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Brave new world? Value of education in post-socialist Poland

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Luxembourg Income Study Working Paper Series

Working Paper No. 374

**Brave New World?
Value of Education in Post-socialist Poland**

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BRAVE NEW WORLD?

Value of Education in Post-Socialist Poland

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Introduction

More than a decade ago, the Iron Curtain isolating Eastern Europe was torn off, best symbolised by the shattering of the Berlin Wall, and Europe was symbolically reunited. There is a wide range of theories concerning the fall of the socialist systems of Eastern Europe, but most of the explanations ultimately boil down to a legitimisation crisis (Holmes 1997, 23-62). Some of the theories emphasise economic failure, some corruption, and some theories put more emphasis on the role of the dissidents, but in my view the common denominator is accumulated discontent. Probably such an enormous change cannot be thoroughly explained by any single factor, and all the before mentioned factors had an effect. However, it may be easier to point out what finally triggered the start of events, which can be traced to the USSR itself. One of the “legs” holding up the socialist systems of Eastern Europe was, arguably, external coercion. When the threat of the USSR was more or less removed by Gorbachev’s glasnost politics, there was nothing to prevent the house of cards from collapsing.

The transition towards a market economy has not been painless in any former socialist country, but nevertheless the success of the transition varies. There were basically two approaches to the transition. Some countries started the transition slow and easy, either because of political will to minimise the social costs, or because of political disagreement and indecision. Hungary and Romania chose this path, albeit partly for different reasons. The other option was to put up the capitalist market mechanisms almost overnight¹, which was known to lead to unemployment and other social problems at least in the short run. This kind of a “shock treatment” was taken to its extreme in Poland. On hindsight this seems to have been the right solution, although Poland has also had its share of problems. In the beginning of the 1990’s the unemployment rate grew steeply from around 6 % in 1990 to approximately 16 % in 1993 (Blanchard 1994, 1170; Poznanski 1996, 179). However, the growth of GDP in Poland has been more intense in the 1990’s than in any other post-socialist country, with the exception of Slovakia. Also (re-)integration to Western Europe is well on its way. Poland started accession negotiations with the EU in 1998, along with five other countries, and was among the first Eastern European countries to join the NATO in 1999.

¹The agenda of transforming socialist economies into capitalist economies is customarily divided into macroeconomic stabilisation, price liberalisation and privatisation of state-owned firms (see e.g. Lipton *et al.* 1990, 293).

In many Western countries the relative value of education has crumbled down to some extent. This could be called *educational inflation* or *falling returns to education*. There are some theoretical reasons, however, to assume that in the (post-) socialist countries the development has been different. The “motivation” for this study is the change of the occupational structure and the subsequent increase in employment opportunities especially for white-collar professionals, whose situation was comparatively weak under socialist rule. I will elaborate on this subject in the following chapter. My assumption is that the situation of university-educated people improved considerably in Poland as well as in most other transitional economies, when the business sector opened up and new opportunities in private enterprises started to emerge in the beginning of the 1990’s.

Thus, the central research task of this article is related to the value of education before and after the Polish transition from a socialist system to one characterised by a market economy and a free parliamentary system.² I am assuming that both for ideological reasons (abandonment of Marxist-Leninist glorification of manual work and industrial production) and practical reasons (expansion of possibilities for non-technically educated university graduates), the transition was a great divider that affected also the value of education, among many other things. My empirical research questions can be formulated as follows: *What kind of an effect did the transition to post-socialism have on the value of education?* Has the value of education declined as in most other countries, or has it risen as a consequence of market-liberalist changes? Special attention is paid to the situation of highly educated people, and also to differences according to gender.

Inflation of credentials

During the previous decades, the relative value of education has slowly but steadily fallen in many Western countries. This change, which can be called educational inflation or credential inflation, can for the most part be attributed to the expansion of (higher) education and the decline in the need for labour (Freeman 1976). Taking the job competition model (Thurow 1975; Hirsch 1977) as the starting point, it can be assumed that the change has not necessarily been the same all over the world, as the value of educational degrees is said to depend on the ratio of educated work force and the demand for it on the labour market.

Research on educational inflation is often carried out by examining changes in the probability of achieving a certain socio-economic position, on different educational levels. Wolbers *et al.* (2001) approached the issue in this way with Dutch data, comparing the shares of people who had ended up in upper white-collar positions in 1960–1991. Overall, the authors conclude that there had been considerable educational inflation in the Netherlands. The decline of the value of education appeared to have been strongest on the upper secondary level. The ones with the least education seemed not to have been affected much, but to begin with, they also did not have much to lose.

