

## СОЦИАЛЬНО-ЭКОНОМИЧЕСКИЕ ПРОЦЕССЫ

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## FINANCIAL BENEFITS FROM EDUCATION IN POLAND ON THE VERGE OF MARKET SOCIETY

*The article examines whether social stratification in Poland follows the conceptual framework developed by theorists of the market transition in post-communist countries regarding returns to human capital and merits related to occupational achievements. This analysis extends an earlier study by using national surveys spanning from 1982 to 2008. Data analyses support hypotheses that market-like reforms changes the mode of allocating rewards in favour of greater incentives to meritocracy and individual attainments. The direct link between education, income and position had been monitored.*

**Key words:** meritocracy, social stratification, human capital, occupational achievements, individual attainments, education, income, position.

In what follows I analyze trends in mechanisms of income stratification in the course of the Polish market transition. The relationship between incomes, and education and occupational position in market economies is well-known. Functional theory of stratification explains that relatively high gradation in incomes by level of educational investments and occupational positions is necessary to provide incentives for individual effort (Duncan, 1961; Treiman, 1970). Basing on this assumption, close association between rewards and individual productivity, as reflected in education and occupational position, is among indicators of economic effectiveness, modernization and meritocracy.

By extending this logic to reforming post-communist economy analysts of social stratification attempt to explain and anticipate path taken by the market transition in former state communist countries in Europe, and Asia. Systematic empirical studies on changes in socioeconomic attainment were carried out in China, Poland, and Russia. With respect to

changing role of income returns to education in China researchers found that education has become more important predictor of income over time that was regarded as „a clear signs of the impact of market transitions” (Bian and Logan, 1996: 755; see also Walder, 1996; Gerber and Hout, 1998; Zhao and Zhou, 2002; Zhou, 2000).

Generalizing from China’s experience carries some risk, as this society represents non-typical transition to capitalism, confined to economic system, with the communist party still holding political power. Outside of China market transition have varied in their pace, strategy, and results. The impact of market reform on processes of socioeconomic attainment has been most intensively studied in Poland. Replacement of the planning economy by the market as the principal agent of social stratification began in 1989. The ensuing decade has witnessed systematic increase of income returns to human capital that mostly resided in monetary benefits to the university level (Domański, 1999). The same course of change was documented in the Czech Republic (Vecernik, 2009: 79). By contrast, market reforms have not increased returns to education in Russia (Gerber and Hout, 1998: 35). Based on analyses of survey data from 1991-1996 they explained the Russian path of transition in terms of greater disintegration of the old system. In their words, contrary to China, „Russia experienced less economic growth and more political change” that inbred uncertainties discouraging investment in productive enterprise and encouraging the short-term windfall profits. According to Burawoy (1997), Russian capitalism is „merchant capitalism” characterized not by efficiency-oriented production that would reward human capital for its productivity but by a

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chaotic scramble to capitalize immediately on what one has to sell. All in all, market transition in Russia has failed to reward education.

Regarding second principal outcome of market reform – i.e. returns to occupational positions - much of the debate concentrates on the income advantages of the managerial/professional cadres and owners. Previous studies have shown that under the communist system, central authorities prescribed wage ranges for all ranks of all occupations, and wage policies were more egalitarian in contrast to prevailing patterns in the market economies (Connor, 1979; Domański, 1990). By the late of the 1980s the average wages of manual and professional categories were barely distinguishable. One of the main predictions of the Market Transition Theory (Nee, 1989; 2001) was that returns to skill and organizational assets would increase during transition. According to the prevailing interpretation the consolidation of the market institutions will enhance rewarding based on meri-

tracy that will result in the growing gap between managers/professionals and other categories. In addressing the second strategic category, namely owners, theories of the market transition posit that markets provide powerful incentives to petty entrepreneurs whose relative success is based on the ability to make long-term investments decisions, cost-benefit calculations, and risk taking. Following the Nee's *market incentive hypothesis* (1989: 674), changes from the state communism distribution to the market allocation increases demand for entrepreneurial skills that will benefit owners.

Contrary to expectations, professions did not reap important rewards neither in China, nor in Poland and Russia. What may be interpreted as supporting the logic of the market incentive hypothesis were relative monetary gains of owners taking place in all three countries (Gerber and Hout, 1998; Wu and Xie, 2003; Domański, 1999). More detailed analyses revealed that in Poland owners overpassed professionals but fared less than salaried managers (mostly directors of firms). In the first half of the 1990s managers have experienced greater improvements relative to all

other categories, exceeding owners in the hierarchy of incomes. This may suggest the role of the „organizational capital” became more salient, relative to the ownership assets (Domański, 1999).

Third constitutive link attributed to the logic of the transitional economies concerns institutional distinctions in returns between sectors. The prevailing wisdom is to attribute bulk of the increasing monetary rewards to the market than to the state sector, bearing in mind that the former is germane for the market like distribution (Nee, 1989; Wu, 2002). In fact researchers, studying urban China and Russia found that income returns to education were higher in the market sector than in the state sector which may be interpreted as supporting the logic of the market transition theory (Gerber, 2002; Zhao and Zhou, 2002; Wu and Xie, 2003).

