | 0.08 | 0.11 | 0.17 | 0.07 |
| ▪ pension benefits | 0.04 | 0.14 | 0.09 | 0.09 | 0.11 | 0.03 |
| ▪ other benefits | 0.02 | 0.05 | -0.01 | 0.02 | 0.06 | 0.04 |
| *Other income* | 0.04 | 0.03 | 0.02 | 0.00 | 0.04 | 0.05 |
| ***Total gross income*** | 1.35 | 1.52 | 1.35 | 1.26 | 1.50 | 1.44 |
| *Tax and insurance* | 0.35 | 0.52 | 0.35 | 0.26 | 0.50 | 0.44 |
| ▪ income tax and insurance | 0.35 | 0.52 | 0.35 | 0.26 | 0.50 | 0.44 |
| ▪ other tax | 0.00 | 0.00 | 0.00 | 0.00 | - | 0.00 |
| ***Total disposable income*** | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| **C. Dual-earner employee households** | | | | | | |
| *Total earned* | 1.32 | 1.49 | 1.29 | 1.20 | 1.48 | 1.45 |
| ▪ earnings head | 0.62 | 0.71 | 0.69 | 0.42 | 0.83 | 0.92 |
| ▪ earnings spouse | 0.36 | 0.44 | 0.44 | 0.26 | 0.43 | 0.45 |
| ▪ earnings other persons | 0.35 | 0.34 | 0.15 | 0.51 | 0.22 | 0.08 |
| *Total transfer* | 0.03 | 0.12 | 0.05 | 0.10 | 0.07 | 0.01 |
| ▪ pension benefits | 0.03 | 0.10 | 0.05 | 0.08 | 0.05 | 0.00 |
| ▪ other benefits | 0.00 | 0.02 | -0.01 | 0.01 | 0.02 | 0.01 |
| *Other income* | 0.07 | 0.04 | 0.02 | 0.00 | 0.05 | 0.05 |
| ***Total gross income*** | 1.42 | 1.65 | 1.36 | 1.30 | 1.60 | 1.52 |
| *Tax and insurance* | 0.42 | 0.65 | 0.36 | 0.30 | 0.60 | 0.52 |
| ▪ income tax and insurance | 0.42 | 0.65 | 0.36 | 0.30 | 0.60 | 0.51 |
| ▪ other tax | 0.00 | 0.00 | 0.00 | 0.00 | - | 0.00 |
| ***Total disposable income*** | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

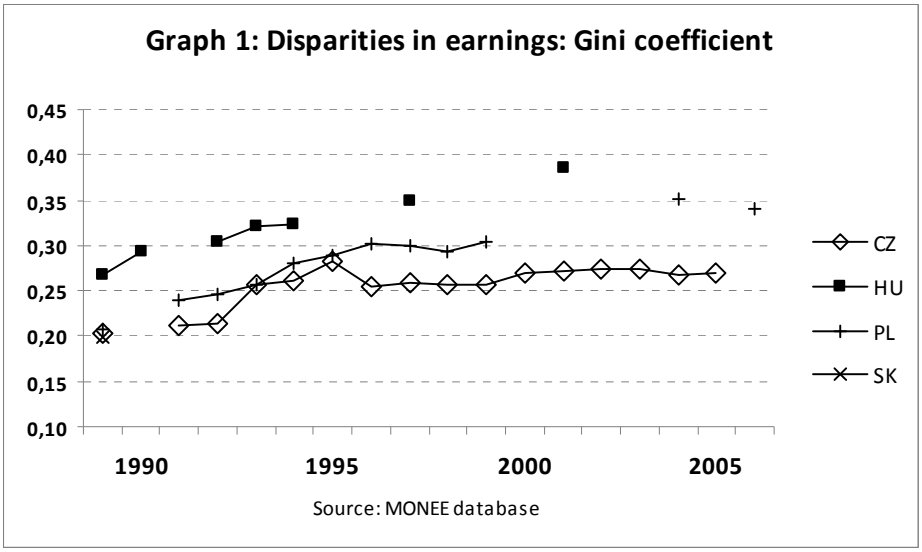
*Source:* EU-SILC 2008.