²In the Polish case, no exact date can be denoted, but the time-frame for the majority of important changes is 1989–1991. In 1989 the government entered into ‘Round Table talks’ with the Solidarity, and a close acquaintance of Lech Walesa was appointed the prime minister. However, the first free parliamentary elections were not held until 1991. Prices were liberalised and most subsidies were removed in 1990. (Holmes 1997, 71, 208–211.) However, privatisation of large state-owned enterprises (SOEs) was still largely unfinished in 2001, as only approximately 1/4 of SOEs registered in 1990 had been directly privatised by the beginning of the new millennium (Durlík 2002, 308).

Similar changes have been found also in Finland (Aro 2003) between 1970–2000, in my previous studies. Inflation of credentials has evidently taken place in Finland, especially the in middle level degrees. The results by Naumanen (2002) also point in that direction, although the concept itself was not used in the study concerned. Naumanen finds that especially the situation of highly educated young women has deteriorated.

In the case of former socialist countries this kind of an approach would be very problematic. Although shifts in the status of occupations always take place, the occupational structure has remained relatively unchanged in the so-called Western countries, but presumably this does not apply to the transitional countries. The usual way of approaching educational inflation does not really fit the situation of comparing the relative value of education before and after the transition – thus comparing a socialist society with a post-socialist (transitional) society. If we think of occupational status as an indicator of prestige, the scale occupational prestige has changed drastically. Comparing the shares of upper middle class on various educational levels would thus be pointless in the study of a transitional country.

The other “school” of research concerning the payoff of education includes the use of income as dependent variable. In general, this approach is strongly influenced by the human capital theory. Education is seen as an investment in human capital, and wage level is mainly used as an indirect estimate of productivity. Thus, in human capital theory and in related empirical research, high wages are generally not considered any kind of a “reward”, but rather a sign of high productivity. There is a wealth of economic research on the returns to education, some of which are briefly summarised in the next few paragraphs.

One of the authors of the previously mentioned article, Ultee (1980) has also examined the relative value of education, measured by income. He used the years spent in education and gross income as the independent and dependent variables, respectively. According to his analysis (Ultee 1980, 148), the relative value of education in the Netherlands declined steadily during 1963–1975. Another central finding in his study was that the relative position of those with no education declined. In other words, the disadvantage caused by having no formal education increased.

According to Vila and Mora (1998, 176-177), the payoff of lower secondary level degrees declined sharply between 1981–1991 in Spain. However, at the same time the returns to higher education increased, especially for women. Alba-Ramírez and San Segundo (1995) examined age-earnings profiles in Spain in 1990. As their study was not longitudinal, they did not analyse any changes in the returns. However, it can be stated that according to the study, the overall estimate of the rate of return to education was fairly high (8.4 %), while the returns to university education in the private sector were strikingly low (op.cit. 1995, 165).

In the United States the rates of return fell significantly in the 1970’s (Freeman 1976). According to Freeman, the changes in the value of education tend to be cyclical by nature, as undersupply of work force leads to rising returns, which in turn lure an excess of students. The result is a vicious cycle of increasing returns, rising student numbers and degrees, and educational inflation, as in *Figure 1*. The results of Murphy and Welch (1993) confirm the falling value of education in the U.S. during the seventies, but they find that in 1980–1990 the returns grew again.

If an increase in the incidence of overeducation can be interpreted as a sign of educational inflation, also in Portugal the value of education has been declining. Kiker *et al.* (1997, 116) estimated that 18–26 % of Portuguese workers were overeducated in 1985, while in 1991 the estimate for overeducation was around 26–33 %.

Many highly educated are overeducated for their tasks also in the U.K. According

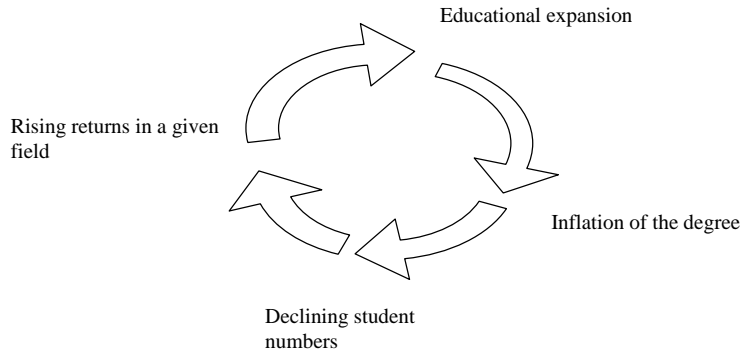


Figure 1. The vicious circle of the changing value of educational degrees, as described by Freeman (1976).

to a panel study by Dolton and Vignoles (2000), as many as 36 % of U.K. higher education graduates were overeducated for their first job in 1980, and six years later, still 30 % (of the same people) were overeducated.