Together the three tendencies are regarded as underlying institutional transformation and social stratification in former state socialist societies. The existing studies tend to focus on data gathered at the 1990s. In the volatile setting of the transition economy, data points from the later period of time must be considered to distinguish steady patterns from transient developments. The course of economic change in Poland seems relevant to debates addressing the question whether market mechanisms in allocation of goods have altered income differentials and patterns. This analysis extends earlier developments in using eleven surveys spanning from 1982 to 2008. These data permit us to track changes in income distribution over the reform period to evaluate the hypotheses implied by the market transition theories.

Towards this goal I will focus on following interrelated questions. The first of them concerns income returns to educational credentials – existing analyses has documented an unambiguous trend of increasing returns to education since 1982 until 1998 (Domański, 1999). However to assess whether these observed patterns are attributable to marketization per se, one must compare pre-reform baseline with post-communist results for a longer period of time. I will investigate the outcomes of labor market transition in the

period between 1982-2008<sup>1</sup>. On the one hand, continued rise in monetary benefits for education (if it occurs) can be interpreted as a relentless change in structure of opportunities toward economic effectiveness, meritocracy, and fair distribution equated (in a common wisdom) with allocation of rewards according to investments. On the other hand, after several years of steady rise, even some decline in returns to education would not necessarily indicate of the reversal or collapse of the market reform.

The second question concerns returns to those in the high tiers of occupational hierarchy. Increasing returns to education in the reform era clearly reflect the increasing importance of human capital. Another corollary of the market transition theory is that following a shift of market allocation, category of higher managers and professionals – that are leading „contributors” in building modern structures – will experience net gains over those categories that occupy less strategic positions. One should remind that under the command economy, Polish intelligentsia enjoyed only slightly more returns than skilled workers. It seems logical that capitalist transition should enhance the rewards accruing to this category due to their highest education, expertise, and skills, not to mention their social capital. According to previous findings professionals have not benefited from the economic reform in its early stage, however one may expect some delayed effect in their financial returns that could come into fore after consolidation of the market structures.

Question who has gained and lost leads to the third prediction concerning financial advantages of owners. According to the *market opportunity thesis* formulated by Nee (1989) shift to the market coordination should result in higher returns for this category relative to non-owners. A large body of literature documented that under the new circumstances both the legal and political system gave support for the small and medium-sized private business. Polish entrepreneurs entered the 1990s with monetary gains, which put them among the higher reaches of income distribution. However, in the course of consolidation of the market rules small and medium-sized

ownership did not appear to serve as an avenue for financial prosperity (Domański, 1999). This is no longer an asset, which tends to promote itself. Market in transitional economies establishes barriers, which are probably no less effective in limiting the economic role of the „old middle classes” as the arrangements in the mature capitalism of the West. In consequence, small and medium-sized owners might experience decreased incomes relative to managers and professionals.

Finally, it remains to be seen to what extent economic returns differ across sectors. Previous studies on the market transition in Poland have missed this link that was fully in force in China (Wu and Xie, 2003).

Below, I develop the theoretical arguments that connect incomes to education and occupational position in post-communist economies, and review relevant research. Next, I discuss the survey data used in each stage of the analysis. Finally, I report on results of each part of the analysis in turn, and conclude by summarizing the findings and considering some of the implications of this research.

## HYPOTHESES

Given this conceptual framework I evaluate three interrelated hypotheses. My first hypothesis is on the relationship between education and incomes. Let us remind that in the 1990s this relationship systematically increased. The reversal of this trend could result from educational expansion of the university level. In 1990-2008 number of universities grew from 122 to 455, followed by growing supply of students in tertiary education – from 403,8 in 1990 to 1.937,4 thousands enrolled in 2008, and the number of the graduates increased from 56,1 to 410,1 thousands (Rocznik, 2008: 350).

It is likely that growing supply of persons with the university diploma inflated the market value of educational credentials (Boudon, 1974)<sup>2</sup>. Apparently, growing size of the university enrollment in Poland did not translate into increment of the jobs with the university credentials. Percentage of the category of the higher managers and professionals (referred in Poland to intelligentsia) remained

fairly stable across 1988-2008 at 10,7-10,8%<sup>3</sup>.

Concerning further increase of education premium, the likely contextual development fuelling it might be certain rise in inequality of incomes. A number of studies suggest that market reforms tend to penalize less educated categories and promote wages of those with the university diploma. In 1982-1992 there was a detectable rise in concentration of incomes in Poland. The Gini coefficient rose appreciably from 0,228 in 1982 to 0,350 in 1992, although in the subsequent period the inequality of incomes tends to stagnate and in 2008 it amounted to 0,342. Analysis of dispersion of incomes brings similar pattern in that the major breakthrough took place in the turn of the 1980s. The decile ratio (9/1) rose appreciably from 2,82 in 1982 to 4,22 in 1992 followed by small increase to 4,29 until 2008.

Putting these findings together, they give greater validity to the claim of continuity in high returns to education. Educational level seems to still matter despite the massive increase of the supply of the university graduates that could lower price of the university diploma. These considerations suggest hypothesis on the continued effect of the university education on incomes. If this were the case, returns to education would continue to increase until the beginning of the 2000s, or – at least – persist at the magnitude of the 1990s.

