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Abstract

This paper documents trends in earnings distribution during the transition in Central Europe, and examines changes in relative wages that have underlined the rise in earnings inequality. The paper finds that the widening of earnings distribution was concentrated in the early phase of transition, and the trend towards greater inequality in most countries tapered off during the late 1990s. This suggests that a new equilibrium has been reached, or at least approached. This equilibrium is characterized by high but not exorbitant earnings dispersion. In most transitional economies of Central Europe earnings inequality is in the upper part of the OECD range, rarely beyond that range. The widening of earnings distribution has occurred at its both ends. The relative position of low-paid workers has deteriorated while the position of top paid workers has improved. At the same time the incidence of both low- and high-pay has considerably increased. High earnings dispersion is particularly pronounced in the private sector, which is a primary source of both low- and high-paying jobs. The main observable factor behind the increase in earnings inequality during the transition has been the increase in the premium to university education. Education is currently the single most important variable explaining the attained level of inequality, whereas inter-industry wage differentials are second in importance. The contribution of other factors, such as gender, labor market experience, location, is small or insignificant.

Acknowledgments

Earnings Inequality In Transition Economies of Central Europe
Trends and Patterns During the 1990s

INTRODUCTION

Earnings inequality was traditionally low under central planning. Economic transition has brought about a considerable increase in inequality, which was concentrated over just a few years. Already in early 1990s, when the transition was at its early stage, earnings inequality in most historically planned economies of Central Europe (CE) reached the range characteristic of mature market economies of Western Europe (Rutkowski, 1996b). Interestingly, the increase in earnings dispersion was not directly related to the pace of economic reforms. Earnings dispersion has increased both in countries which adopted fast and decisive market oriented reforms, such as the Czech Republic or Poland, and in countries where reforms were slow and faltering, such as Bulgaria or Romania. It seems that the decentralization of the wage setting has had a stronger impact on the wage structure than the speed of privatization and other related reforms. Although the development of the private sector undoubtedly has spearheaded the process of rising earnings dispersion, the forces of supply and demand compelled the public sector to adjust its wage setting practices, too.

Has the trend toward greater earnings inequality, that emerged so forcefully at the outset of the transition, continued along with the development of market institutions? Or, after a few years of intensive adjustment the earnings structure reached a new equilibrium and the trend toward greater inequality has tapered out? Do earnings differentials keep rising, or have they stabilized? This paper aims to answers these questions by documenting changes in the earnings distribution in selected CE countries during the 1990s, focusing on the second half of the decade, i.e. at the later phase of the transition. It also attempts to examine some of the factors underlying the changes in the earnings structure.

The paper updates the results of numerous earlier papers on the earnings structure in transition economies of Eastern and Central Europe (see for example Rutkowski, 1996b, and Newell and Reilly, 1997 for the analysis of the earnings structure at an early stage of the transition). It does not address, in a systematic manner, conceptual issues relating to the changes in the earnings structure in the wake of economic transition, as these have been

treated quite extensively in other papers. For instance, Atkinson and Micklewright (1992), Flanagan (1993), Munich, et al. (1999), and Rutkowski (1994) discuss wage determination in the CE countries under central planning, on the eve of economic transition. A conceptual framework for the analysis of the impact of transition on the earnings structure is presented in Orazem and Vodopivec (1997), and possible explanations for the changes in relative wages are provided in Rutkowski (1996a). Thus, the scope of this paper is limited to an empirical analysis of the recent evidence on trends in earnings distribution in the CE countries.

The study focuses on the earnings distribution of full-time wage and salary workers.[1] This approach is in part dictated by the scope of the employer based earning surveys (which exclude the self-employed and part-time workers), but also by an intention to compare likes with likes, i.e. to control for some exogenous factors affecting earnings level.[2] Also in line with the received tradition, this study does not include the unemployed in the analysis of the earnings distribution. It is sometimes argued that the unemployed should be included (with their earnings equal zero) in order to measure the broader notion of labor market inequality (including the inequality in access to jobs), and to incorporate in the analysis the trade-off between wage dispersion and unemployment. Although we see the rationale behind this idea, we think that in practice such a comprehensive measure of labor market inequality would conceal more that it would reveal, as it would merge two separate – although admittedly related – phenomena, rendering the interpretation of such a measure difficult. Thus, we stick to the traditional approach, by focusing on a single aspect of labor market inequality – inequality of earnings.

The analysis of the earnings distribution is based on employer based surveys. Earnings are defined as gross monthly earnings and salaries of full time employees. The non-cash elements of worker remuneration are left out of the analysis. A detailed description of the surveys is provided in Rutkowski (1996b). The analysis of wage determination, and the analysis of links between the earnings distribution and poverty is based on household based

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[1]   This is consistent with other international comparisons of earnings distribution; see for example OECD (1996).

[2]   For example, earnings of the employees and the self-employed are determined according to different rules.

2

surveys, such as the Labor Force Survey or LSMS type surveys. Here earnings are defined as net (take-home) monthly earnings.

The country coverage is confined to transition economies of Central Europe including the Baltic states (but excluding other FSU countries). In Section I, which examines trends in the earnings distribution, we cover all transitional Central European economies for which data are available.[3] In Section II, which focuses on the wage determination, we use a narrow sample of countries consisting of Bulgaria, Hungary, Macedonia and Poland. This sample was determined by the availability of micro data sets containing information on earnings. We supplement the analysis of wage determination by data on the Czech Republic and Latvia, which come from recently produced papers by Munich, et al. (1999) and Chase (1999), respectively.

The paper is organized as follows. Section one provides an update on changes in the earnings distribution in CE transition economies during the second half of the 1990s. Section two examines wage determination – returns to different human capital characteristics – and the sources of earnings inequality. Section three concludes.

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[3]   Albania, Croatia, Estonia, and Slovakia are excluded due to the lack of time-series data on earnings distribution.

BOX MEASURING EARNINGS INEQUALITY

Measuring earnings inequality is intrinsically difficult for a at least three reasons. First, results often differ depending on the **source of data**. Employer based surveys usually yield different results than household based surveys. For example, in Poland according to the (employer based) Survey of Earnings Distribution wages are more unequally distributed in the private than in the public sector. However, according to the (household based) Labor Force Survey the result is exactly the opposite. Different data sources can also give raise to substantially different measured magnitude of wage inequality. For example in Macedonia according to the Labor Force Survey the Gini coefficient for wages amounts to 24, indicating low inequality, while according to the Family Budget Survey it amounts to 31, indicating relatively high inequality (both surveys are household based). These differences according to the source partly reflect differences in survey **coverage** and the adopted definition of earnings. For example, small firms, let alone informal sector firms, are usually underrepresented in employer based surveys.

Second, results often differ depending on the applied **definition of earnings**. In particular, the distribution of earnings tends to be different from that of an hourly wage rate. For example, in Poland private sector workers enjoy a significant earnings premium over public sector workers if earnings are measured on a monthly basis. However, this premium disappears if the comparison is based on hourly wage rates.

Third, earnings tend to be **misreported**. Both employers and workers may underreport actual earnings to avoid a discrepancy between earnings reported for tax and survey purposes. For example the official survey of earnings distribution in Bulgaria shows an abnormally high concentration of earnings in the lowest wage bracket. Moreover, earnings tend to be measured imprecisely, with a wide margin of error.

4

CHANGES IN THE EARNINGS DISTRIBUTION

Earnings inequality

Earnings inequality has strongly increased during the transition in virtually all transition economies of Central Europe (CE). During the period of 1989-1997 in most countries in the region the Gini coefficient – a summary measure of inequality – increased by 6-8 points (Table 1). Although most countries conformed to this pattern, there were some notable exceptions. Macedonia stands out as a country where the increase in inequality was relatively modest (4 points), while Romania is the opposite case of an extremely high increase in earnings inequality (over 20 points). These two extreme cases notwithstanding, CE has experienced a considerable but not exorbitant increase in the earnings dispersion, the latter being characteristic of the FSU.