However, credential inflation has not necessarily taken place all over the world. Previous research indicates that transitional countries seem to have had different kind of paths of development. Li (2003, 325-326) compared Chinese data from the 1995 household survey to previous research conducted in the 1980's, finding that the returns had risen in China, but not quite as much as has been reported of some other transitional economies.

Brainerd (1998) found considerable growth in the returns to education in Russia 1991–1994. Chase (1997) examined the returns to education before and after the transition in the Czech Republic and Slovakia. His analysis gave support to his hypothesis that the returns to education would increase in both countries, while returns to work experience would fall.

Increases in returns to schooling have also been found in Poland (Rutkowski 1996, from Li 2003, 318). According to Domanski (1997), correlation between education and earnings increased, and the value of higher education rose in Poland during the years 1982–1993. Also Psacharopoulos and Patrinos (2002) cite various studies on the returns to education in Poland. It is probable that the studies cited by Psacharopoulos and Patrinos (2002) are not directly comparable, but nevertheless they indicate that the returns have generally risen after the transition.

Most of the previous studies have been done by economists strongly involved in the human capital theory framework. Consequently the value of education has been examined using the so-called Mincer equation.³ This means that the studies are based on estimates of lifelong earnings, in other words estimates about the *future*. As estimates done using the Mincer equation depend on assumptions concerning the length of working life, they are sensitive to changes in retirement age (Björklund and Kjellström 2000) and also to unemployment bouts. I am not very familiar with the methods used by economists, but as any clairvoyant can say, forecasting the future is a tedious job, with which many things can and usually do go wrong.

³The 'Mincer equation' was originally defined by Mincer (1958). Bluntly said, according to Mincer, earnings depend on the stock of human capital, estimated by years of schooling and work experience.

Workers' paradise

One of the cornerstones of real socialism was heavy industrialisation, especially in the post-war era. Because of this, it was necessary to increase the attractiveness of work in heavy manufacturing by offering relatively high wages (Domanski 1990, 435). Industrial production was more or less a shared obsession in socialist countries. Also, as the official ideology dictated that the working class was in a central position, the ideology had to be at least paid some kind of lip-service.

Manual work (especially skilled manual work) was highly appreciated in socialist countries, and white-collar clerical work was clearly under-appreciated compared to the Western countries (Treiman 1977). Especially mining and steel industries were in a privileged position in socialist Poland, and service, trade, healthcare and public administration were discriminated against (Mach *et al.* 1994). This was reflected also in the social prestige of occupations. When Alestalo *et al.* (1978, 138-141) report prestige scores of different occupations in Poland and Finland, the clearest difference comes up in the case of miners, who were much more highly regarded in Poland than in Finland. The same applied also more generally to the group of skilled workers. Conversely, the occupation of an office worker was less prestigious in Poland than in Finland.

Alestalo *et al.* (1978, 128) compared, among other things, the relationship between education and income (as well as education and occupation) in Finland and Poland, finding that in Finland the correlation was much stronger, especially in urban settings. Alestalo *et al.* (1978, 143) interpret these findings as a higher status inconsistency in Poland. It is my educated guess that this difference might, in part, reflect the dominance of alternative sources of income in Poland. However, perhaps a more important reason for the low correlation of education and income in Poland may have been that in mining and steel industries those with low formal education were paid well, and correspondingly highly educated white-collar workers' wages were rather low.

Katz (2001, 162-163) cites some studies concerning education and relative wages in the USSR. The studies, based on local samples, indicate that the average wage of specialists (e.g. technicians with secondary education) actually fell *below* that of unskilled workers between 1968–1978. The official socialist ideology was geared towards favoring blue-collar occupations. In the “dictatorship of the proletariat”, white-collar occupations were generally not as highly rewarded.

In another comparison of Poland and Finland, using data from 1972, Pohoski *et al.* (1978) examined social mobility and the role of education in it. Among other things they found (*op. cit.*, 162–163) that there was a greater tendency in Poland for highly educated people to end up in non-manual occupations than in Finland, the percentages being 85 % and 69 %, respectively. However, taking into account the differences concerning the prestige of occupations, this can hardly be considered a sign of higher returns to education in socialist Poland. Many non-manual white-collar occupations were of a low prestige as well in Poland as in Finland.

The high prestige of blue-collar manufacturing occupations was also reflected in education. Socialist educational systems were biased towards vocational education. Fields of study closely related to industrial and economic development, such as natural sciences, engineering and agronomy, were expanded. Conversely liberal-arts, legal and commercial training, were neglected. (Connor 1975, 329–330.)