In a similar vein I formulate my second hypothesis concerning returns to managers, professionals, and owners. One of the most important debates arising out of the post-communist transition is which of these categories have become key actors of the market reforms. By extension of the *market power thesis* (Nee, 1989) – arguing that power is located in marketlike transactions – one can expect increasing importance of the capital of property residing in owners. At the same time, existing literature is consistent on that efficiently operating market mechanism has to be based on meritocratic distribution of incomes that requires positive returns to managers and professionals.

So far, previous studies indicate that in Russia professionals must be counted among the losers rather than winners of the market

transition (Gerber and Hout, 1998). In contrast, the prevailing empirical results for Poland come to document the increasing returns to professional expertise and organizational skills, accompanied by the growing prosperity of managers and new intelligentsia relative to incomes enjoyed by owners (Domański, 1999). As regards owners, research carried out in China and Russia confirmed increasing monetary gains of this category, although an important caveat to application of Nee's theory is its reliance on research conducted mostly in rural areas. Note that already in the 1970s theories of modernization suggested the prominent role of the „knowledge workers” relative to the „old class”, i.e. to owners (Bell, 1973). These considerations motivate my second hypothesis that – in the longer course of transition – higher managers and intelligentsia will benefit more relative to owners.

My third hypothesis is borrowed from Wu and Xie (2003) who postulate thorough examination of the sectoral differentials in returns to education and occupational positions. Past research in China provided strong support for the common wisdom that returns in the market sector should be higher than in the state sector (Zhao and Zhou, 2002; Wu and Xie, 2003). Contrariwise, in Russia returns to education in the private sector have particularly diminished and professionals remained relatively disadvantaged which Gerber and Hout (1998) explained in terms of the specific path taken by the Russian market transition.

My article can either give greater validity to claims of the country-specific links between markets and stratification, depending on historical circumstances, sequence, and timing of events. Or, in contrast, it can support the validity of general theories of post-communist transition, pointing to cross-national tendencies. My prediction is that returns both for education and professional/managerial skills should be higher in the private sector.

#### DATA NAD MEASUREMENT

I analyze data from surveys carried out in Poland in 1982, 1988, 1992-1995, 1997, 1999, 2002, 2005, and 2008. Each survey drew a multistage stratified cluster sample of

a target population. The data for 1992-2008 were collected under the Polish General Social Survey that is an ongoing program aimed at systematic measurement of trends in the Polish society. PGSS data come from personal interviews, based on standardized questionnaire containing identical questions and indicators. The structure of the data files and their documentation follow standards developed in General Social Survey in the United States and ALLBUS in Germany. The 1982, and 1988 data were gathered by the Institute of Philosophy and Sociology Polish Academy of Sciences as a part of longstanding program of monitoring living standards and social stratification (see Beskid, 1984; Słomczyński et al., 2003).

All data sets represent adult population of women and men. The total size for the 1982 was 5317, for 1988 – 5884, and for the PGSS 1992-1995 – respectively 1647, 1649, 1609, and 1603. In the PGSS 1997 the completed size of the sample was 2401, in 1999 - 2282, in 2002 - 2473, in 2005 – 1277, and in 2008 – 1293. In case of 1982, along with the PGSS 1992-2008 studies, samples were drawn on the basis of households, and only in 1988 the sample was a sample of individuals. All these surveys contain detailed information on educational attainment of each respondent, occupation, individual incomes, and background characteristics. The wording of the questions, answer categories, and sequencing were similar in all of them producing cross-time comparable data sets.

All variables were coded in identical way for each data set. My dependent variable is monthly earned income from primary job. In multivariate analysis I take the natural logarithm of income, which makes this variable, comparable across time (using logarithm allow to adjust incomes for periodical inflation of the Polish Zloty at its exchange in 1991). In order to capture effect of education I use two measures. First is a set of discrete categories that reflect the most important types of educational outcome in the Polish educational system: (i) less than elementary and elementary (after reform in 1999 including also *gymnasium*, which became compulsory since then), (ii) basic vocational and less

than secondary, (iii) complete secondary, (iv) post-secondary, less than tertiary, and tertiary with bachelor degree (hereafter referred to „some university”, (v) university complete. Second measure of education is years of schooling which allows to identify its effect in a summary way.

To classify occupations I apply the widely used EGP class schema. The detailed version of the EGP was collapsed to five basic categories: (i) higher professionals and managers (i.e. Polish intelligentsia), (ii) other non-manual employees (clerical, sales and service), (iii) owners, (iv) manual-workers (foremen, skilled and unskilled workers), and (v) agricultural categories (farmers and agricultural laborers). Theoretical justification of the categories themselves derives from the conception developed for the market society. Although the adoption of this measure in Poland can be criticized, the evidence is considerable that this conceptualization is empirically potent. The use of the EGP was validated on various datasets coming from national samples. As it was shown explanatory power of the EGP in examining relationship between occupation and various „external” criteria is satisfactory (Domański and Przybylsz, 2003).