The widening of the earnings distribution that has occurred during the transition amounted to a transition from a low to a relatively high earnings inequality status. Inequality is a relative concept, so in order to assess the level of inequality one needs a benchmark. We will compare earnings inequality in transition economies of CE to that in advanced OECD countries. And for the sake of comparability, as a measure of inequality we will use the Decile Ratio – a ratio of the top decile earnings to the bottom decile earnings. In West European OECD countries the Decile Ratio ranges from around 2.0 (Italy, Sweden) to around 3.5 (Austria, U.K.), with most countries falling into the 2.5-3.0 range. The U.S is an outlier with the Decile Ratio reaching 5.5. Against this background, all transition economies of CE should be categorized as countries characterized by relatively high earnings inequality. In all countries under question the Decile Ratio exceeds 3.0, which can be adopted as a conventional threshold marking above the average inequality. In fact, in most of the CE countries the Decile Ratio exceeds 3.5, that is the level of earnings inequality observed in the U.K., the most unequal West European country. In a number of countries inequality is still higher: in Latvia, Lithuania, Hungary, and Romania the Decile Ratio exceeds 4.0 – the level of earnings dispersion not observed in Western Europe, although still below that in the U.S.

Accordingly, with respect to earnings inequality, the transition economies of CE can be divided into two groups:

- Modest to high inequality (Decile Ratio less or equal to 3.5): Czech Republic, Macedonia, Poland, Slovenia;
- High to very high inequality (Decile Ratio more than 3.5): Bulgaria, Latvia, Lithuania, Hungary, Romania.

Thus virtually all transition economies of CE should be considered as high inequality countries, although in some of them the level of earnings dispersion is still close to the European standards, while in others it approaches the US standards. However, it should be stressed that, in general, earnings inequalities in CE are not exorbitant, such as those in developing countries, or in some of FSU countries. They are high by the European standards, not by the world standards.

In all countries for which data are available, earnings dispersion in the private sector is significantly higher than in the public sector (Table 2).[4] In the private sector the Gini coefficient is from 3 to 10 points higher than in the public sector, indicating a substantially wider earnings distribution. As a rule, the gap between low paid workers and the median worker is larger in the private than in the public sector. Also the distance between top paid workers and the median worker tends to be larger in the private sector. For example, in Poland the bottom decile worker earns 62 percent of the median earnings in the public sector and only 54 percent in the private sector. Similarly, the top decile worker earns 195 percent of the median earnings in the public sector and 212 percent in the private sector.

Has earnings inequality been continuously increasing since the outset of transition, or are there signs that the trend toward greater inequality has tapered out, or maybe even reversed? It turns out that there is no clear pattern common to all countries. In a few countries earnings distribution has still been exploding. Romania is the most notable example: the Decile Ratio rose to around 5 in 1999 from 4.1 in 1996 and 3.6 in 1995, which

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[4]   Data on wage distribution shown in Table 2 are not comparable with those in Table 1 since the former come from household based surveys while the latter from employer based surveys (with the exception of Poland where the same source is used in both cases). The reason for using different sources is that the employer based surveys as a rule do not allow for a sectoral (public/private) break-down of the wage data.

6

is a huge surge. Also in Hungary earnings dispersion keeps increasing at a relatively high rate. By contrast, Poland and Slovenia are examples of countries which still experience some increases in earnings inequality but at a very modest rate. In both these countries the Decile Ratio hardly increased since the mid 1990s, suggesting that a new equilibrium was reached. An interesting process of inequality being actually reversed can be observed in the Czech Republic, Latvia, and to a lesser extent, Lithuania. For example in Lithuania the Decile Ratio fell from 7 in 1994 around 4 in the late 1990s. Earnings inequality is still high in Lithuania, but incomparably lower than it was just a few years earlier. In the Czech Republic and in Latvia the fall in earnings inequality was less dramatic. However these there countries provide an important lesson that the increase in inequality is not inexorable, and it can be reversed.

Table 1:
Summary of Earnings Distribution, 1989-1999

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Bulgaria a)											
P10	..	63.3	56.3	..	56.9	..	..	55.6	..	..	..
P90	..	162.9	171.9	..	178.0	..	..	198.7	..	..	..
Decile ratio	..	2.6	3.1	..	3.1	..	..	3.6	..	..	..
Gini coefficient	..	0.213	0.262	..	0.25	..	..	0.292	..	..	..
Czech Republic											
P10	61.3	..	63.2	60.8	57.0	57.6	49.4	60.4	58.2	57.4	59.1
P90	148.7	..	163.5	166.7	182.4	181.3	182.7	172.9	173.7	173.0	177.8
Decile ratio	2.4	..	2.6	2.7	3.2	3.1	3.7	2.9	3.0	3.0	3.0
Gini coefficient	0.198	..	0.210	0.212	0.257	0.259	0.282	0.255	0.260	0.258	0.257
Latvia											
P10	..	..	58.4	46.3	55.3	50.1	45.4	48.4	47.4	44.9	47.4
P90	..	..	179.8	206.0	185.1	204.6	208.1	215.4	209.6	205.7	202.5
Decile ratio	..	..	3.1	4.4	3.3	4.1	4.6	4.4	4.4	4.6	4.3
Gini coefficient	..	..	0.249	0.338	0.282	0.327	0.344	0.349	0.335	0.331	0.332
Lithuania											
P10	..	..	..	42.4	..	31.2	42.1	50.3	52.4	51.2	49.3
P90	..	..	..	221.0	..	236.6	231.0	220.4	216.6	224.9	228.7
Decile ratio	..	..	..	5.2	..	7.6	5.5	4.4	4.1	4.4	4.6
Gini coefficient	..	..	..	0.385	..	0.391	0.374	0.342	0.339	0.353	0.363
FYR Macedonia											
P10	..	60.2	55.0	60.4	51.3	61.2	49.6	58.9	55.6	57.0	55.7
P90	..	165.5	185.6	169.5	182.8	179.6	176.9	180.0	180.1	183.5	187.5
Decile ratio	..	2.7	3.4	2.8	3.6	2.9	3.6	3.1	3.2	3.2	3.4
Gini coefficient	..	0.223	0.267	0.235	0.271	0.253	0.270	0.250	0.259	0.269	0.274

Table 1:
Summary of Earnings Distribution (cont.)

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Hungary c)											
P10	58.3	57.7	..	56.6	55.9	54.7	..	..	51.4	..	..
P90	183.0	196.4	..	201.2	205.2	207.4	..	..	214.0	..	..
Decile ratio	3.1	3.4	..	3.6	3.7	3.8	..	..	4.2	..	..
Gini coefficient	0.268	0.291	..	0.304	0.315	0.323	..	..	0.349	..	..
Poland											
P10	65.4	..	61.6	61.6	60.1	58.5	58.3	57.3	56.7	57.2	56.2
P90	159.0	..	176.1	179.8	181.9	196.5	197.0	198.4	200.3	193.6	199.2
Decile ratio	2.4	..	2.9	2.9	3.0	3.4	3.4	3.5	3.5	3.4	3.5
Gini coefficient	0.205	..	0.242	0.247	0.257	0.281	0.288	0.295	0.301	0.293	0.305
Romania											
P10	74.3	..	66.8	..	61.1	57.7	52.0	49.3	41.5	39.3	46.0
P90	145.1	..	161.9	..	168.6	177.6	185.9	199.9	216.0	215.1	227.9
Decile ratio	2.0	..	2.4	..	2.8	3.1	3.6	4.1	5.2	5.5	5.0
Gini coefficient	0.156	..	0.205	..	0.229	0.228	0.283	0.304	0.422	0.357	0.381
Slovenia											
P10	62.1	62.2	56.5	59.3	58.7	59.8	60.2	59.9	60.1	59.5	58.9
P90	164.9	173.4	178.1	177.7	181.6	190.3	191.3	194.8	200.0	196.8	197.0
Decile ratio	2.7	2.8	3.2	3.0	3.1	3.2	3.2	3.3	3.3	3.3	3.3
Gini coefficient	0.222	0.228	0.269	0.261	0.273	0.275	0.292	0.298	0.302	0.306	0.305

Notes:

Unless noted otherwise, earnings are defined as gross monthly earnings, including monthly equivalents of bonuses and allowances.