Naturally there were no private institutions of higher education in the socialist era.

After the (velvet) revolution, private institutions of higher education⁴ have appeared in Poland like mushrooms in the rain, the number now exceeding 180 according to Kwiek (2003, 457), but based on some unpublished sources, this may be an underestimate. In any case, private higher education institutions clearly outnumber the public institutions. On the other hand, the private institutions are often smaller, and their tenured staff are also employed in public institutions, working in the private sector “on the side”. Thus, the private institutions provide an important additional source of income for many professors.

The expansion of higher education has been very strong in Poland in the 1990’s. The number of full-time university students grew from 299 000 in 1990 to 402 000 in 1994 (Wierzbicki 1997, 18) and by 1999 the overall number of students in both public and private institutions had climbed up to almost 1,400,000 (Kwiek 2003, 461).⁵ This could have led to a surplus of highly educated work force on the labour market, but possibly the demand for highly educated people has been even stronger, as Poland has been one of the economically most successful post-socialist countries in the transition period.

As mentioned above, given the expansion of tertiary education, according to theory (the job competition model), basically a “trickle-down” of university-educated work force into lower-level labour market positions, and a fall in their relative income, could basically be expected. However, obviously the job competition model was not planned with such extraordinary situations as a complete regime change in mind.

Data and measurement

The data used in the analysis is from the Luxembourg Income Study (LIS) database. The data covers the years 1986, 1992 and 1995. Although a Polish data-set also from the year 1999 exists in the LIS database, it does not include any income variables, which were necessary for the analysis.

LIS is a large international survey project, currently covering 29 countries. The database is a collection of household income surveys. The microdata that comes from national surveys is harmonised and standardised by the LIS team.

The Polish data come from the Polish Household Budget Survey, orchestrated by the (Polish) Central Statistical Office. The survey was conducted in the form of interviews. The 1986 survey included a total of 24,596 persons, the 1992 survey included 14,221 persons and the 1995 survey included 78,556 persons.

The analysis was restricted in each case to the *age group of 30–39*. The selection of a determinate age-group was necessary, because the importance of education at any given moment is different for the representatives of different cohorts. The aim was to examine the change in the value of education as directly as possible, and to avoid the effect of age and work experience. Along with ageing, especially social networking increasingly affects a person’s placement in the labour market. In the age group of 30–39-year-olds, there were 5,616 cases in the 1986 data, 3,457 cases in 1992 and 13,162 cases in 1995. The variables used in the analysis are as follows (original LIS variable names in brackets):

⁴According to EURYDICE the Polish higher education institutions comprise of non-university higher vocational schools, teacher training colleges, traditional universities, technological universities (politechniki) and ‘academies’.

⁵In 1999 there were 1,002,110 students in public institutions and 377,712 in private institutions.

- age (PAGE)
- gender (PSEX)
- educational level (PEDUC)
- net wage/salary (PNWAGE)⁶
- occupation (POCC)
- industry (PIND)
- share of university-educated (constructed from PEDUC)
- share of highest income quartile, HIGH (constructed from PNWAGE)
- weight (PWEIGHT).

I utilised wages (PNWAGE) as the dependent variable, for reasons discussed earlier – if the preliminary hypothesis is that the structure of occupational prestige has changed considerably, it would make no sense to use occupation or socioeconomic status as the indicator of educational inflation. I am not trying to forecast the future by estimating life-span wages, but rather I simply look back to see to what extent a given level of education has been a ticket to a good economic position. As it is also necessary to make the wages comparable, my approach was to calculate *income quartiles* and examine the share of the highest quartile on each educational level.

The classification of educational levels was somewhat different in the 1986 data than in the 1992 and 1995 data. Because of this, some re-codings of the education variable had to be done. Also the industry-variable (PIND) had to be recoded.⁷ The main problem was that the classification was much more detailed in the 1992, 1995, and 1999 data, than in the 1986 data. Because of this, some categories had to be combined.

The statistical methods used in the article are cross-tabulation and logistic regression. The dependent variable used in the logistic regression analyses was “belonging to the highest income quartile”, a dichotomic variable with values 0 and 1. It was constructed from the LIS variable PNWAGE. The independent variables used were education (PEDUC), industry (PIND) and gender (PSEX). Also the weight PWEIGHT was used in the analysis.

Empirical findings – what happened?

In most Western countries, the value of education has been bitten by educational inflation. More and more education is needed to achieve a certain socioeconomic position. As Thurow (1975) depicts, if one person in a queue rises on his/her toes, everybody else must do the same in order to see forward as well as previously. Has the same happened in Poland? On some premises, the value of education should have declined also in Poland, considering the steep expansion of education and the growing unemployment in the 1990’s.