Given that 1982 and 1988 surveys did not utilize the ISCO code, the EGP categories could not be applied for this data. As a result, in my analysis of income returns to occupational position for 1982-1988 I had to employ different coding schema: the five categories (higher professionals and managers, etc.) were derived from the Polish Sociological Classification of Occupations (Domanski et al. 2009). Second limitation of this study is that – due to relatively small proportion of managers – I had to combine them with professionals that does not permit to test more detailed hypotheses concerning relationships between occupational position and incomes.

The set of available control variables includes: gender (men=1, women=0), age, age squared, size of place of residence (eight-point scale from the countryside to capital city), supervisory position (three-point scale coded 1 for non-supervisors, 2 for lower supervisors, and 3 for higher supervisors, i.e.

those supervising lower supervisors), and branch of economy operationalized as a set of eight dummy variables: manufacturing, construction, agriculture, transport, trade, social service (science, culture, health, education), administration, and personal services (omitted in a regression models)<sup>4</sup>.

In order to determine income returns to education I employ the multivariate OLS regression model with addition of sex, age, supervisory position, economic branch, sector of economy, and size of place of residence. In first step I consider this baseline model for 1982, 1988, 1992-1995, 1997, 1999, 2002, 2005, and 2008. To avoid co-linearity between education and occupation I fit separate models to estimate their net effects. Then, in order to test for cross-time variation in the effects of education and occupational position, I pool the all data sets, and estimate a series of full models including interactions of the education by year of the market transition, as well as interactions between occupation and year of the of the market transition. The „year of the of the market transition” variable is opera-

tionalized as the amount of time elapsed since 1982, measured in years, coded from 1 for the 1982 study, to 26 for that of 2008.

To measure income differences by sector I add to baseline equation a variable *sector* coded „1” if respondent worked in the state company (including cooperative firms), and „0” for those working in private sector. Owners in agriculture (farmers and peasants) and respondents working in the stock and foreign companies were classified in the private sector.

#### ANALYSIS

##### Returns to education

In Table 1, I present the OLS regression estimates for model of income determination. This is a baseline model that sets out returns to education in years of transition, spanning from 1982 to 2008. Dummy variables for education were entered to the model as effect-coded variables which makes it possible to interpret the values of parameters as a measure of the distance between the average (non-weighted) incomes for a given category and the sample mean.

**Table 1**  
**OLS coefficients from multiple regression of monthly incomes on selected variables. Poland<sup>a</sup>**

Variables	1982	1988	1992	1995	1999	2002	2005	2008
Sex (male=1)	0,358**	0,402**	0,353**	0,310**	0,173**	0,214**	0,349**	0,325**
Age	-0,005**	-0,0003**	0,016**	-0,010**	-0,013**	-0,016**	-0,004**	-0,003**
Age <sup>2</sup>	-0,001**	-0,0004**	0,001**	-0,001**	-0,001**	-0,001**	-0,0005**	-0,0004**
Size of place of residence	0,015**	0,019**	0,036**	0,032**	0,030**	0,028**	0,043**	0,017
Education								
University	0,112**	0,177**	0,230**	0,369**	0,325**	0,415**	0,496**	0,356**
Some university	-0,006	0,047*	0,069	0,088	0,037	0,147**	0,237**	0,079
Secondary	-0,009	0,004	0,0519	-0,045	-0,010	0,003	-0,069	0,058
Basic vocational	0,007	-0,060**	-0,052	-0,158**	-0,087**	-0,236**	-0,142	-0,140**
Elementary (reference)	-0,104**	-0,168**	-0,298**	-0,254	-0,265**	-0,329**	-0,470**	-0,359**
Supervisory position	0,103**	0,102**	0,224**	0,231**	0,287**	0,259**	0,211**	0,317**
Economic branch								
Manufacturing	0,043**	0,092**	0,029	0,071*	0,102*	0,044**	-0,017	0,101
Agriculture	-0,048**	-0,019	-0,151**	-0,307**	-0,383**	-0,354**	-0,158*	-0,298**
Construction	-0,012	0,038	0,146**	0,057	0,160**	0,201**	-0,013	-0,140**
Transport	-0,001	-0,008	0,018	0,055	0,062	0,018	0,143	0,014
Trade	-0,0031	-0,031	0,095	0,052	-0,001	-0,036	-0,003	-0,121
Social services	0,010	-0,068	-0,213**	-0,097*	-0,063**	-0,086**	-0,074	0,082
Administration	0,041	0,060**	-0,051	-0,120	0,001	0,084	0,104	0,127
Personal services (reference)	0	0	0	0	0	0	0	0
Constant	4,402**	4,998**	5,376**	5,944**	6,862**	7,174**	6,576**	6,737**
R <sup>2</sup> (adjusted)	0,342	0,332	0,401	0,397	0,386	0,383	0,355	0,371

\*\*p<0,01; \* p<0,05;

<sup>a</sup> In all models dependent variable is natural logarithm of incomes.