P10 denotes the earnings of the bottom decile relative to the median, expressed as a percentage.

The decile ratio is the ratio of the top decile to the bottom decile, i.e. P90/P10.

a) Data refer to the public sector only.

b) Net earnings

c) 1988 instead of 1989.

Source: UNICEF's TransMONEE database; Author's calculations. An earlier version of this table was prepared for the paper by Rashid and Rutkowski (2001).

Table 2:
Earnings Distribution in the Public and Private Sectors

	Gini	Decile Ratio	P10	P90
Bulgaria (1997)				
Public sector	0.393	5.7	43.8	250.0
Private sector	0.415	4.8	44.1	213.1
Hungary (1997)				
Public sector	0.221	2.4	66.2	161.8
Private sector	0.279	3.0	63.0	188.9
Macedonia (1996)				
Public sector	0.262	3.3	50.0	162.5
Private sector	0.359	3.8	57.1	214.3
Poland (1997)				
Public sector	0.271	3.1	61.8	194.5
Private sector	0.341	3.9	54.0	211.6

Notes:

Inequality measures based on sample order statistics (P10, P90, Decile Ratio) are likely to be biased. This is caused by the fact that people tend to round off their earnings which results in bunching of reported earnings at certain values (e.g. 1,000, 2,000). This problem is often aggravated by the small sample size. Accordingly, the inter-sectoral comparisons based on these measures may be not reliable. The Gini coefficient, which is based on all observations in the sample is more robust.

Bulgaria, Hungary and Macedonia: net monthly earnings of full-time workers

Poland: Gross monthly earnings of full-time workers

In Macedonia the public sector includes state, cooperative, and socially (worker) owned

enterprises. The private sector includes private and mixed (partly private) enterprises.

Source:

  Bulgaria: Integrated Household Survey, 1997.

  Hungary: Hungarian Household Panel Survey, TARKI, 1997

  Macedonia: Family Budget Survey, 1996.

  Poland: Earnings Distribution Survey, September 1997, GUS, Warsaw.

Author's calculations.

Macedonia offers yet another example of an fluctuating trend in earnings inequality. One year inequality goes up, just to go down the next year, and the whole process then is repeated. One can not exclude that some measurement error is involved and the fluctuations are spurious. However, the time series seems too long to reflect a purely random process. One possible explanations is that these fluctuations are caused by two countervailing forces, which take turns to prevail. One is market forces toward more flexible wage structure

reflecting demand and supply conditions. The other is institutional forces (union bargaining) which oppose the trend toward greater inequality.[5]

Thus, the inequality trend has had several distinct patterns in CE. In some countries the growth in inequality was strongly concentrated during the early stage of the transition (Poland, Slovenia). In others inequality continues to growth at a stable rate (Hungary), in still others the growth in inequality accelerated during the late 1990s (Romania). In a number of countries after an initial growth inequality begun to fall, although it keeps to be relatively high. A unique example of Macedonia is likely to point to the fact that wage distribution is a product of a joint influence of different forces, in particular market and institutional ones, which often run in opposite directions.

In all CE countries the widening of the earnings distribution has taken place at its both ends. The relative position of workers in the bottom of the distribution has deteriorated while the position of those in the top has improved. However, the latter effect was dominant, that is the newly gained affluence of top paid workers was more pronounced than the impoverishment of the low paid workers.

Changes at the bottom of earnings distribution

Before the transition in virtually all CE countries workers at the bottom decile used to be paid over 60 percent of the median earnings. In Romania they received as much as three-quarters of the median. Only in Hungary, which introduced the decentralized wage setting earlier than other countries in the region, bottom decile workers received somewhat less than 60 percent of the median earnings. Thus, before the transition the gap between the low paid worker and the median worker was relatively small, smaller than in most OECD countries.

The transition and associated decentralization of the wage setting have in most cases dramatically changed this situation. Low paid workers have seen their relative earnings status significantly deteriorate. Romania offers the most striking example. At present the bottom decile worker earns just over 40 percent of the median earnings, which implies that in the course of transition the 50-10 earnings gap increased by almost 30 percentage points. This is indeed a huge change. In most other countries the deterioration in the earnings status

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[5]   Unions are extremely strong in Macedonia, even in the privatized enterprises. They bargain at an industry level and have an explicit target of limiting the wage disperion by imposing compressed wage scales.

of low paid workers was less dramatic but still substantial; the 50-10 gap increased by nearly ten points. As a result, currently the bottom decile worker earns about 45 to 55 of the median earnings, which is below the range typical of OECD countries.

There is a number of notable exceptions to this overall pattern. Latvia, Lithuania (in mid-1990s), and Romania are examples of economies where the downward adjustment of relative wages of low productivity workers has been especially marked. By contrast, the Czech Republic, Slovenia, and to a lesser extent Poland, are examples of economies where this adjustment has been much more modest. Slovenia stands out as an extreme in this respect: in 1999 the 50-10 earnings gap at 59 percent was only 3 points lower than in 1989.[6]

Why in some economies the fall in relative wages of low productivity workers has been much more pronounced that in others? The thorough examination of this issue goes beyond the scope of this paper. Her we limit ourselves to pointing to some institutional factors that affect wage setting and in particular may account for the existence of wage floors. Two factors seem to play a decisive role: (a) the minimum wage, and (b) union bargaining. These two factors are not independent. Specifically, union strength often influences the way the minimum wage is set and thus influences its level. It is quite obvious that the higher the minimum wage as the proportion of the average wage, the more compressed is the bottom part of the earnings distribution, although there is no strict relationship between the 50-10 wage gap and the "bite" of the minimum wage. For example, the minimum wage as a percentage of the average wage is relatively low in the Czech Republic (less than 30 percent), while the 50-10 gap is relatively small. By contrast, in Hungary the minimum wage is relatively high (around 47 percent of the average wage), while the 50-10 wage gap is quite large. Obviously, there are supporting examples, too. In Latvia and Romania the minimum wage is low relative to the average wage and so is the bottom decile wage (i.e. the 50-10 gap is large).

One could expect that the bottom of the earnings distribution is more compressed in countries where trade unions are stronger, have more members and the coverage of collective agreements is wider. These factors often depend on the relative size of the private sector, the

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[6]   It would be interesting to correlate the wage adjustment with the unemployment rates, but this would go beyond the scope of this study.

mode of privatization and the governance structure, as well as the level at which bargaining takes place. Unions tend to be stronger in those transition economies where the size of the private sector is relatively small, privatization has not led to the significant change in the governance structure (e.g. manager and employee buy-out), and bargaining is centralized (national or industry level bargaining as opposed to firm level bargaining). These variables are difficult to measure which is one reason why the formal test of the hypothesis of the correlation between the union strength and the compression of the wage distribution is not carried out here. Not attempting to "prove" the suggested relationship, we can cite the examples of Macedonia and Poland as countries where strong trade unions are successful in protecting the relative earnings position of low paid workers. Interestingly, in Macedonia there is no national minimum wage, but still strong worker representation in both public and privatized firms as well as industry level bargaining, which covers all firms in an industry, result in a relatively favorable position of low paid workers. By contrast, in Latvia and Lithuania, where unions are weaker, the position of low paid workers is less favorable.

It should be noted that in most countries the widening of the 50-10 earnings gap has taken place in the context of the fall in the real value of the median wage. This implies that low paid workers lost in relative and in absolute terms. Their real wages have fallen both as a result of the falling average wage and the growing wage dispersion.

Changes at the top of the earnings distribution

As already mentioned, most of the action has taken place at the top end of the distribution. The transition entails the emergence of high earnings, which were not attainable under the communism. Before the transition the top decile worker used to earn 50 to 60 percent more than the median worker. At present, in most countries in the region the top decile worker earns at least twice as much as the median worker. The gap between the top paid workers and the median workers has thus dramatically increased. High productivity is currently rewarded considerably more than before the transition.