Firstly, the percentage shares of the highest and lowest income (net wage/salary) quartile on each educational level were examined. Belonging to the highest income quartile is used as a rough measure of “doing fairly well” economically. As shown in *Figure 2*, in 1986 slightly less than a half of the university-educated Poles were in the highest income quartile. By 1992, the share had grown to 59 %, and in 1995 the share was still considerably higher than before the transition, although it had slightly declined.

⁶I was originally going to use gross wage/salary as the dependent variable, as in Aro (2003) but as it turned out the LIS database only contains net wage/salary for Poland, I had to revert to the latter. The downside is, from my point of view, that the net wage variable includes the effect of paid and received income transfers.

⁷The abbreviation PHC used in the tables refers to plumbing, heating, cooling, etc.

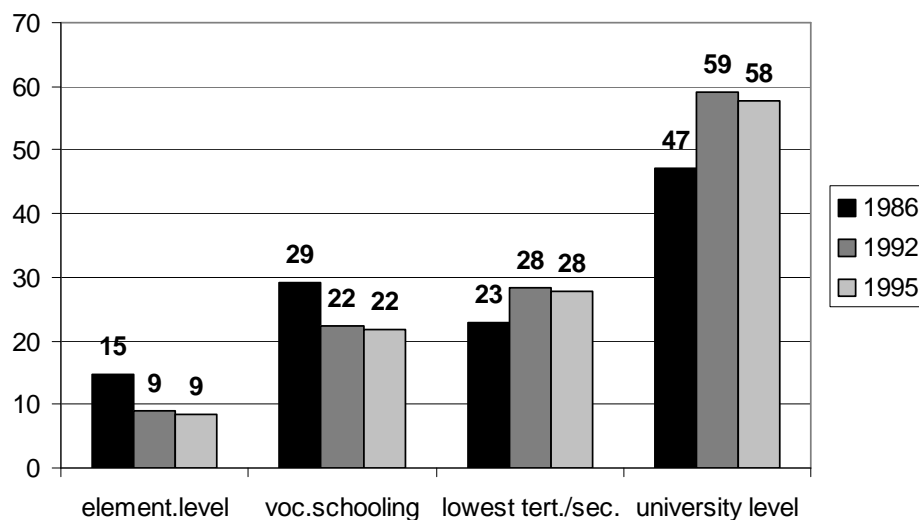


Figure 2. The shares of the highest income (net wage/salary) quartile by educational level in 1986 (n=5385), 1992 (n=3394) and 1995 (n=12982) (%).

Table 1. The shares of the highest income (net wage/salary) quartile by educational level and gender in 1986 (n=5385), 1992 (n=3394) and 1995 (n=12982) (%).

		1986	1992	1995
males	university level	68.4	64.9	64.9
	lowest tert./sec.	45.5	42.2	42.3
	voc. schooling	44.9	32.9	31.6
	elementary level	29.3	17.0	14.9
females	university level	29.0	54.2	51.8
	lowest tert./sec.	10.9	21.1	19.8
	voc. schooling	5.1	6.9	7.0
	elementary level	4.0	3.2	3.3

Also on lowest tertiary/secondary level, the economic situation improved in the first years of the transition. Whereas in 1986 only 23 % of those educated at this level were in the highest income quartile, in 1992 and 1995 the share was up to around 28 %. On the basic vocational level and elementary level, however, things got worse in the 1990's. In 1986 basic vocational schooling had been economically more profitable than the lowest tertiary level/secondary level, but after the “big bang” the value of basic vocational schooling declined considerably. On the elementary level the educational inflation seems to have been even more drastic, as between 1986–1995 the share of the highest income quartile dropped from 14.7 % to 8.5 %.

When we look at men and women separately (*Table 1*), the picture changes completely. As a matter of fact, a lion's share of the change is actually due to the fact that the relative incomes of women have improved. Especially the position of highly educated women improved markedly. In 1986, only 29 % of university-educated women were in the highest income quartile, whereas in 1992 and 1995 the share was over 50 %. Elementary level is less and less often profitable as well for women as for men. In 1986 almost a third of elementary level-educated men were in the highest quartile,

Table 2. The shares of the highest income (net wage/salary) quartile by occupation in 1986 (n=5616) and in 1992 (n=3455) (%).