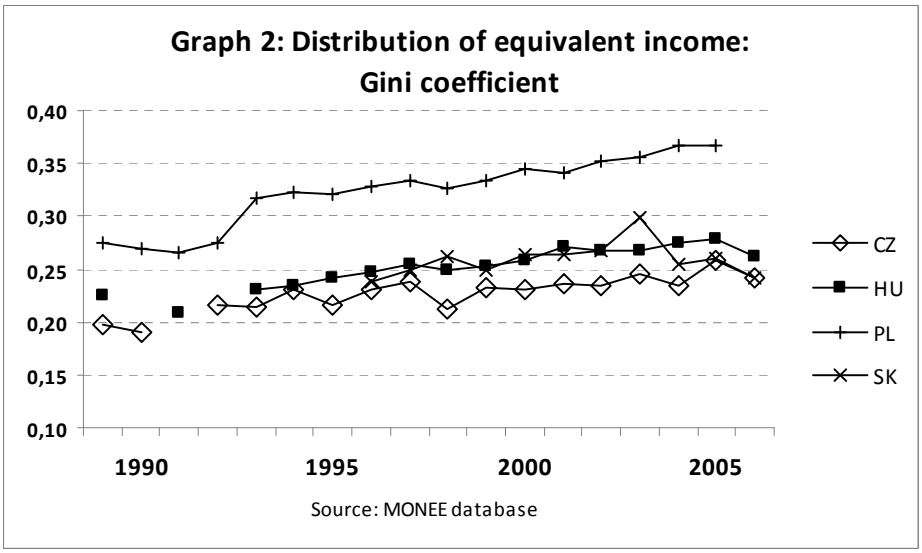
**Table 8 Correlation between personal earnings and household income (Pearson coefficients)**