The increase in the 90-50 earnings gap has been so substantial, that in some cases it has compensated for the fall in the average level of wages that has occurred during the initial phase of the transition. For example, in Slovenia the top decile worker earns a few percent more than before the transition despite that the average wage is more than 10 percent below its pre-transition level. In the Czech Republic and Poland top decile workers earn substantially more than before the transition (20-40 percent), while the average wage has barely recovered from the initial plunge. However, in countries which experienced a really dramatic fall in real wages, such as Latvia or Romania where wages fell by over 30 percent, even top decile workers have suffered a real earnings loss.

The incidence of low and high pay

Another facet of the widening the of earnings distribution is the growing number of both low and high earners. In the course of the transition low wages have become even lower and more people are earning them. Similarly, the earnings status of highly paid workers has improved and the ranks of the high paid have swollen. As a result, those of the middle of the distribution – a vast majority under central planning – have become less numerous. Table 3 illustrates this process. It uses standard definitions of low pay as earnings lower than two-thirds of the median and high pay as earnings higher than 1.5 times the median earnings.

It is not surprising that the increase in the proportion of low- and high-paid workers is correlated with the increase in earnings dispersion. Those countries which experienced the largest decompression of the earnings distribution also experienced the largest rise in the numbers of low- and high-paid jobs. Currently in Romania there are five times as many low paid workers as before the transition, and three times as many high paid workers. By contrast in Slovenia or Macedonia the increase in both low and high paying jobs was rather modest. The Czech Republic is an untypical example: while the percentage of high paid workers nearly doubled during the 1990s, the percentage of low-paid workers has stayed close to the pre-transition level.

Despite the differences in dynamics, virtually all transition economies of CE ended up with a relatively high incidence of both low- and high-pay. In most CE countries low paid workers account for 17 to 25 percent of employment. In comparison, in most European

OECD countries the incidence of low pay does not exceed 15 percent, and only in the U.K. it reaches 20 percent. The U.S. is an outlier, with the incidence of low-pay at 25 percent (OECD, 1996).

Against the backdrop OECD countries, most transition economies are characterized by very high incidence of low pay. Countries where it exceeds 20 percent include Bulgaria, Latvia, Lithuania, Hungary and Romania.[7] In Macedonia, Poland and Slovenia the incidence of low pay is relatively high, but below the 20 percent. Only in the Czech Republic the incidence of low pay is relatively low (16 percent), comparable to that prevailing in OECD countries.

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[7]   Data for Bulgaria in 1997 come from a household based survey, and for the sake of comparability are not shown in Table 2.

Table 3:
The Incidence of Low- and High-pay, 1989-1999

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Bulgaria a, b)											
Low paid workers	..	13.2	18.4	..	17.8	..	..	18.5	..	..	..
Highly paid workers	..	21.9	16.9	..	17.6	..	..	21.5	..	..	..
Czech Republic											
Low paid workers	14.7 ..		12.9	14.0	17.5	16.9	22.6	14.8	11.0	16.8	15.5
Highly paid workers	9.6 ..		14.0	14.5	18.9	17.9	19.5	16.2	23.8	16.3	16.1
Latvia											
Low paid workers	..	..	16.6	25.7	17.1	77.2	25.3	24.7	24.8	26.4	26.4
Highly paid workers	..	..	18.5	23.7	18.8	10.6	23.5	24.0	23.8	22.7	21.3
Lithuania											
Low paid workers	..	..	..	25.8 ..		30.5	31.3	26.3	24.8	25.7	27.8
Highly paid workers	..	..	..	25.7 ..		29.2	29.5	26.2	24.8	26.6	27.4
FYR Macedonia											
Low paid workers	..	14.5	22.5	14.9	20.8	19.9	21.9	15.8	18.9	18.4	19.4
Highly paid workers	..	14.4	19.3	15.6	18.8	18.0	15.2	17.8	17.4	18.2	18.9
Hungary c)											
Low paid workers	17.5	17.7	..	18.9	19.1	20.0	..	..	21.5	..	..
Highly paid workers	18.6	20.8	..	21.9	22.2	22.0	..	..	23.1	..	..
Poland											
Low paid workers	11.0	..	14.0	14.2	15.7	17.2	17.3	18.3	18.8	18.2	18.6
Highly paid workers	12.6	..	16.6	17.5	18.1	20.3	20.5	20.8	21.0	20.1	21.1
Romania											
Low paid workers	4.5	..	9.9	..	13.0	19.0	20.9	22.4	25.3	25.4	25.6
Highly paid workers	8.3	..	13.5	..	15.2	20.7	19.6	21.2	24.5	24.0	25.0
Slovenia											
Low paid workers	14.2	14.1	17.6	16.3	16.3	15.8	15.6	16.1	16.8	16.3	17.2
Highly paid workers	14.5	17.3	17.2	17.5	18.0	19.5	19.9	19.5	19.8	19.8	20.2

.. Data not available

Notes: The incidence of low (high) pay = low (high) paid workers as a percentage of all full-time wage and salary workers.

Low pay is defined as less than two-thirds of median earnings for all full-time workers

High pay is defined as more than 1.5 times the median earnings

    a)   Data refer to the public sector only.

    b)   Net earnings

    c)   1988 instead of 1989.

Source: UNICEF's TransMONEE database; Author's calculations. An earlier version of this table was prepared for the paper by Rashid and Rutkowski (2001).

Well paying jobs have also become quite common in transition economies. In most of the countries under question, 20 to 25 percent of workers currently earn more than 1.5 times the median earnings. As a result the middle of the distribution has shrunk. For example in Poland – where the changes in the distribution have been relatively modest – the proportion of middle paying jobs declined from 76 percent before the transition to just over 60 percent in 1997. However in Romania – where the distribution has changed dramatically – the percentage of middle paying jobs plummeted from 87 to 50 percent.

Where are the bad and good jobs located? Does the private sector offer better job opportunities than the public sector? Not necessarily. The incidence of low pay is substantially higher in the private sector in all countries (Table 4).[8] A private sector worker is about 50 percent more likely to be low-paid than the public sector worker. For example in Poland low paid jobs account for as much as 22 percent of private sector jobs and only 15 percent of public sector jobs. Obviously, this is a simplistic picture as it does not allow for the inter-sectoral differences in industry structure, firm size, human capital and other factors. The private sector tends to be concentrated in industries such as trade and construction, which pay lower wages. Also, private firms are usually much smaller than public firms, and this may be the primary reason why they pay lower wages. Nonetheless, the fact that the bottom tail of the earnings distribution is heavier in the private sector than in the public sector, by itself seems to be an important observation. It may help to understand the resistance of some groups of workers (especially less skilled manual workers) toward privatization.

What about well paying jobs? Here the evidence is less clear-cut. In some countries they are more common in the private sector, in others still in the public sector (Table 4). The sample is too small to make generalizations, but the limited evidence suggests that the private sector has become an attractive employer in more advanced transition economies, such as Hungary and Poland, while it is still the public sector which is a more attractive employer in less advanced economies, such as Bulgaria and Macedonia

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[8]   Given that the data come from household based surveys (except for Poland), there is no reason to assume that private sector earnings are underreported relative to public sector earnings (this kind of bias potentially could have occurred if the data where coming from employer based surveys).

Table 4:
The Incidence of Low- and High-pay by Sector

	Incidence of	
	Low pay	High pay
	%	
Bulgaria (1997)		
Public sector	22.1	29.4
Private sector	33.3	18.4
Hungary (1997)		
Public sector	10.7	12.5
Private sector	15.9	17.6
Macedonia (1996)		
Public sector	13.1	20.1
Private sector	17.5	18.5
Poland (1997)		
Public sector	14.5	20
Private sector	21.7	22.9

Notes:

Data presented in this table come from different sources than data presented in Table 3 and thus are not comparable.