	1986	1992	Diff.
Miner	90.7	93.0	2.3
Electrician	57.1	45.2	-11.9
Carpenter	46.9	42.9	-4.0
Bricklayer	47.5	26.3	-21.2
Machine op.	51.4	52.8	1.4
Cleaner	2.7	1.3	-1.4
Driver	43.6	43.6	0.0
Accountant	28.3	36.5	8.2
Engineer	74.2	78.3	4.1
Teacher	24.0	41.1	17.1
Office worker	22.0	45.9	23.9

compared to only 4 % for women. In 1995 the numbers were, respectively, approximately 15 % and 3 %. Thus, relatively speaking, the decline on the elementary level was much larger for men than for women, but nevertheless quite a large difference remained in favour of men.

Table 2 shows the percentages of people in the highest income quartile, in certain chosen occupations. Only such occupations were chosen for which the classification was the same in 1986 and 1992. Combining the categories would have been very problematic because of totally different classifications in some cases. For the same reason, the 1995 data was excluded, because its occupational classification was drastically different.

Interestingly, even on the level of the classification of occupations, the predominance of blue-collar occupations was very clear in 1986. There were only four white-collar occupations in the classification, and the blue-collar occupations were given very specifically. In other words, it is notable how *classifications* reflect reality, and sometimes perhaps vice versa. Classifications may also affect the status of an occupation or of an educational degree, for example.

In general, the “losers” of the first years of the transitional period were manual workers. Conversely, the greatest winners were office clerks and teachers. While university-level education did not pay off for teachers in 1986, the returns were clearly better in 1992.⁸ For some occupations there was not much change to be seen, such as for cleaners and drivers. Interestingly, miners were better off than engineers both before and after the regime change, and their situation did not get any worse by the year 1992, unlike for many other manual workers.

As shown in Table 3, the value of a university education is strongly dependent on the branch. In the mining industry, roughly 85–93 % of the university-educated work force were in the highest income quartile. Then again, also *non-university-educated workers in the mining industry fared better than university-educated people in any other industries*. In the manufacturing branch the pay-off for a university education increased, with the share of university-educated workers who reached the highest income quartile rising from around 64 % in 1986 to almost 76 % in 1995.

⁸In the age group 30–39, 64.5 % of teachers had a university degree in 1986, and in 1992 70.5 % of them were university graduates.

Table 3. The shares of the highest income (net wage/salary) quartile (%) by branch and educational level in 1986, 1992 and 1995.

		1986	1992	1995
Univ. ed.	Agriculture, fishing	30.6	10.5	23.3
	Mining	93.3	84.6	93.3
	Construction/PHC/transp./comm.	72.0	44.8	58.3
	Trade, finance, business services	60.0	70.4	47.9
	Pub.admin./def./educ./health/soc.serv.	34.5	64.3	65.3
	Other services and organisations	54.5	62.5	42.0
	Manufacturing	63.9	57.6	75.8
Other ed.	Agriculture, fishing	11.2	2.0	5.2
	Mining	78.9	88.3	82.8
	Construction/PHC/transp./comm.	37.0	38.9	35.9
	Trade, finance, business services	17.9	27.4	18.3
	Pub.admin./def./educ./health/soc.serv.	8.0	24.6	29.1
	Other services and organisations	20.8	23.8	21.3
	Manufacturing	30.4	28.6	35.2

The steepest increase in the value of a university degree was seen in the field of public administration (and related fields – defence, education, healthcare and social services). Whereas in this field the share of the highest income quartile was slightly under 35 % in 1986, in 90’s data the shares were up to around 65 %.

When the value of education is examined within industries, the picture is not altogether clear. In some industries there is an incline in the value of education to be seen (especially in public administration), while in others the value seems to have declined (such as in the field of trade, finance and business services). Incidentally, certain occupations, in the fields of public administration, healthcare and social services, are typically predominantly female occupations. According to the analyses presented above, the rise of the value of a university degrees was mainly due to the improved position of females. Considering these factors, are the changes in the value of education actually due to shifts in the industries’ gender structures? Have women moved from low-pay industries to high-pay industries?

The results shown in *Figure 3* indeed lend some support to this assumption. The share of women increased in the manufacturing branch and decreased in trade & finance and in public administration, healthcare & social services. In any case, the share of “financially well off” workers in the relatively low-pay branches did increase, while women were moving away from them. Do women have a “reverse Midas touch”, and vice versa, is the share of women working in a given branch negatively correlated to the average pay? In other words, did the wages in the spheres of public administration, healthcare and social services increase exactly *because* the share of women decreased?

It does not seem to be the case that the entry of women into certain branches has depreciated them. As shown in *Table 4*, the share of *well-paid women* increased as well in some formerly poorly paid branches (especially public admin etc.) as in high-pay branches, such as manufacturing. In fact, relatively speaking, the situation of women in public administration (and related fields) improved more than men’s situation. As a conclusion, my interpretation of the analysis presented so far is that the connection between high wages (HIGH) and branch (PIND) is not spurious – in other words, the changes in wages are not due to shifts in the gender structures of occupations.