One can draw two conclusions from Table 1. First, regarding patterns of change the most revealing result is almost steady rise in returns to the university level until 2005. In 1982 the rate of returns for those who completed university was about 11.2 per cent ( $e^{0,112}-1$ ), after partialling out sex, age, and other predictors, and the most disadvantageous was category with no more than elementary education ( $b=-0,104$ )<sup>5</sup>. Clearly, graduates from the university level made continuous gains relative to the mean level of incomes. Once in 1982 net returns for this category amounted to .112, in 1992 it increased to 0,230, in 2002 – to 0,415, and in 2005 – to 0,496. Apparently, it exhibited marked decline until 0,356 in 2005-2008. Although, then, the overall impression is one of considerable upward tendency, some deterioration in the last period may suggest downfall of the market price of the university level. The same pattern of changes reveals in linear relationship between education and incomes (see Table A1). Net returns to years of schooling in

1982 were at the lowest (0,025). Until 2005 this association increased to 0,102, decreasing in 2005-2008 to 0,072. This evidence points to the fact that our tested hypotheses are basically correct.

Second conclusion concerns the pattern of differential returns. It appears fairly stable with the university level being at the top and elementary level on the bottom. Returns to the highest and the lowest levels of education clearly diverged across time. This differential increased from 0,216 in 1982 to 0,966 in 2005 that provides support for the hypothesis of the overall increase of relationship between education and incomes.

Since Table 1 provides a robust set of results suggesting increasing role of educational credentials it is worth to corroborate this finding in a more rigorous way. In doing so I estimated a model for pooled data sets, including the effects of educational levels and year of the study, as well as the education-by-year interactions implied by my hypothesis 1.

Table 2

**OLS coefficients from multiple regression of monthly incomes on selected variables.  
Poland, 1982-2008: main effects and interactions between education and time**

Variables	Model I	Model II
Sex (male=1)	0,312**	0,315**
Age	-0,001**	-0,001**
Age <sup>2</sup>	-0,001**	-0,001**
Size of place of residence	0,013**	0,012**
Education		
University	0,262**	0,107**
Some university	0,082**	0,016
Secondary	-0,015	0,010
Basic vocational	-0,013**	-0,022
Elementary (reference)	0	0
Supervisory position	0,158**	0,161**
Economic branch		
Manufacturing	0,078**	0,076**
Agriculture	-0,251**	-0,236**
Construction	0,066**	0,068**
Transport	0,037**	0,035**
Trade	0,016	0,015
Social services	-0,076**	-0,074**
Administration	0,059**	0,053**
Personal services (reference)	0	0
Year	0,256**	0,260**
Interactions		
University*Year	-	0,035**
Some university*Year	-	0,015**
Secondary*Year	-	-0,001
Basic Vocational*Year	-	-0,021**
Constant	4,273**	3,916**
R <sup>2</sup> (adjusted)	0,750	,751

\*\*p<0,01.

In Table 2 Model 1 is an additive model that examines returns to education levels. It gives a summary picture of patterns in 1982-2008, according to which individuals with the university level enjoyed – on the whole – incomes approximately 30 percent ( $e^{0,262}-1$ ) higher than average Pole. Categories with less than secondary education, made it worst – at 1,3-1,5 percent below the mean. Adding interaction terms between educational levels and year of the study, Model 2 examines differential returns to education across time. The positive coefficients for interaction terms indicate linear raise in the returns in time, and negative ones its decline. They appear positive only for the university, and some university levels, suggesting that increased returns to education materialized mostly for those categories. Each additional year increased returns to the university education by 3,5 percent ( $e^{0,035}-1$ ), and to the some university by 1,5 percent ( $e^{0,015}-1$ ). Consistent with this is significant decline (of 2,1 percent) in returns to basic vocational and not completed secondary education ( $e^{-0,021}-1$ ). In search for linear effect of educational level, I replace dummies with sum-

mary scale. Model with linear effect education-by-year interaction in the Table A2 informs that net increment for each year of schooling increased annually by 0,7%. In short, market institutions continue to benefit human capital residing in the highest educational category, as hypothesis 1 predicts.

#### Effect of occupation

Let us see whether steady rise in returns to the university degree was paralleled by increase of returns to the higher occupational positions. In line with hypothesis 2 we expect growing benefits of managers and professions accompanied by relative decline in incomes of owners. To capture net returns to occupational categories I test for cross-time variation, by pooling the eleven data sets and estimating, first, standard additive regression models, and, next – the model along with the interaction „occupation-by-year of the market transition”. Table 3 replicates Table 2 except that educational levels are replaced by occupational categories.