The incidence of low (high) pay = low (high) paid workers as a percentage of all full-time wage and salary workers.

Low pay is defined as less than two-thirds of median earnings for all full-time workers

High pay is defined as more than 1.5 times the median earnings

Source:

Bulgaria: Integrated Household Survey, 1997.

Hungary: Hungarian Household Panel Survey, TARKI, 1997

Macedonia: Family Budget Survey, 1996.

Poland: Earnings Distribution Survey, September 1997, GUS, Warsaw.

Author's calculations.

SOURCES OF EARNINGS INEQUALITY

A number of factors causes earnings of individual workers to differ. They can be grouped into two broad categories: (a) individual specific factors and (b) firm specific factors. Individual specific factors relate to human capital: education, skills, labor market experience, innate abilities, gender. Firm specific factors include ownership, degree of monopoly power, union strength, size, capital-to-labor ratio, etc. Unfortunately, data availability limits the extent to which we are able to estimate the impact of these factors on

earnings variation. Below we attempt to present available evidence on the role of some of these factors, including education, experience, gender, and firm ownership.

Educational attainment

Returns to education (educational premia) were traditionally low under central planning and thus differences in educational attainment had a limited impact on earnings variation. In the course of transition this situation has changed dramatically. Returns to education have considerably increased in all transition economies of CE (for which the relevant data are available) and now by and large they are comparable to those observed in advanced market economies. Accordingly, the increase in returns to education has significantly contributed to the increase in earnings inequality.

Poland is a typical example. Before the transition a university educated worker earned on average around 35 percent more than a worker with primary education. Already at the early stage of the transition – in 1993 – the picture was radically different. The university/primary earnings differential increased to almost 75 percent, that is more than doubled. Such a sharp increase in educational premia provided a huge boost to earnings inequality. Interestingly, the increase in the educational premia in Poland took place almost entirely during the early stage of the transition; in the late 1990s educational earnings differentials are virtually the same as they were in 1993.

Table 5 summarizes available evidence on the changes in educational premia in the CE region. The premia are derived from the human capital (Mincer type) earnings function, which means that they show an independent impact of education on earnings variance. The data clearly show that high skills, undervalued under central planning, have begun to pay-off. Especially strong was the increase in the university earnings premium, while the premium to secondary education increased much more modestly. Similarly as in Poland, the increase in returns to education became visible already in the early years of the transition.

Table 5:
Educational Premia Before and at the Early Stage of the Transition

	Percentage wage margins above the reference category					
	<Primary	Primary	Vocational	Secondary	College	University
Czech R.						
1984[a]		Ref.	8.3	21	36.8	
1992[a]		Ref.	9.5	30.9	48.6	
Men[b]						
1988		Ref.	5.0	13.5	34.4	
1992		Ref.	9.3	23.4	46.0	
Women[b]						
1988		Ref.	6.7	21.6	50.4	
1992		Ref.	8.4	30	54.5	
Bulgaria						
Men						
1989		Ref.	5.26	8.43	1.47	
1992		Ref.	1.57	5.44	14.15	
Women						
1989		Ref.	3.67	3.02	21.07	
1992		Ref.	12.3	19.31	29.9	
Poland[d]						
1987		5.0 % per year of schooling				
1992		7.9 % per year of schooling				
1993		7.3 % per year of schooling				
Hungary[e]						
Men						
1986	-10.6	ref.	11.5	19.6	51.4	
1989	-4.2	ref.	12.1	27.2	70.4	
1992	-12.5	ref.	13.4	36.6	81.5	
Women						
1986	-18.3	ref.	14.4	25.4	63.9	
1989	-6.3	ref.	15.3	32.3	77.8	
1992	-12.5	ref.	17.4	37.5	80.3	
Slovakia[a]						
1984		ref.	8.3	21	36.8	
1992		ref.	11	30.9	50.7	
Slovenia[c]						
Men						
1987	ref.	4.4	16.3	31.9	52	71.5
1991	ref.	10.7	20.1	40.6	67.7	94.3
Women						
1987	ref.	7.9	16.4	37	56.9	76.8
1991	ref.	11.2	18.3	46.5	68.5	94.0

Note:
Estimated from Mincer type earnings functions
Source, estimated variable, explanatory variables:
a) Sakova (1996), gross earnings, gender, experience, experience2, schooling dummies
b) Vecernik (1995), gross earnings, experience, experience2, schooling dummies
c) Orazem and Vodopivec (1995), hourly earnings, gender, experience, experience2, schooling dummies ethnicity, region, industry
d) Rutkowski (1996a), net earnings, gender, experience, experience2, years in school, industry
e) Kertesi and Kollo (1999), gross earnings, experience, experience2, schooling dummies
f) Jones and Ilayperuma (1994), experience, experience2, schooling dummies, gender, industry, region, plus other controls (marital status, ethnicity, firm size, union membership, contract type, etc.)
Source: Adopted from Kertesi and Kollo (1999)

Table 6 presents a more recent snapshot data from a somewhat different sample of CE economies. The data reinforce the message that the educational earnings differentials are currently quite high in CE, virtually regardless of the progress of market oriented reforms. In Bulgaria and Macedonia the return to one year of schooling, at around 7 percent, that is similar as in Poland. It is noteworthy that this rate of return to schooling is characteristic of developed market economies (Psacharapoulos, 1994). Similarly, returns to different levels of education in Latvia are close to those observed in Poland. These relatively high returns account for the increased earnings dispersion.

In advanced transition economies, such as Hungary and Poland, educational earnings differentials tend to be significantly larger in the private than in the public sector.[9] This explains (at least partly) why in the private sector earnings are more dispersed. For example in Poland, the university/primary education earnings differential accounts for some 70 percent in the public sector and for about 120 percent in the private sector (Table 7). A similar pattern is observed in Hungary. In contrast, in less advanced transition economies, such as Bulgaria and Macedonia, there is no private sector premium for high skills. One possible explanation for the existence of the private sector earnings premium in more advanced transition economies and the absence of such a premium in less advanced economies may be the different industrial composition of the private sector. In Hungary and Poland the private sector has developed in skill intensive industries (e.g. finance) while in Bulgaria and Macedonia it is concentrated in less skill intensive industries (e.g. trade). Accordingly, the private sector demand for high skills in Hungary and Poland is higher than in Bulgaria and Macedonia. In fact, once the industry structure is controlled for, educational premia in the private sector in Macedonia go significantly up and are virtually the same as in the public sector.

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[9]   In the Czech Republic the picture is more complex. Munich et al. (1998) report that "there is no significant difference in the return to a *year of education* form men or women across [...] three types of ownership. [...] However the return to a university degree is significantly higher in the privatized enterprises and coops than in the SOEs and public administration for women, but not for men".

Table 6:
Educational Premia at the Second Stage of the Transition

	Per year of schooling	Primary	Vocational	Secondary technical	Secondary general	College	University
Bulgaria (1997)							
National economy	6.5	reference	23.5		31.3	39.1	93.4
Public sector	6.2	..	..	..	..	..	..
Private sector	6.8	..	..	..	..	..	..
Men	6.9	..	..	..	..	..	..
Women	6.1	..	..	..	..	..	..
Hungary (1996) a		reference	12.9	21.2		77.5	
Latvia (1998)							
Men	..	reference	11.6	25.9		71.6	
Women	..	reference	16.2	2.8		58.4	
Macedonia (1996)							
National economy	7.0	..	..	..	..	..	..
Public sector	7.4	..	..	..	..	..	..
Private sector	5.9	..	..	..	..	..	..
Men	6.0	..	..	..	..	..	..
Women	7.4						
Poland (1996)							
National economy	7.3	reference	9.3	31.5	34.0	34.4	77.4
Public sector	6.0	..	..	..	..	..	..
Private sector	7.5	..	..	..	..	..	..
Men	7.8						
Women	6.7						

Notes:

Estimated using Mincer type earnings functions.

Bulgaria: (log) monthly net earnings, years of schooling, experience, expereince2.