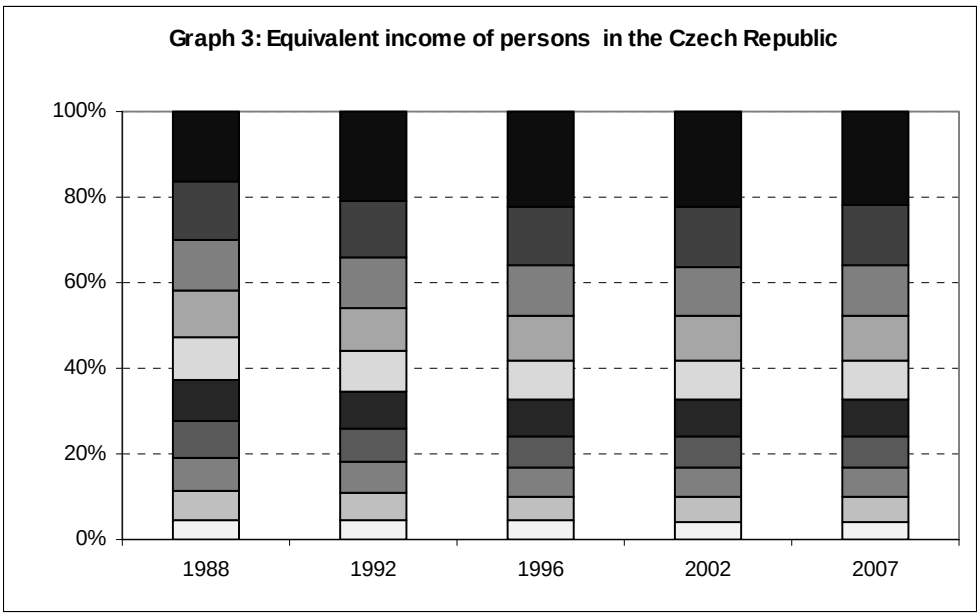
| | Czech Republic | Hungary | Poland | Slovakia | Austria | Germany |
|---|---|---|---|---|---|---|
| **A. All households** | | | | | | |
| *Total disposable* | | | | | | |
| Earnings head | 0.80 | 0.69 | 0.77 | 0.76 | 0.74 | 0.80 |
| Earnings spouse | 0.54 | 0.50 | 0.52 | 0.59 | 0.52 | 0.45 |
| Earnings other persons | 0.41 | 0.49 | 0.38 | 0.59 | 0.36 | 0.20 |
| Total earned | 0.91 | 0.83 | 0.92 | 0.93 | 0.84 | 0.85 |
| *Per capita* | | | | | | |
| Earnings head | 0.64 | 0.51 | 0.61 | 0.57 | 0.54 | 0.58 |
| Earnings spouse | 0.34 | 0.29 | 0.36 | 0.29 | 0.28 | 0.26 |
| Earnings other persons | 0.16 | 0.25 | 0.10 | 0.25 | 0.08 | 0.05 |
| Total earned | 0.65 | 0.55 | 0.64 | 0.56 | 0.54 | 0.59 |
| *Per equivalent unit* | | | | | | |
| Earnings head | 0.78 | 0.66 | 0.72 | 0.72 | 0.73 | 0.73 |
| Earnings spouse | 0.43 | 0.40 | 0.46 | 0.45 | 0.42 | 0.35 |
| Earnings other persons | 0.23 | 0.33 | 0.17 | 0.38 | 0.16 | 0.09 |
| Total earned | 0.81 | 0.72 | 0.79 | 0.77 | 0.76 | 0.75 |
| **B. Employee households** | | | | | | |
| *Total disposable* | | | | | | |
| Earnings head | 0.65 | 0.61 | 0.79 | 0.61 | 0.80 | 0.75 |
| Earnings spouse | 0.53 | 0.48 | 0.48 | 0.48 | 0.49 | 0.50 |
| Earnings other persons | 0.46 | 0.47 | 0.32 | 0.61 | 0.33 | 0.26 |
| Total earned | 0.89 | 0.84 | 0.95 | 0.92 | 0.92 | 0.90 |
| *Per capita* | | | | | | |
| Earnings head | 0.58 | 0.60 | 0.69 | 0.61 | 0.69 | 0.56 |
| Earnings spouse | 0.34 | 0.35 | 0.38 | 0.26 | 0.34 | 0.32 |
| Earnings other persons | 0.17 | 0.25 | 0.09 | 0.26 | 0.06 | 0.07 |
| Total earned | 0.63 | 0.67 | 0.73 | 0.60 | 0.71 | 0.62 |
| *Per equivalent unit* | | | | | | |
| Earnings head | 0.70 | 0.68 | 0.77 | 0.70 | 0.84 | 0.70 |
| Earnings spouse | 0.44 | 0.43 | 0.45 | 0.39 | 0.43 | 0.44 |
| Earnings other persons | 0.25 | 0.31 | 0.14 | 0.37 | 0.11 | 0.12 |
| Total earned | 0.79 | 0.79 | 0.85 | 0.78 | 0.88 | 0.80 |
| **C. Dual-earner employee households** | | | | | | |
| *Total disposable* | | | | | | |
| Earnings head | 0.69 | 0.64 | 0.85 | 0.61 | 0.91 | 0.76 |
| Earnings spouse | 0.51 | 0.52 | 0.54 | 0.53 | 0.49 | 0.51 |
| Earnings other persons | 0.46 | 0.47 | 0.25 | 0.63 | 0.21 | 0.23 |
| Total earned | 0.91 | 0.85 | 0.97 | 0.94 | 0.97 | 0.91 |
| *Per capita* | | | | | | |
| Earnings head | 0.57 | 0.65 | 0.73 | 0.61 | 0.80 | 0.57 |
| Earnings spouse | 0.52 | 0.55 | 0.56 | 0.57 | 0.57 | 0.59 |
| Earnings other persons | 0.15 | 0.21 | 0.07 | 0.28 | 0.01 | 0.01 |
| Total earned | 0.69 | 0.76 | 0.82 | 0.74 | 0.86 | 0.77 |
| *Per equivalent unit* | | | | | | |
| Earnings head | 0.68 | 0.70 | 0.79 | 0.69 | 0.91 | 0.67 |
| Earnings spouse | 0.55 | 0.57 | 0.59 | 0.59 | 0.54 | 0.59 |
| Earnings other persons | 0.20 | 0.26 | 0.09 | 0.36 | 0.02 | 0.04 |
| Total earned | 0.81 | 0.82 | 0.89 | 0.83 | 0.95 | 0.85 |