**Table 3**

**OLS coefficients from multiple regression of monthly incomes on selected variables. Poland, 1992-2008: main effects and interactions between occupational categories and time**

Variables	Model I	Model II
Sex (male=1)	0,357**	0,362**
Age	-0,004**	0,004**
Age <sup>2</sup>	-0,001**	-0,001**
Size of place of residence	0,019**	0,017**
EGP occupational categories		
Higher managers and professions	0,413**	0,345**
Lower non-manual categories	0,133*	0,215**
Owners	0,293**	0,336**
Skilled and unskilled workers	-0,028**	0,176**
Farmers and agricultural laborers (reference)	0	0
Economic branch		
Manufacturing	0,069**	0,061**
Agriculture	-0,093**	-0,109**
Construction	0,028	0,025
Transport	0,010	0,013
Trade	-0,064**	-0,063**
Social services	-0,059**	-0,054**
Administration	0,085**	0,088**
Personal services (reference)	0	0
Year	0,277**	0,295**
Interactions between EGP classes and Year		
Higher managers and professions*Year	-	0,014**
Lower non-manual categories*Year	-	-0,019**
Owners*Year	-	-0,012
Skilled and unskilled workers*Year	-	-0,050**
Constant	4,384**	4,298**
R <sup>2</sup> (adjusted)	0,737	0,798



The first column of Table 3 contains the summary results of the additive model. The regression estimates clearly suggest a robust effect of occupation on incomes. Results corroborate that higher managers and professionals gain relative to owners. According to Model 1, incomes of higher managers and professions are 51,1 percent higher ( $e^{0,413}-1$ ) than mean incomes while net advantages of owners are 34 percent higher ( $e^{0,293}-1$ ).

To check hypothesis on variation in time, in Model 2 the interaction terms are included. Three of the four interaction terms reached significance. First noteworthy finding is linear rise in returns to managers and professions. It shows that one additional year of transition increases incomes of this category by 1,4 percent ( $e^{0,014}-1$ ). Second, rising benefits to intelligentsia contrasted with relative deterioration of monetary returns to the lower non-manuals – by 1,9 percent – ( $e^{0,019}-1$ ). Third, these results provide strong evidence for relative decline in benefits accruing to workers. They lost relative to the mean incomes by 5 percent ( $e^{-0,050}-1$ ) per annum. It shows that as market transition advanced, intelligentsia gained while the working class and lower non-manual strata actually lost ground over time. This may indicate growing rigidity of this barrier in hierarchy of incomes. Concerning capital of property residing in category of owners, any significant tendency took place. Taken together these findings lead to general conclusion that growing market economy in Poland rewarded more human capital and organizational assets while the returns to ownership advantages seem to evaporate over years of transition.

#### Effect of sector

The market transition theory maintains that income returns to education, managerial skills, and professional expertise are higher in the market sector than in the state sector. This hypothesis finds support in China but not in Russia. Furthermore, analyses of cross-time data revealed that in China these associations increased while in Russia the picture is muddled. Gerber and Hout (1998) attribute the non-typical Russia's path of transition to lack of political stability. Poland seems to be more on the track as predicted by the market transition theory. According to expectations im-

plied by my hypothesis 3, returns to the university level should increase more in the private sector than in the state sector.

In approaching this question I created a pooled data set that incorporated data from the nine surveys carried out in 1992-2008. To assess returns to education differences by sectors I employed, first, a reduced form model of educational categories, and control variables, with the addition of a dummy variable measuring impact of sector (respondents were classified into the state and private sectors). To further allow returns to education to vary by sector, I fit the second model with an interaction term between educational level and sector. The last model is designed to check cross-time variation in returns to education differences by sectors – I estimated a full model including all regressor variables (models 1 and 2) as well as the education-by-sectors-by-year of transition interactions implied by my hypothesis 1.

Table 4 shows the results. Starting with column 1, it can be seen that sector of economy remained a significant net determinant of incomes. In 1992-2008 the lower incomes were in the state firms, with state workers receiving negative returns at 21 percent ( $e^{-0,234}-1$ ).

Turning to cross-sector differences in rates of return, the coefficients for the interaction term in the second model confirm significance of sectors in determination of incomes during this period. As expected, university education yields higher incomes in private sector. Other things being equal, employment in state sector decreased incomes of individuals with university level by 19 percent ( $e^{-0,127}-1$ ). Accordingly, state sector appears relatively better place for individuals with basic vocational education who gain higher returns than their counterparts in the private firms by 11,5 ( $e^{0,109}-1$ ).

What can be learned from Table 4 is that, indeed, the private sector plays pivotal role in rewarding human capital in Poland. The key question arising out concerns dynamics of this pattern. With the proceeding marketization, the development of financial markets and foreign companies afforded lucrative opportunities demanding the university education that might enhance its price. I do not present estimates for three-way interaction terms between university education, sectors, and year of transition included in the third model.

Table 4

**OLS coefficients from multiple regression of monthly incomes on selected variables.  
Poland, 1982-2008: main effects and interactions between education, sectors, and time**

Variables	Model I	Model II
Sex (male=1)	0,256**	0,254**
Age	-0,006**	-0,006**
Age <sup>2</sup>	-0,001**	-0,001**
Size of place of residence	0,020**	0,019**
Education		
University	0,290**	0,373**
Some university	0,052	0,011**
Secondary	-0,023	-0,053*
Basic vocational	-0,172**	-0,218**
Elementary (reference)	0	0
Economic branches		
Manufacturing	0,051**	0,054**
Agriculture	-0,150**	-0,155**
Construction	0,024	0,025
Transport	0,052	0,050**
Trade	-0,108**	-0,105**
Social services	0,017	0,022
Administration	0,090	0,092
Personal services (reference)	0	0
Sector (state=1)	-0,234**	-0,263**
Year	0,258**	0,259**
Interactions between Education and Sector		
University*Sector	-	-0,127**
Some university*Sector	-	0,071
Secondary*Sector	-	0,058
Basic vocational*Sector	-	0,109**
Constant	4,581**	4,603**
R <sup>2</sup> (adjusted)	0,409	0,441

\*\*p<0,01; \* p<0,05.