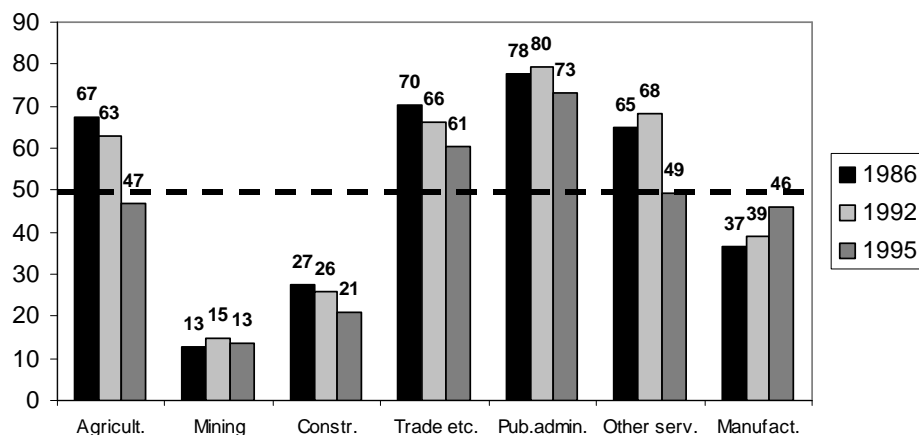


Figure 3. The shares of women by branch in 1986, 1992 and 1995 (%).

Table 4. The shares of the highest income (net wage/salary) quartile (%) by branch and gender in 1986, 1992 and 1995.

		1986	1992	1995
Male	Agriculture, fishing	32.3	4.8	9.1
	Mining	85.2	92.1	89.4
	Construction/PHC/transp./comm.	49.1	41.1	38.5
	Trade, finance, business services	36.4	20.2	28.1
	Pub.admin./def./educ./health/soc.serv.	33.6	57.4	62.2
	Other services and organisations	41.4	39.1	31.0
	Manufacturing	41.9	40.2	46.7
Female	Agriculture, fishing	1.9	0.6	1.3
	Mining	44.4	64.3	43.1
	Construction/PHC/transp./comm.	13.0	34.4	31.1
	Trade, finance, business services	15.8	38.0	17.5
	Pub.admin./def./educ./health/soc.serv.	11.0	28.1	29.7
	Other services and organisations	16.7	24.0	15.6
	Manufacturing	14.4	14.6	25.7

Finally, logistic regression is used in order to see whether the effect of education remains after some other variables are taken into account. In the logistic regression tables, in each case the last group is the reference category, which is marked with zero and to which other categories are compared. For education the reference category is *elementary education*, for gender it is *female*, and for the branch it is *manufacturing*. The point was not to build the best possible model, but rather to simply control for some crucial variables, while keeping emphasis on educational level. Nevertheless, the model seems to fit the data reasonably well, based on the R-square statistics.

The results of the logistic regression, run separately for each year, are shown in *Table 5*. The results indicate that education is, each year, a significant explanatory variable, even when the branch and gender are taken into account. In Poland the effect of a university level education seems to have only gotten stronger. In the 1990's, after the regime change, the value of a university education has thus grown in the sense that the

Table 5. Logistic regression. Dependent variable: HIGH (in the highest income quartile). Odds ratios for each category, reference categories marked with zero. Significance levels indicated by stars (***) $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$.

	1986	1992	1995
Education	***	***	***
University level	8.725***	9.980***	11.347***
Lowest tert./sec.	2.141***	3.505***	3.827***
Voc. schooling	1.655***	1.931***	1.986***
Elementary level	0	0	0
Branch	***	***	***
Agriculture, fishing	0.490***	0.070***	0.103***
Mining	7.923***	18.013***	7.064***
Construction/PHC/transp./comm.	1.192	1.334*	0.739***
Trade, finance, business services	0.879	1.116	0.372***
Pub.admin./def./educ./health/soc.serv.	0.387***	1.099	0.819**
Other services and organisations	0.836	1.017	0.405***
Manufacturing	0	0	0
Gender	***	***	***
Male	6.585***	2.477***	2.936***
Female	0	0	0
<i>Cox & Snell R Square</i>	0.227	0.288	0.210
<i>Nagelkerke R Square</i>	0.336	0.427	0.299

probability of achieving a good (relatively speaking) income level has increased. Also on the other educational levels, the difference in comparison to the elementary level has grown.