Latvia: (log) monthly earnings, schooling dummies, age, age2, nationality, marital status, region dummies, rural/urban residence.

Macedonia: (log) monthly net earnings, years of schooling, experience, experience2, gender.

Poland: (log) monthly net earnings, years of schooling, actual experience, actual experience2, gender.

The premia are calculated as $(exp(b)-1)*100$, where b is the estimated coefficient on the pertinent education dummy variable.

Source:

  Bulgaria: Integrated Household Survey, 1997; author's calculations.

  Hungary: Kollo and Kertesi (1999)

  Latvia: Case (1999)

  Macedonia: Family Budget Survey, 1996; author's calculations.

  Poland: Labor Force Survey, May 1996; author's calculations.

Table 7:
Educational Earnings Differentials by Sector

	Public sector	Private sector
	%	
Bulgaria (1997)		
University	94.7	98.4
College	21.4	16.6
Secondary technical	56.1	21.6
Secondary general	17.0	1.8
Vocational training	..	..
Hungary (1996)		
University	119.1	186.6
College	55.1	101.9
Secondary technical	31.5	45.8
Secondary general		
Vocational training	17.3	23.9
Macedonia (1996)		
University	79.5	35.5
College		
Secondary technical	33.9	2.4
Secondary general		
Vocational training		
Less than primary	-6.5	-33.9
Poland (1996)		
University	69.2	119.1
College	13.2	32.1
Secondary technical	27.9	27.9
Secondary general	24.5	17.8
Vocational training	17.0	6.8

Note: The table shows coefficients on the education dummy variables in human capital earnings functions, transformed to obtain percentage wage differentials. Primary education is the reference category

Source:

Bulgaria: Integrated Household Survey, 1997.

Hungary: Hungarian Household Panel Survey, TARKI, 1996

Macedonia: Family Budget Survey, 1996.

Poland: Labor Force Survey, May 1996

Author's calculations.

Labor market experience

Actual labor market experience is difficult to measure, so it is customary that it is proxied by *potential* experience defined as age – years of schooling – 6. It is usually assumed that the experience-earnings profile has flattened during the transition, reflecting the

fact that the experience gained during the previous regime is of lesser value in the market economy. Flanagan (1993), Rutkowski (1997) and Kollo and Kertesi (1999) provide some empirical support for this hypothesis for the Czech Republic, Poland and Hungary, respectively. For example in Poland, the earnings differential between a worker with 25 years of (potential) experience and a worker of the same education and gender with 5 years of experience was 23 percent in 1996, down from 33 percent in 1987. Analogous changes have taken place in Hungary; Figure 1 gives their stylized representation. However, Orazem and Vodopivec (1994) report a more complex pattern for Slovenia (experience-earnings profile is flatter over first eight years but steeper thereafter). Given that the impact of the experience-earnings profile on the earnings distribution also depends on the relative cohort size, it is difficult to assess whether or not changes in the profile contributed to greater earnings inequality.

Figure 1   **Experience-earnings profile in Hungary before and during the transition**

Experience-Earnings Profile
Hungary 1989 and 1996
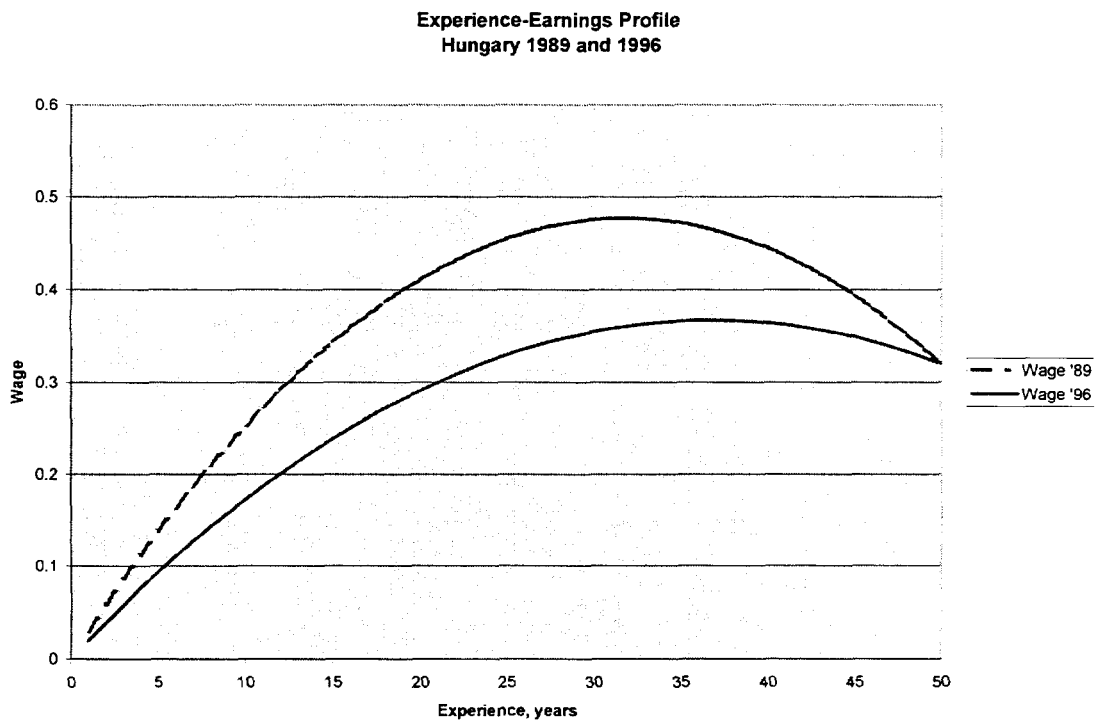
At present the importance of labor market experience in wage determination varies visibly across the region (Table 8). Earnings differentials between experience categories

seem to be very large in Latvia, especially among women, and at the same time they play a negligible role in Bulgaria and Macedonia. Hungary and Poland are the intermediate cases, with the premium for 20 years of additional experience of around 25 percent.

Table 8:
Earnings Differentials between Workers with 5 and 25 Years of Experience

	Earnings differential between workers with 25 and 5 years of experience
	%
Bulgaria (1997)	11.9
Latvia (1998)	
Men	30.0
Women	62.9
Hungary (1996)	26.9
Macedonia (1996) a	4.1
Poland (1996)	23.1

Note: The table shows coefficients on the gender dummy variable in human capital earnings functions, transformed to obtain percentage earnings differentials.
a) Tenure with the current firm
Source:
   Bulgaria: Integrated Household Survey, 1997.
   Hungary: Kollo and Kertesi (1999)
   Làtvia: Chase (1999)
   Macedonia: Family Budget Survey, 1996.
   Poland: Labor Force Survey, May1996.
Author's calculations.

Gender

In centrally planned economies, as in market economies, women earned less than men with similar observable human capital characteristics. For example in Hungary in 1989, after controlling for human capital, and firm characteristics (size, productivity, capital-to-labor ratio) a male worker earned on average 35 percent more than his female counterpart (Kollo and Kertesi, 1999). A significant gender wage gap was also observed in other centrally planned economies, for example Bulgaria (Jones and Ilayperuma, 1994), Poland (Rutkowski, 1996a) or Slovenia (Orazem and Vodopivec, 1994).

The transition to capitalism has improved women's relative earnings position in most countries for which the evidence is available. In Bulgaria, Hungary and Poland the male/female earnings differential fell by about 10 percent points within just 3 years. Apparently the transition to a market economy entailed an increase in the demand for skills possessed by women. One possible explanation of this trend may be the rapid expansion of the services sector, traditionally neglected under central planning. The resultant narrowing of the gender wage gap has held back the increase in earnings inequality. If the gender wage gap remained at its pre-transition level, inequality would have been greater than the one actually observed.

Owing to the decline in the female/male earnings differential during the transition the gender gap is currently rather modest by international standards, albeit not negligible. It ranges from 24 percent in Hungary to 27 percent in Poland, indicating that CE countries are quite homogenous in this respect (Table 9). For comparison, the wage differential between US men and women accounts for about 35 percent (Chase, 1999). Correspondingly, the contribution of gender wage differentials to inequality in CE transition economies is lower than in the US.