Any of them reach significance, which is in contrast with hypothesis 3 expecting increase of the university education returns in private sector. Nor private increased returns to the university education as market transition advances neither workers with basic vocational schooling in state companies fared relatively better.

Based on hypothesis 3 I also predict income advantage of the professional and managerial assets being exposed in the private sector. To assess this possibility I replicated analytical strategy used in determination of sectoral differences in returns to the educational level. In Table 5, the „baseline” gives estimates of the main effects. The second model that is of more concern of this study examines sectoral differences in monetary benefits of managers and professionals. Contrary to expectations, managers and profes-

sionals did not enjoy higher returns in the private sector. Working in the private sector increased their earnings by a non-significant value of 0,9% ( $e^{0,009}-1$ ). The only sense in which hypothesis 3 implied by the transition theory is confirmed is the positive return to manual workers in state sector. The parameter estimate for interaction variable „skilled and unskilled workers-by-sector” reach 0,199, suggesting that workers in state sector fared better relative to representatives of the working class in the private companies.

To ensure whether transition from state socialist to market economy resulted in higher returns to managers and professions I estimated full model including three interactions between membership in the EGP classes, sectors, and a „year of transition” variable. According to these results (not reported here) there is little evidence for hypothesis that re-

turns to managers professions are converging in the private sector. Like in case of the university education, monetary gains of working in private firms did not rise in a significant

way. Neither specialists working in private firms enjoyed higher returns, nor these benefits consolidate in time.

**Table 5**  
**OLS coefficients from multiple regression of monthly incomes on selected variables. Poland, 1992-2008: main effects and interactions between EGP classes, sectors, and time**

Variables	Model I	Model II
Sex (male=1)	0,293**	0,299**
Age	-0,007**	-0,008**
Size of place of residence	-0,001**	-0,001**
EGP classes		
Higher managers and professions	0,262**	0,314**
Lower non-manual categories	-0,133**	-0,144*
Owners	0,143**	0,133**
Skilled and unskilled workers	-0,338**	-0,392**
Farmers and agricultural laborers (reference)	0	0
Economic branches		
Manufacturing	0,112**	0,120**
Agriculture	-0,374**	-0,389**
Construction	0,026	0,028
Transport	0,098*	0,095*
Trade	-0,145**	-0,149**
Social services	0,079*	-0,079*
Administration	0,149**	0,162**
Personal services (reference)	0	0
Sector (state=1)	-0,129**	-0,253**
Year	0,264**	0,264**
Interactions between EGP classes and Sector		
Higher managers and Professions*Sector	-	0,009
Lower non-manual categories*Sector	-	0,121
Owners*Sector	-	-0,065
Skilled and unskilled workers*Sector	-	0,199*
Constant	4,851**	4,862**
R <sup>2</sup> (adjusted)	0,396	0,397

\*\*p<0,01; \*p<0,05.

**Table A1.**  
**OLS coefficients from multiple regression of monthly incomes on selected variables. Poland<sup>a</sup>**

Variables	1982	1988	1992	1995	1999	2002	2005	2008
Sex (male=1)	0,363**	0,414**	0,353**	0,311**	0,181**	0,214**	0,370**	0,328**
Age	-0,005**	0,0001**	-0,017**	-0,008**	-0,013**	-0,016**	-0,004**	-0,003**
Age <sup>2</sup>	-0,001**	-0,001**	-0,001**	-0,001	-0,001	-0,001**	0,0005**	-0,0004**
Size of place of residence	0,015**	0,020**	0,037**	-0,032**	-0,029**	0,029**	0,044**	0,014
Years of schooling	0,025**	0,040**	0,051**	0,062**	0,059**	0,086**	0,102**	0,072**
Supervisory position	0,097**	0,099**	0,230**	0,236**	0,283**	0,255**	0,197**	0,314**
Economic branch								
Manufacturing	0,046**	0,094**	0,033	0,064	0,283*	0,033	-0,018	0,110
Agriculture	-0,047**	-0,017	-0,168**	-0,288**	-0,106**	-0,368**	-0,161**	-0,310**
Construction	-0,006	0,045*	0,150**	0,048	-0,386**	0,258**	-0,009	0,126
Transport	0,005	-0,007	0,029	0,042	-0,164**	0,030	0,140	0,026
Trade	-0,001	-0,043	0,105*	0,053	-0,002	-0,075	-0,009	-0,106
Social services społeczne	0,003	-0,074	-0,226**	-0,082	-0,070	-0,124**	-0,071	0,078
Administration	0,031	0,062**	-0,051	0,105	-0,001	0,060	0,086	0,128
Personal services (reference)	0	0	0	0	0	0	0	0
Constant	4,094**	4,526**	4,801**	5,088**	6,149**	6,158**	5,334**	5,867**
R <sup>2</sup> (adjusted)	0,353	0,344	0,406	0,390	0,385	0,387	0,351	0,370

\*\*p<0,01; \* p<0,05.