Political regimes come and go, but good salaries in the mining industry are in Poland to stay. At least in 1992 and 1995, the mining industry was still the best bet for achieving a high income level. However, the difference of typically white-collar branches⁹ in comparison to the manufacturing branch got smaller by 1995.

The gender difference declined considerably between 1986 and 1992. Whereas the advantage of men over women was roughly 6-fold in 1986, it was 3-fold in 1995. Still in the 1990's men were much more likely than women to have a high level of income. However, whether this is due to discrimination or much more complex social processes, is another story.

Head over heels? Summary and some conclusions

In this study, the preliminary hypothesis was that unlike in many Western countries, the value of education may not have declined in Poland. The theoretical points of departure were related to the Eastern Europe in general, but I used Poland as a “case study”. The analysis was carried out by examining relative wages on different educational levels, before and after the regime change that took place, in the case of Poland, in 1990–1991. The hypothesis was lent some support by the analysis, as a greater share of highly educated people were in the highest income quartile in 1992 and 1995 than in 1986. This change was mostly due to the fact the position of women greatly improved. There

⁹For example in public administration, defence, education, health-care, and social services.

were, however, no significant signs of educational inflation on the highest educational levels in general. Elementary level education was, also for men, less and less often sufficient for achieving a good economic status, as defined in this case by belonging to the highest income quartile.

Data from the LIS database was used in the analysis, from the years 1986, 1992 and 1995. The main idea presented in the article was that the transition from state socialism was a “great divider”, which profoundly affected the value of education and the status hierarchy of occupations. For this reason, it was necessary to have data from the eras both before and after the transition, and the LIS data fit this purpose well. Elsewhere, also socioeconomic status has been used in the evaluation of the value of education (Wolbers *et al.* 2001), but this approach would have been ill-fitted for a (post-) socialist country, as the prestige hierarchy of occupations has shifted. Therefore, relative wages were used.

It has to be remembered, though, that looking at official monetary wages does not paint the whole picture. DiFranceisco and Gitelman (1984) argue that in the USSR the higher educated had better social connections, and had to revert to bribery less often than others in order to get needed goods or services. Also the fact that different kinds of fringe benefits were important in socialist economies (see Katz 2001, 71-75) is problematic for the analysis. According to Rose (1994), different kind of non-monetary and/or unofficial income sources have played an important role in the every-day life of people also during the transition period, however.

According to Katz (2001), generally the highly educated people, such as doctors, were better able to use their position and the resources of the work place in order to extract extra incomes. Thus, due to received bribes, the true income level of white-collar employees may be under-estimated in the data. However, also this applies both before and after the transition. According to a study by Open Society Institute (2002, 442-444)¹⁰, corruption is still widespread in Poland in the spheres of healthcare and education, as well as customs and police. Bribery may be needed in order to get “free” health services, for example.

Thus, corruption and fringe benefits may cause some bias to the analysis, as social status and the standard of living of some (especially white-collar professionals) probably was higher than the official income levels suggest. However, it can be assumed that the informal sources of income available today more or less counter-balance the illegal or non-monetary earnings or benefits of the socialist era.

Another possible ground for critique is the way the “value of education” has been defined empirically. Of course earnings, in general, are only the tip of the iceberg when thinking of consequences of education, but I would argue that there are not many alternatives in this kind of research. Further, concerning the exact operationalisation of a “good income level”, the cut-off point (in this case, 75 %) may affect the results to some degree, as usually is the case with categorised variables. It may be necessary to experiment with different cut-off points. However, the approach chosen in this study solved quite simply the problem of making the earnings (from different years) comparable.

In general this study indicates that the development of the value of education has followed a different path at least in one post-socialist country, in Poland, than in most Western countries. Using the terminology of the human capital theory, it can be said that education is a considerably better investment in monetary terms in capitalist Poland than it was during socialist times. However, of course there is also a flipside to the coin.

¹⁰The Open Society Institute (OSI) is affiliated with the Soros foundations network.

In Poland, as also in the other post-socialist countries, unemployment continues to be a huge problem, which mostly touches the lower educated people. There is also a risk of increasing social polarisation, if the highly educated continue to get richer and the least educated and the school dropouts get poorer.

It remains to be seen what will happen to the value of university education in the near future, if higher education continues to expand in Poland. Experiences from other countries would suggest that there is a breaking point in the share of university-educated work force, after which the problems of overeducation and inflation of credentials become evident, but apparently that point had not yet been reached in Poland by the mid-1990's. The results of this study naturally cannot be assumed to represent all the former socialist countries, but there are good theoretical reasons why the development may have been similar in other countries which underwent the regime change. In general it can be concluded that based on the analysis it seems that the premises of the job competition model are not universal – there are exceptions to the rule.

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