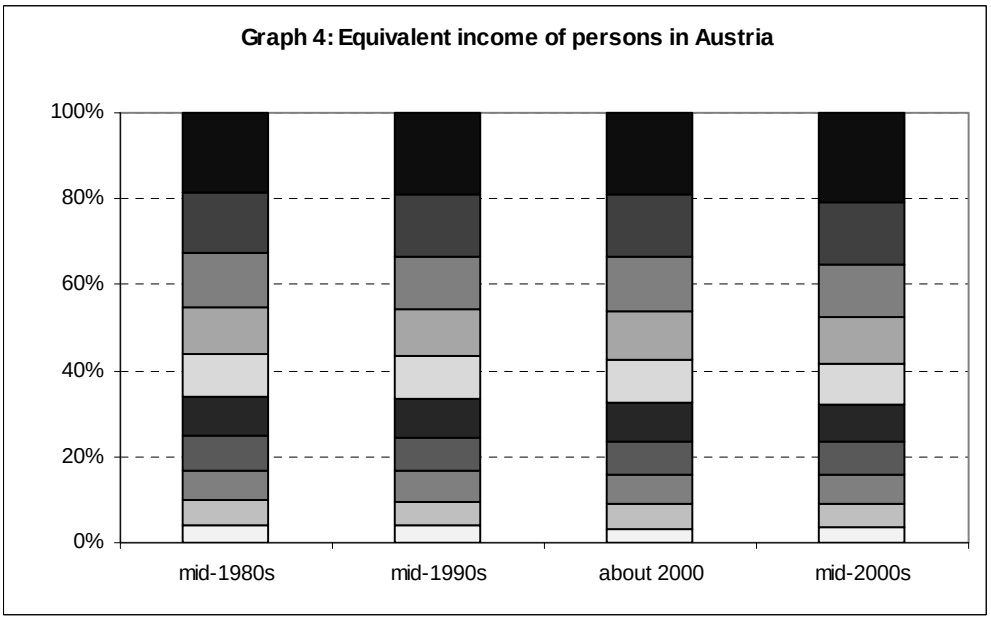
*Source:* EU-SILC 2008.

Income per capita and income per equivalent unit are weighted by household size.


Graph 1: Disparities in earnings: Gini coefficient
0,45
0,40
0,35
0,30
0,25
0,20
0,15
0,10
1990
1995
2000
2005
CZ
HU
PL
SK
Source: MONEE database

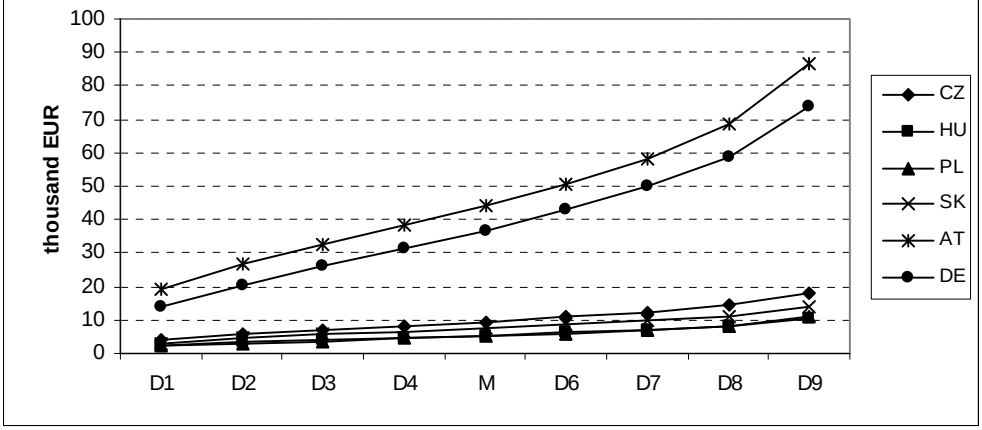

Graph 2: Distribution of equivalent income: Gini coefficient
0,40
0,35
0,30
0,25
0,20
0,15
0,10
1990
1995
2000
2005
CZ
HU
PL
SK
Source: MONEE database