**Table A2.**  
**OLS coefficients from multiple regression of monthly incomes on selected variables. Poland,**  
**1982-2008: main effects and interactions between education and time**

Variables	Model I	Model II
Sex (male=1)	0,316**	0,321**
Age	-0,001**	-0,001**
Age <sup>2</sup>	-0,001**	-0,001**
Size of place of residence	0,012**	0,013**
Years of schooling	0,053**	0,022**
Supervisory position	0,162**	0,165**
Economic branch		
Manufacturing	0,076**	0,075**
Agriculture	-0,246**	-0,233**
Construction	0,068**	0,071**
Transport	0,035**	0,035**
Trade	0,010	0,010
Social services	-0,072**	-0,074**
Administration	0,057**	0,051**
Personal services (reference)	0	0
Year	0,257**	0,176**
Years of schooling *Year	-	0,007**
Constant	30,588**	3,964**
R <sup>2</sup> (adjusted)	0,752	0,756

\*\*p<0,01; \* p<0,05.

## CONCLUSION

Distribution of incomes is the most sensitive measure of changes in social stratification. Building on conceptual framework developed by theorists of the market transition in post-communist countries I attempted to determine whether social stratification in Poland follows this logic regarding returns to human capital characteristics and to merits related to occupational achievements.

To summarize, my findings provide further support for hypotheses that market-like reform involves changes in the mode of allocating rewards, and in stratification order, in favor of greater incentives to meritocracy, and individual attainments. First, Poland faced steady increase in returns to the university education – although rise to meritocracy begun already in the 1980s it relentlessly continued until 2005. Second, this tendency, have been paralleled by growing benefits to higher managers and professions. Third, privatization of the economy distinguishes workers into private and state sectors, with incomes advantage being more pronounced in the private sector. According with previous studies, basically in China, market mechanisms in Poland, residing in private sector, appear to dictate more rational and efficient allocation of re-

wards based on workers' productivity. At the same time caveat has to be made casting doubts on the proposition that higher returns in private sector, than in state sector, are attributable to marketization per se. There have been no significant increases in returns to highest education, neither to managers and professionals in the private sector that suggest that these sectoral differences may result from other mechanisms.

What in the course of transition appears different for China, Poland, and Russia, concerns mostly the highest returns to the education in analyzed periods of time. The decisive shift – increase in returns to education – was limited to China and Poland, and only these countries witnessed steady rise in rewards of higher managers and professionals. Contrasting with this, in Russia rates of returns diminished.

Gerber and Hout (1998) specified roots of distinctiveness of the Russian's case in terms of political chaos that dominated economic reform. In their view, the market economy is a common factor underlying distribution of incomes and social stratification in post-communist societies, whereas they differ in degree of political stability. In Russia the communist system lasted longer, its col-

lapse was more striking, and transition to market mechanisms involved deeper „shock” than in China. Given protracting political and legal uncertainties, Russian capitalism is marked not by efficiency-oriented production that would reward human capital but by a chaotic and domestic economy relying on subsistence plots, barter networks, and bargaining between suppliers, customers, and state. When compared to Russia, China is more economically predictable, although transition to market economy is there controlled by state.

What can be learned from these findings to understanding of the dynamics of social stratification? Comparative studies of post-communist stratification are still scarce, however it seems likely that the fate of meritocratic distribution of incomes depends not only on economic efficiency but also on the solid political ground that secure governance of firms in the new markets. The political stability is contingent on the rules of „procedural democracy” – like in Poland – but democracy is not prerequisite for these developments that seems to be proved by China. Ultimately, lack of political stability tends to impede rise of the meritocratic distribution. One may hypothesize that – until now – Russia has not met this condition.

#### NOTES

<sup>1</sup> This analysis starts from 1982 since one can hardly find comparable data based on national samples before 1982.

<sup>2</sup> A narrowing wage gap between college and high school-educated workers have been documented in the numerous studies for the United States in the 1970s. The number of the college-educated workers grew at the time relatively faster than non-college in all age and sex groups – among men it was attributed to Vietnam War draft evasion. As supply grew, the wage gap between college and high school-educated worker narrowed. America was seen to be producing too many educated workers for jobs that had been increasingly „deskilled”. By the next decade, this decline in the earning premium was reversed (Morris and Western, 1999:632).

<sup>3</sup> Data on percentages of this occupational

category come from the national surveys referred to in the next section.

<sup>4</sup> In order to control for the curvilinear relationship between incomes and age, I include a square term of age. To reduce collinearity between age and its square I subtract a constant before squaring, i.e.  $b/2$  ( $\text{Age} - b/2$ ), where  $b$  is the slope of the regression of  $\text{Age}^2$  on  $\text{Age}$  (see Treiman 2009:145).

<sup>5</sup> Omitted category for education is „less than elementary and elementary”. Using effect-coding one can established parameters for this category as a reversal of the sum of values of estimated coefficients. For example, for 1982 it was calculated according to the formula:  $0,112-0,006-0,009+0,007= (-)0,104$ .

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Статья поступила в редакцию 10.04.2013