Table 9:
Gender earnings differentials

	Female/Male earnings differential
	%
Bulgaria (1997)	28.8
Hungary (1996)	23.6
Latvia (1998)	32.4
Macedonia (1996)	24.7
Poland (1996)	30.6

Note: The table shows coefficients on the gender dummy variable in human capital earnings functions, transformed to obtain percentage earnings differentials.

Source: Author's calculations using the following sources:

Bulgaria: Rutkowski (1998b)

Hungary: Kollo and Kertesi (1999)

Latvia: Chase (1999).

Macedonia: Rutkowski (1998a)

Poland: Rutkowski (1997)

Private versus Public sector

The earnings differential between the private and the public sectors is relatively small and thus does not seem to be an important source of inequality. Only in Macedonia and Poland the regression adjusted log earnings differential is statistically significant, however its magnitude – less than ten percent – is modest.[10] In Bulgaria and Hungary the differential between public and private sector earnings is statistically insignificant (Table 10). Moreover, higher private sector earnings to some extent may compensate for longer hours of work. This proves to be the case in Poland. If monthly earnings are replaced by hourly wage rates then the private/pubic wage differential is reduced or even disappears (Newell and Socha, 1997).[11]

Table 10
Private/Public sector earnings differential

	Private/Public sector earnings differential %
Bulgaria (1997) a, b	-8.1
Hungary (1996)	-1.0
Macedonia (1996)	9.4 **
Poland (1995) c	6.4 **

** - significant at 1% level

Note: The table shows coefficients on the sector dummy variable in human capital earnings functions, transformed to obtain percentage earnings differentials.

Controls include education, experience, gender, industry and region.

a) P-value = 10.5%

b) Trade union membership was an additional control variable

c) Firm size was an additional control variable.

Source:

Bulgaria: Integrated Household Survey, 1997.

Hungary: Hungarian Household Panel Survey, TARKI, 1997

Macedonia: Family Budget Survey, 1996.

Poland: Labor Force Survey, May 1995

Author's calculations.

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[10]   Controls included education, experience, gender, industry and region.

[11]   The evidence is not conclusive. Adamchik and Bedi (2000) found that the private sector earnings advantage persists, although it is reduced, even after adjusting for work hours. Specifically, an average private sector worker has a 9 percent earnings advantage over a comparable and working the same hours public sector worker.

Industry premia

Inter-industry earnings differentials are a significant source of earnings variation. In Bulgaria, Hungary, Macedonia and Poland industry coefficients in earnings equations are highly significant. Similar result is reported for the Czech Republic (Munich, et al., 1999). The magnitude of industry wage premia is often large. Agriculture stands out as industry where, other things being equal, earnings are considerably lower than in other industries. For example, agricultural workers on average earn 20-30 percent less than their counterparts in manufacturing.

Unfortunately, because of the lack of comparable data it is not possible to determine whether the inter-industry wage differentials have lost or gained in importance compared to the pre-transition period. The only evidence comes from the Czech Republic and it is ambiguous. Under central planning there were fewer significant inter-industry differentials for men but more for women (Munich et al., 1999).

Region and urban vs. rural residence

There is no clear evidence of large regional earnings differentials in Central European economies. However, workers in capital cities and urbanized regions tend to earn a premium relative to workers in rural areas. For example, in Hungary village workers earn some 20 percent less than comparable workers in the capital city, and 6 percent less than workers in other large cities, but virtually the same earnings as workers in small towns. A similar premium to large city residence occurs in Poland (Puhani 1997). In the Czech Republic, the Prague (capital) effect is positive but insignificant in 1989 but becomes significant in 1996 (Munich, et al., 1999). However in Bulgaria most of regional coefficients are insignificant. Macedonia is an exception in that *rural* workers earn a 6 percent premium over urban workers. Thus, it seems that regional earnings differentials to some extent contribute to earnings inequality, but they are not its important source.

Returns to unmeasurable skills

Earnings inequality and its changes are also caused by changes in the valuation and distribution of unmeasurable skills, such as innate abilities, motivation, language or computer skills, etc. An indirect evidence of changes in returns to non-measured skill components can be obtained from the residual earnings distribution. Hungary is the only country for which

necessary time series data is available. It turns out that "Residual earnings were astonishingly stable over time with the notable exception of the 100th percentile where there was a sudden upward jump in the mean residual real earnings between 1989 and 1992," (Kollo and Kertesi, 1999). The authors interpret this spectacular earnings rise of the best paid workers as a sort of "privatization gain". That is, workers with the highest unmeasurable skills experienced a large earnings gain due to high value attached to those skills by the developing private sector. However, given that this gain occurred only at the 100the percentile of the distribution of unmeasurable skills, its impact on the earnings inequality could not have been substantial. It should be stressed that the Hungary example is not necessarily representative of other countries in the region, especially given that market oriented reforms were launched there earlier than in other countries, and thus the re-evaluation of skills has begun earlier and has been spread over a longer period of time.

Contribution of selected variables to earnings inequality

To what extent are we able to explain earnings inequality by observable characteristics? What are major observable causes of inequality? The answer to these two questions summarizes the earlier analysis. In the sample of CE transition economies for which the results of the estimation of the earnings function are available the coefficient of determination ranges from 20 (Latvia) to 40 (Hungary) percent, which is a standard result (Table 11). It implies that most of the variation in earnings reflects the impact of unobservable individual or firm specific factors, and hence cannot be explained by observable characteristics. However it also implies that the impact of standard factors (such as education, experience, gender, or industry affiliation) is in transition economies of CE not much different from that in advanced market economies. In other words, in transition economies earnings vary because of the similar reason as in mature market economies, and thus similar are the main sources of earnings inequality.

Table 11:
Contribution of Selected Variables to Log-earnings Inequality

Variable	Bulgaria (1997)		Hungary (1996)		Macedonia (1996)		Poland (1995)	
	Contribution of selected variables to log-earnings inequality as a percentage of:							
	Total variance	Explained variance	Total variance	Explained variance	Total variance	Explained variance	Total variance	Explained variance
Education	8.2	31.4	25.9	61.7	8.9	35.3	11.5	34.9
of which Tertiary	8.1	31.1	17.9	42.7 [a]	9.4	37.1	9.1	27.4
Experience	0.7	2.7	2.1	5.0	0.8	3.1 [b]	3.8	11.6
Gender	4.6	17.5	3.8	9.1	2.0	7.7	6.8	20.5
Occupation	..	..	..	..	5.0	19.8	..	..
Firm size	..	..	..	..	..	..	2.9	8.6
Private/public sector	1.3	5.0	-0.1	-0.2	-0.4	-1.6	-0.6	-1.9
Industry	9.5	36.3	4.8	11.3	8.4	33.1	8.7	26.3
Urban/rural residence	2.0	7.7 [c]	5.5	13.1 [d]	0.6	2.5	..	..
Total explained (R^2)	26.2	100.0	42.0	100.0	25.3	100.0	33.0	100.0
Unexplained	73.8	x	58.0	X	74.7	x	67.0	x
Total	100.0	x	100.0	X	100.0	x	100.0	x

.. Data not available

x Not applicable

a) University

b) Tenure

c) Region

d) Categories included village, town, major city, and the capital city.

Source:

Bulgaria: Rutkowski (1998b)

Hungary: Hungarian Household Panel Survey, TARKI, 1997. Author's calculations.

Macedonia: Rutkowski (1998a)

Poland: Rutkowski (1997)

Education seems to be the single most important factor contributing to earnings inequality.[12] Differences in educational attainment explain from 8 (Bulgaria) to 26 (Hungary) percent of the total variance in earnings, or from 31 to 62 percent of the explained variance. Interestingly, the effect of education comes predominantly from tertiary education. For example in Poland education differences account for 35 percent of the explained variance in earnings, of which tertiary education alone accounts for 27 percent.