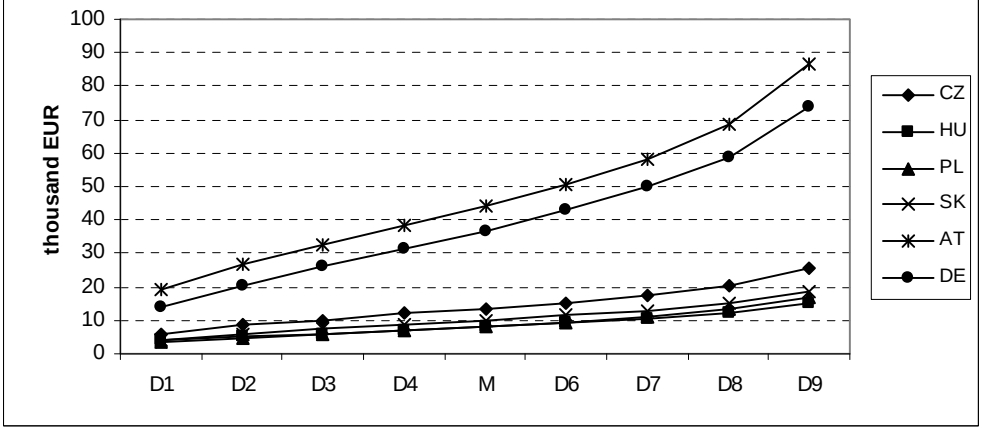




Czech data in Graph 3 are computed by the same method as applied by Gudrun Biffl (2007) which figures are presented in Graph 4. Distribution is measured among individuals, attributing to each person the equivalent income of the household to which he or she belongs. Income is adjusted on the square root principle and weighted by persons. Sources of Czech data are Microcensuses 1988, 1992, 1996 and 2002, and the EU-SILC 2008.

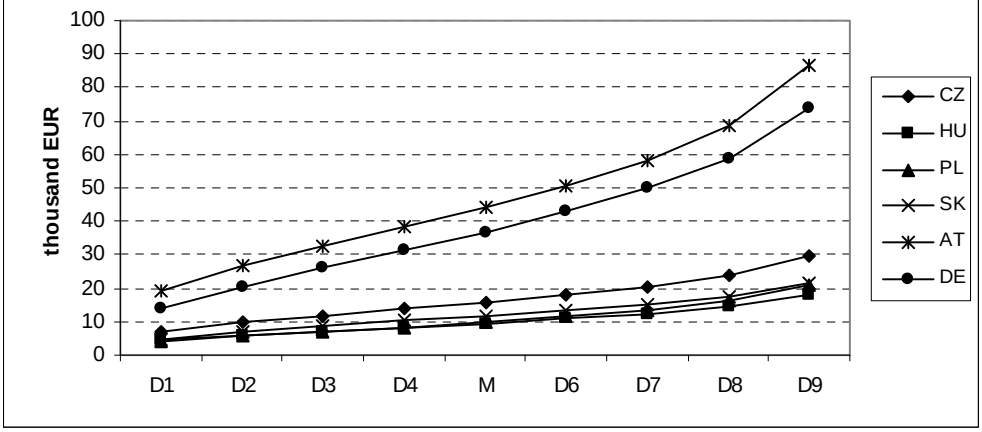
**Graph 5a: Yearly income per person in EUR - nominal exchange rate**




**Graph 5b: Yearly income per person in EUR - adjustment to price levels in CEE countries**




**Graph 5c: Yearly income per person in EUR adjustment to price levels and informal economy in CEE countries**



In Graphs 5a-5c, EU-SILC data of 2008 (income year 2007) are used. The conversion of national currency to EUR is included in Eurostat's EU-SILC files. For adjustment to the price levels, *OECD Main Economic Indic*ators, release of May 2010, were used. For informal economy, estimates made by Friedrich Schneider (2002, Table 5) for CEE countries were applied, assuming that the share of household income from the informal economy is the same as the share of it in GDP.

## Annex

**Size and composition of households in EU-SILC 2008, version May 2010**

| | Czech Republic | Hungary | Poland | Slovakia | Austria | Germany |
|---|---|---|---|---|---|---|
| Sample N= | 9675 | 8737 | 14286 | 4941 | 6806 | 14153 |
| After weighting to the population size | 4043341 | 3810232 | 13281985 | 1909627 | 3537022 | 39151717 |
| *Number of members* | *2.51* | *2.60* | *2.84* | *2.86* | *2.31* | *2.06* |
| of them: | | | | | | |
| economically active | 1.14 | 1.00 | 1.08 | 1.33 | 1.02 | 0.88 |
| dependent children | 0.58 | 0.64 | 0.74 | 0.71 | 0.51 | 0.42 |
| pensioners | 0.50 | 0.51 | 0.48 | 0.62 | 0.51 | 0.47 |
| other persons | 0.29 | 0.46 | 0.55 | 0.20 | 0.27 | 0.29 |
| *In percent of all members* | *100.00* | *100.00* | *100.00* | *100.00* | *100.00* | *100.00* |
| economically active persons | 45.42 | 38.46 | 38.03 | 46.50 | 44.16 | 42.72 |
| dependent children | 23.11 | 24.62 | 26.06 | 24.83 | 22.08 | 20.39 |
| pensioners | 19.92 | 19.62 | 16.90 | 21.68 | 22.08 | 22.82 |
| other persons | 11.55 | 17.69 | 19.37 | 6.99 | 11.69 | 14.08 |