Industry affiliation is second in importance, its effect being usually smaller than that of education. Industry premia explain from 5 (Hungary) to 10 (Bulgaria) percent of the total variance in earnings and from 11 to 36 percent of the explained variance.[13]

Gender is the distant third factor explaining variation in earnings. Gender differences account for less than ten percent of the total variance in earnings, and for 8 (Macedonia) to 21 (Poland) percent of the explained variance.

Other measurable factors are of secondary importance. Labor market experience plays a noticeable role only in Poland and Hungary. Urban/rural differentials seem to be a significant source of inequality only in Hungary. There are variables that contribute to inequality, but no general conclusions can be drawn since they were not included in earnings functions for all the countries. These variables include occupation which accounts for 5 percent of earnings inequality in Macedonia, and the firm size, which accounts for about 3 percent of inequality in Poland.

An interesting result is that the private sector by itself –independently of other factors – does not contribute significantly to earnings inequality. In all countries under question the role of the private sector is either negligible or insignificant.

Why has inequality increased during the transition?

While it is relatively easy to explain the level of inequality, it is much more difficult to explain why it has increased. Leaving aside the fundamental institutional factors, as well as demand and supply shifts, one can set a more modest goal of decomposing the change in

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[12] Only in Bulgaria education comes second, after industry affiliation.

[13] One possible explanation for a small contribution of industry wage differentials to earnings inequality in Hungary is a relatively small agricultural sector. Consequently, the earnings differential between agricultural and other industries – which tends to be particularly large – has relatively low weight in Hungary, and thus contributes little to inequality.

31

earnings dispersion into characteristics (endowments) effect, and changes in coefficients effect (returns to endowments). Unfortunately, in order to carry out such an exercise one needs sufficiently long time series of individual record data, which are hardly available. The only decomposition of changes in wage inequality was done for Poland for the period 1992-1995 (Puhani, 1997). This exercise was very limited, however, as it did not cover the pre-transition period; and also because during the period under investigation inequality hardly increased.

Perhaps not surprisingly, Puhani (1997) found that the changes in coefficients -- the revaluation of crucial labor market characteristics -- worked in favor of an increase in inequality. By contrast, and less obviously, the changes in observed characteristics had a decreasing impact on inequality. Thus, overall inequality in Poland has changed less than it would have if the distribution of characteristics not become conducive to lower inequality. One important characteristic to which returns have substantially increased during the transition is education. It thus seems fair to say that the revaluation of human capital has been the major driving force behind the increase in earnings inequality during the transition in Poland, and most likely in other CE countries, as well.

SUMMARY

Earnings distribution has considerably widened in virtually all transition economies of CE. Still, in some countries the increase in earnings inequality has been relatively modest (e.g. Macedonia), while in others it has been extremely large (e.g. Romania). Leaving aside the extreme cases, the increase in inequality in CE has been substantial, although not exorbitant.

The attained level of earnings inequality is high or very high by the OECD standards, but not in most cases not falling beyond the OECD range. Countries where earnings inequality is modestly high include the Czech Republic, Macedonia, Poland and Slovenia. Countries where inequality is high or very high include Bulgaria, Latvia, Lithuania, Hungary and Romania. In the latter group earnings are more dispersed than in the UK (country characterized by the most unequal earnings distribution in Europe) but still lower than in the US.

The increase in earnings inequality was in most cases concentrated in the early years of transition. Then the patterns of changes in the earnings distribution have started to diverge. One can distinguish four distinct groups of countries. In the first group of countries earnings dispersion keeps increasing at a relatively high rate. This group includes Bulgaria, Hungary and Romania. In the second group the process of the widening of the earnings distribution has apparently attenuated. This group includes Poland and Slovenia. In the third group after an initial sharp rise earnings inequality has started to decline. This group includes the Czech Republic, Latvia and Lithuania. The fourth, untypical, "group" consists of Macedonia, where the trend of earnings inequality exhibits a cyclical pattern.

In all CE countries the widening of the earnings distribution has occurred at its both tails. The relative wage position of low paid workers has deteriorated, while the relative position of highly paid workers has improved. However, changes at the upper end of the distribution have been more pronounced than changes at the bottom end. The distance between the top paid workers and the median worker has increased dramatically in all countries. By contrast, in some – although not all – cases, the gap between low paid workers and the median worker has widened relatively modestly. Countries where the low-paid workers still enjoy relatively favorable status include the Czech Republic, Slovenia and Poland. Countries where the low-paid workers saw their status substantially worsen include Latvia, Lithuania and Romania.

In most cases the changes in the earnings distribution have taken place against the backdrop of falling real wages. This implies that as a rule low paid workers have lost not only in relative but also in absolute terms. In contrast, highly paid workers often gained in absolute terms, despite the fall in the average earnings.

The increase in earnings inequality in CE has also implied the increase in the incidence of low and high pay. As a result the middle – dominant under central planning – has markedly shrunk. By the OECD standards the incidence of low pay is high to very high in virtually all CE economies, except for the Czech Republic.

In all countries the incidence of low pay is significantly higher in the private than in the public sector. As regards well paying jobs, the situation is less clear-cut. In more advanced transition economies, such as Hungary and Poland, well-paying jobs are concentrated in the

private sector. In contrast, in less advanced transition economies, such as Bulgaria and Macedonia, it is still the public sector which is a main source of well-paying jobs.

Returns to education, specifically to university education, have significantly increased in all transition economies of CE, virtually regardless of the progress of the economic restructuring. These returns, abnormally low under central planning, are at present comparable to those prevailing in advanced market economies.

This increase in educational premia is presumably the main observable cause of the increase in earnings inequality in all CE countries. However, changes in returns to observable characteristics are only a part of the story. Another part is changes in returns to unobservable, individual and firm specific characteristics. Owing to the lack of necessary time series data, it is not possible to quantify the relative contribution of different factors to the increase in earnings dispersion.

Education is the single most important observable characteristic explaining the current level of inequality. Differences in educational attainment account for around one-third of the explained variation in earnings. Hungary is exceptional in that education accounts for as much as 60 percent of the explained variation in earnings.

The second most important factor contributing to earnings inequality is inter-industry wage differentials. Gender comes third, but its impact is relatively small. Other factors, such as labor market experience, firm ownership, urban/rural residence are of secondary importance, or insignificant.

To conclude, the increase in educational earnings differentials stands out as the major observable force behind the widening of the earnings distribution which has occurred during the transition in CE. At the same time, differences in educational attainment have become the principal source of earnings inequality. In simple terms, high earnings inequality is to a large extent a cost of the revaluation of human capital that has taken place during the transition in CE.

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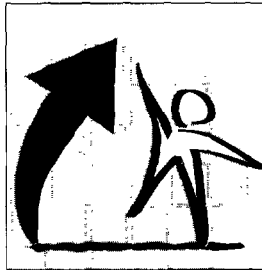by Robert Holzmann and Steen Jorgensen

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Summary Findings

This paper documents trends in earnings distribution during the transition in Central Europe, and examines changes in relative wages that have underlined the rise in earnings inequality. The paper finds that the widening of earnings distribution was concentrated in the early phase of transition, and the trend towards greater inequality in most countries tapered off during the late 1990s. This suggests that a new equilibrium has been reached, or at least approached. This equilibrium is characterized by high but not exorbitant earnings dispersion. In most transitional economies of Central Europe earnings inequality is in the upper part of the OECD range, rarely beyond that range. The widening of earnings distribution has occurred at its both ends. The relative position of low-paid workers has deteriorated while the position of top paid workers has improved. At the same time the incidence of both low- and high-pay has considerably increased. High earnings dispersion is particularly pronounced in the private sector, which is a primary source of both low- and high-paying jobs. The main observable factor behind the increase in earnings inequality during the transition has been the increase in the premium to university education. Education is currently the single most important variable explaining the attained level of inequality, whereas inter-industry wage differentials are second in importance. The contribution of other factors, such as gender, labor market experience, location, is small or insignificant.

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